



**The United Republic of Tanzania**  
**Ministry of Health, Community Development, Gender, Elderly and Children**

**MOST VULNERABLE CHILDREN DATA MANAGEMENT INFORMATION  
SYSTEM  
(MVC MIS)**

**\*\*\* SOFTWARE REQUIREMENT SPECIFICATION \*\*\***

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**August 30, 2017**  
**DEPARTMENT OF SOCIAL WELFARE**

## **About this Software Requirement Specification**

This Software Requirement Specification contains a detailed overview of the MVC MIS, its parameters and goals. The document describes the system's target users and its user interface and software requirements. Also, it helps any designer and developer to assist in software development lifecycle (SDLC) processes.

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## **1. Introduction**

The introduction of the Software Requirements Specification (SRS) provides an overview of the entire SRS with purpose, scope, definitions, acronyms, abbreviations, references and overview of the SRS. The aim of this document is to gather and analyze and give an in-depth insight of the complete Most Vulnerable Children Management Information System (MVC MIS) by defining the problem statement in detail. It also concentrates on the needs and capabilities required by the project team while defining high-level features of the system. The detailed requirements of the MVC MIS are provided in this document.

### **1.1 Purpose**

The purpose of the document is to collect and analyze all assorted ideas that have come up to define the system, its requirements with respect to National Most Vulnerable Children Monitoring and Evaluation (MVC M&E) Plan. Also, we shall predict and sort out how this system will be used in order to gain a better understanding of the project and document ideas that are being considered, but may be discarded as the product develops.

In short, the purpose of this SRS document is to provide a detailed overview of the MVC MIS, its parameters and goals. This document describes the system's target users and its user interface and software requirements. Also, it helps any designer and developer to assist in software development lifecycle (SDLC) processes.

### **1.2 Scope**

Primarily, the scope pertains to the MVC MIS features that enable entering of MVC monthly summary report of each village/Mtaa into electronic database and allow sharing of the MVC data among Ministries, Departments and Agencies (MDA's), the Development and Implementing Partners, and other stakeholders for their monitoring, analysis, planning and decision making. It focuses on the Integrating National Most Vulnerable Children (MVC) Monitoring and Evaluation Data Capture and Management Systems into DHIS2 Project specific requirements, MVC M&E Plan and the National Coasted Plan of Action for Most Vulnerable Children NCPA II 2013 - 2017.

### 1.3 Definitions and Acronyms

CBO	Community-based Organization
DED	District Executive Director
DSW	Department of Social Welfare
DSWO	District Social Welfare Officer
FB	Faith Based
HMIS	Health Management Information System
IPG	Implementing Partners Group
LGA	Local Government Authority
M&E	Monitoring and Evaluation
M&E TWG	Monitoring and Evaluation Technical Working Group
MDA	Ministries, Departments, and agencies
MIS	Management Information System
MOHSW	Ministry of Health and Social Welfare
MVC	Most Vulnerable Children
MVCC	Most Vulnerable Children Community
NCPA	National Costed Plan of Action
NSC	National Steering Committee
NTC	National Technical Committee
PMORALG	Prime Ministers' Office Regional Administration and Local Government
RAS	Regional Administrative Secretary
RS	Regional Secretariat
RS WO	Regional Secretariat Welfare Officer
SDLC	Software Development Life Cycle
SRS	Software Requirement Specification
USAID	United States Agency for International Development

### 1.4 Overview

The remaining sections of this document provide a general description, including characteristics of the users of this project and the functional and data requirements of the product. General description of the project is discussed in section 2 of this document. Section 3 gives the functional requirements, data requirements and constraints and assumptions made while designing the MVC MIS. It also gives the user viewpoint of application. Section 3 also gives the specific requirements of the application. Section 3 also discusses the external interface requirements and gives detailed description of functional requirements. Section 4 is for supporting information.

## **2. Overall Description**

### **2.1 Background**

The Government of United Republic of Tanzania is committed to improving child welfare by mitigating the negative impacts caused by poverty, orphaning, residence in child- or elderly-headed household and disability. In line with this goal, the Ministry of Health and Social Welfare, through the Department of Social Welfare, implemented the first National Costed Plan of Action (2007–2010) for Most Vulnerable Children (MVC) to respond to the problem of vulnerable children in Tanzania. This plan of action was reviewed in 2011 and the recommendations that resulted were used to guide the development of the Second National Costed Plan of Action for MVC (NCPA II). The NCPA II was launched in February 2013 and is a five-year program (2013–2017). The NCPA II outlines activities aimed at enhancing the wellbeing of Most Vulnerable Children (MVC) through protecting their rights and preventing and/or reducing the incidences of risks and the impacts of shocks. To monitor the progress of implementation of the NCPA II, the Ministry of Health and Social Welfare has spearheaded the development of a national Monitoring and Evaluation (M&E) Plan which provides a set of core indicators for reporting by all stakeholders working to improve the wellbeing of MVC and their households. The collection of quality information by all stakeholders will improve the government's ability to monitor the implementation progress of the NCPA II and make appropriate decisions.

MEASURE Evaluation is a project funded by the United States Agency for International Development (USAID) to strengthen monitoring, evaluation and research capacity of community health and social service programs in the United Republic of Tanzania. The Project's implementation is led by the Futures Group. MEASURE Evaluation has supported the Department of Social Welfare (DSW), within the Ministry of Health and Social Welfare (MOHSW), to develop a National Most Vulnerable Children Monitoring and Evaluation Plan (MVC M&E Plan). The DSW required a Management Information System (MIS) for MVC data. Discussions between MEASURE Evaluation, the DSW and the Health Management Information Systems (HMIS) Department within the MOHSW recommended the adoption of the District Health Management Information System Version 2 (DHIS2) as an MIS for MVC data.

DSW under the support of MEASURE Evaluation Tanzania engaged the University of Dar es Salaam, Department of Computer Science and Engineering (UDSM/DoCSE) in 2015 to develop and pilot test DHIS2-linked data management system for Most Vulnerable Children (MVC) program data. The pilot was successfully completed in December 2016 in three districts/councils (Kinondoni, Kyela and Wanging'ombe) in Mainland Tanzania. The pilot work has informed the rollout of the MVC M&E plan through Pact/Kikazi Kipya Project and JSI's Community Health and Social Welfare Systems Strengthening Project (JSI/CHSSP). The MVC M&E plan pilot provided important feedback for the improvement of data collection tools. Specifically, the pilot experience recommended:

- I. The need to include new HIV data fields to accommodate Pact/Kikazi Kipya projects programmatic needs.
- II. Modification to some of the MVC data fields.
- III. Updating of data tables and other standards reports.

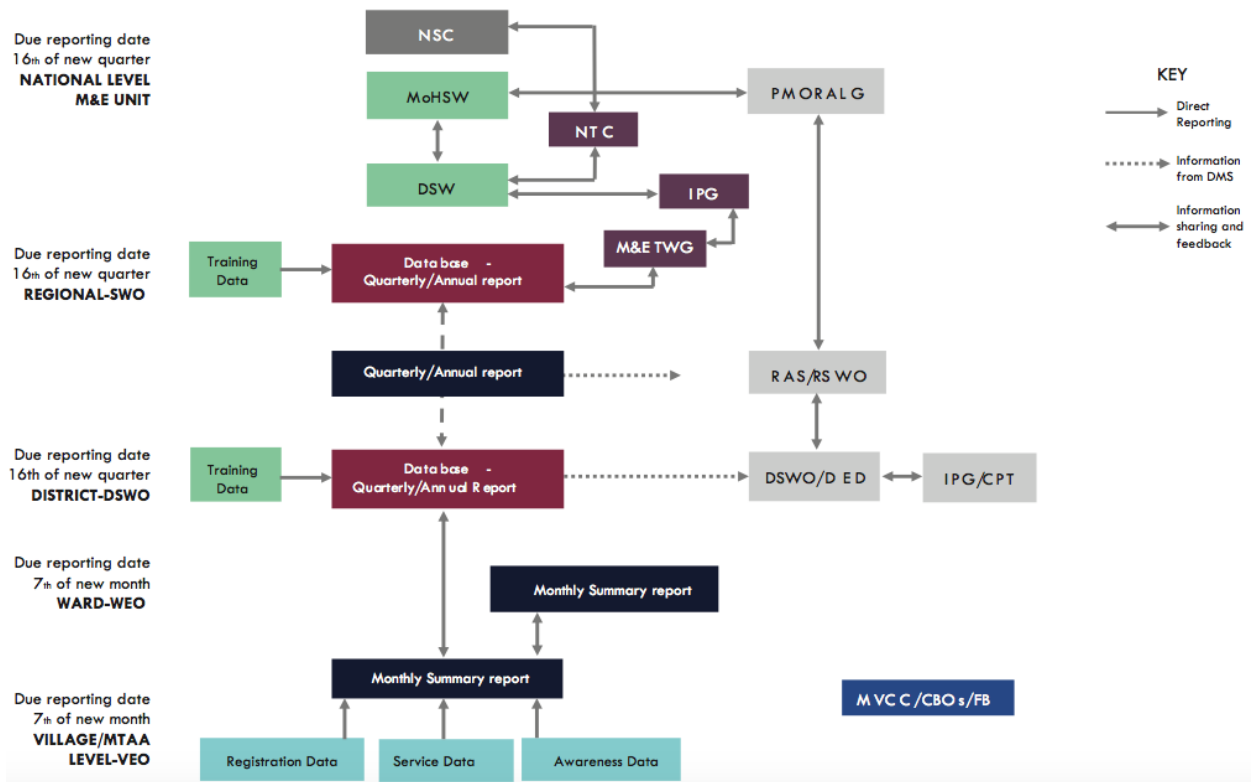
These changes greatly affect the metadata in the original database developed, especially the Monthly Summary Report Form, which is a core form programmed in the database for data capture and report generation. Furthermore, the pilot exercise indicated that it is important to have simple and easily printable standard reports improve the use of the data generated through the system in program planning and decision making. Therefore, necessitated a revision of the features in the original database (MVC MIS) for the Monthly Summary Report form and other standard reports and dashboard to be accommodated.

## **2.2 Major Components of MVC data flow**

Major components of MVC data flow are Monthly Summary Report Form, Periodic Report Form and the electronic MVC MIS. Monthly Summary Report Form is a single summary form that captures information on all MVC or MVC households registered, services provided to the household and MVC. This form will be completed by members of MVCC or service providers at the community level (Village/Mtaa) on a monthly basis and the MVCC will submit a copy to the Social Welfare Officer at the district/council for entry into the electronic database. At the district/LGA level, Monthly Summary Reports from different villages/Mtaa will be entered into the electronic database.

Periodic reporting form will be built into the electronic system and summarize core NCPA II indicators in the M&E plan. It is to be completed at the district or national levels quarterly or annually. District Social Welfare Officers generate periodic reports from the database (quarterly, and annually) for their own use, reporting to the regional level, and for dissemination to the district MVC coordination team and the district management.

MVC MIS will be the electronic database system and will be a separate instance of DHIS2 configured for MVC data processing. Data will be stored into the system according to the reporting structure for MVC (village → ward → council → regional → national). Thereafter, data collected through the DHIS2 MVC instance will be linked to the main HMIS instance at the district level. Overall MVC data flows therefore are illustrated below.



**Figure 1: MVC Data Flow, as specified in the National MVC M & E Plan**



### **3. Specific Requirements**

The purpose of the system is to allow easy MVC monitoring and evaluation data capture and integration to DHIS2 to allow sharing of the MVC data among Ministries, Departments and Agencies (MDA's), the Development and Implementing Partners, and other stakeholders for their monitoring, analysis, planning and decision making. These requirements are organized by the features specified in the MVC M&E Plan. The features are then complimented by the discussion held with Department of Social Welfare, Measure Evaluation and other stakeholders to best capture the functional requirements of the system.

#### **3.1 Purpose of the system**

The system should address the following data need requirements:

- Monitoring and Evaluation of the response to the problem of vulnerable children in Tanzania.
- Policy and decision making of most vulnerable children in Tanzania.
- Ability to flexibly accommodate new programmatic needs.

#### **3.2 Target users**

##### **3.2.1 User Access Level**

The system provides different user access levels to public officers. In particular,

- Officers of ministries, departments and agencies (MDAs)
- Officers of regional offices
- Officers of local government authorities

Specific MVC MIS user access levels shall be discussed and agreed by the project team.

##### **3.2.2 Data to be entered to the electronic MVC MIS**

Although the DHIS2 has the specific module (called DHIS Tracker) to collect, analyze and report individual data, for this assignment the requirement gathering and DHIS2 customization process will focus on the aggregated MVC data and not individual data, which requires additional work for customization of DHIS2 Tracker for capturing individual data. Therefore, in this assignment, data to be entered to the system will be all aggregated data submitted to the district/ LGA, which includes but not limited to Monthly Summary Report data.

### 3.3 Functional Requirements

**ID:** FR1

**Title:** Captures Monthly Summary of MVC.

**Description:** The system shall allow users to enter and store monthly summary information (of a Village/Mtaa) on all MVC, MVC households registered, services provided to MVC and households.

**Rationale:** A comprehensive system of monitoring the NCPA II requires a system to collect, analyze and report the data and monitor progress. The need to accommodate Pact/Kikazi Kipya projects programmatic needs

**Fit Criterion:** The system is implemented to allow user to enter monthly summary reports of MVCs from villages/Mtaa into the electronic database. Data entered shall include, but not limited to, those specified in the Monthly Summary Report Form (refers appendix 3 of the National Most Vulnerable Children Monitoring and Evaluation Plan, 2015). Developers shall propose the layout.

**Dependencies:** NFR3

**ID:** FR2

**Title:** Captures HIV data

**Description:** The Monthly Summary Report Form shall include new HIV data fields to accommodate Pact/Kikazi Kipya projects programmatic needs.

**Rationale:** The MVC M&E plan pilot provided important feedback for the improvement of data collection tools. Specifically, the pilot experience recommended: The need to include new HIV data fields to accommodate Pact/Kikazi Kipya projects programmatic needs. Modification to some of the MVC data fields. And updating of data tables and other standards reports.

**Fit Criterion:** The monthly summary reports form of MVC MIS is revised to accommodate Pact/Kikazi Kipya projects programmatic needs. Data entered shall include, but not limited to, those specified in the MVC Revised tools of April 2017, which included new HIV data fields and other fields to accommodate Pact/Kikazi Kipya projects programmatic needs. Developers shall propose the layout.

**Dependencies:** FR1, NFR3

**ID:** FR3

**Title:** Generate Periodic Report

**Description:** The system shall be able to present in a report format the selected original data, which summarize core NCPA II indicators in the MVC M&E plan. The report shall be presented at, but not limited to, the district, regional or national levels quarterly, biannually, or annually.

**Rationale:** MVC M&E Plan requires periodic aggregated reports for each of the selected routine indicators to provide a comprehensive overview of the national MVC response periodically and summarize all routine indicators against achievements per strategic objective.

**Fit Criterion:** The system includes periodic report specified in appendix 4 of the MVC M&E Plan, 2015, with consideration of the revision specified in FR02. The system shall aggregate the data and allow user to view the report at, but not limited to, the district, regional or national levels quarterly, biannually, or annually. In addition, reporting responsibilities, frequency, and timeframe specified in table 3 of the MVC M&E Plan, 2015 will be considered. Also, the system

includes standard customizable reports that allow administrator to customize standardized look and feel of different organizational reports. Developers shall propose the layout.

**Dependencies:** FR1, FR2, NFR3

**ID:** FR4

**Title:** Completeness and Timelines Summary Report

**Description:** The system shall include report which shows summary of data collection units (MVCCs, etc.) that have/ have not submitted reports and if have submitted on time or not.

**Rationale:** MVC M&E want to enforce completeness and timeliness of the reported data for data quality assurance.

**Fit Criterion:** The system includes the Reporting Rate Summary report module which produce summary of data collection units that have submitted reports and if have submitted on time or not as well as those that have not submitted the required reports.

**Dependencies:** NFR1, NFR3

**ID:** FR5

**Title:** Table generation

**Description:** The system shall allow users to select the variables, filter the data and construct a table, which shows the relationship among selected variables. The variables that users can select should include, but not limited to, the following.

- Time-related variables (Year and Quarter)
- Geographical variables (Name of District/LGA, Region)
- Data-related variables (Variables shown in the format tables which specify attributes of data)

**Rationale:** MVC M&E requires the system to include decision support tools to show, for example, aggregated data from the database, MVC registration trends, and service information by location, and will allow comparisons between LGAs and against targets.

**Fit Criterion:** The DHIS2 pivot table tool improved to allows user to query MVC data based on existing data dimensions, such as what data is required based on different dataset and indicators, from which locality such as local government authority, regions or districts and of which period such as monthly, quarterly, semi-annually and even annually.

**Dependencies:** FR1, FR2, NFR3

**ID:** FR6

**Title:** Graph/Chart generation

**Description:** The system shall be able to generate graphics from the above tables (FR4). The types of graphs to be created are, but not limited to, the following:

- Pie chart
- Vertical Histogram and Horizontal Histogram
- Line graph
- Scatter graph
- Cylinder graph

**Rationale:** MVC M&E requires the system to include decision support tools to show, for example, aggregated data from the database, MVC registration trends, and service information by location, and will allow comparisons between LGAs and against targets.

**Fit Criterion:** The DHIS2 data visualizer tool improved to allow users to generate Vertical and Horizontal Histogram, Pie chart, Line, Scatter and Cylinder Graph for MVC data. The data visualizer is implemented to support switching and displaying these charts and graphs based on selected data dimensions.

**Dependencies:** FR5, NFR3

**ID:** FR7

**Title:** Map generation

**Description:** The system shall be able to generate maps using geographical references from data captured (FR1) or generated in the above tables and charts (FR4 and FR5).

**Rationale:** MVC M&E requires the system to include decision support tools to show, for example, aggregated data from the database, MVC registration trends, and service information by location, and will allow comparisons between LGAs and against targets.

**Fit Criterion:** The system includes GIS framework that allow overlay of coordinates and boundaries of, but not limited to, districts, regions and national borders on top of Google map along with thermal indicators of presented data for association of captured geographical locality.

**Dependencies:** FR1, FR2, FR5, FR6, NFR3

**ID:** FR8

**Title:** Dashboard

**Description:** The system shall have the ability to display MVC data dashboard as an inbuilt function. The contents and layouts of the dashboard should be customizable by the user.

**Rationale:** MVC M&E requires the system to include decision support tools to show, for example, aggregated data from the database, MVC registration trends, and service information by location, and will allow comparisons between LGAs and against targets.

**Fit Criterion:** The DHIS2 dashboard is improved such that have the ability to display MVC information dashboards and allow users to customize the contents of the dashboard. A dashboard provides an overview of important trends or performance (reference to be made from indicators specified in MVC M&E Plan) of particular variables in graphs, summary tables, maps etc.

**Dependencies:** FR5, FR6, FR7, NFR3

**ID:** FR9

**Title:** Exporting Report's Data

**Description:** The system shall enable users to export data from tables and graphs created to Excel, CSV, and XML.

**Rationale:** MVC M&E requires the system to allow customization of information and exporting of data for further analysis.

**Fit Criterion:** The system includes data exporting tool that allow user to export MVC data to PDF, Excel, CSV, and XML format depending on reporting tool used to generate output.

**Dependencies:** FR5, FR6, FR7, NFR3

**ID:** FR10

**Title:** Print out

**Description:** The system shall be able to print out all information created by the above process in a visually appealing format.

**Rationale:** Support for data/information storage in papers for filing and dissemination purposes is necessary, since the MVC M&E information reports will be disseminated to all key stakeholders so that they are all informed about the NCPA II implementation processes, outcomes, and impacts.

**Fit Criterion:** FR1, FR2, FR3, FR4, FR5, FR6 and FR7 are implemented such that allows user to print generated data for external use like filing and dissemination purposes.

**Dependencies:** FR1, FR2, FR3, FR4, FR5, FR6, FR7 and NFR3

**ID:** FR11

**Title:** Backup and Disaster Recovery

**Description:** The system shall support data backup procedures (schedule and timeliness) to facilitate data backup at each point of data entry.

**Rationale:** MVC M&E requires the backup server to maintain recent copies of the district databases to enable quick recovery in case of failure either at the data entry installations or the main server.

**Fit Criterion:** The system includes an automated daily data backup routine process to make sure MVC data is backed up and stored in designated recovery location.

**Dependencies:** NFR3

**ID:** FR12

**Title:** Users and Roles Management

**Description:** User shall login using their accounts (user name and password), and system shall restrict access to functions based on the security access level of the user.

**Rationale:** MVC M&E requires MVC information to be secured as per existing government social welfare confidentiality protocol and child protection guidelines (2011– 2015). Also, MVC M&E information products will be accessed by users of different level (with different data needs) and disseminated to all key stakeholders so that they are all informed about the NCPA II implementation processes, outcomes, and impacts. This necessitate user and role management for easy sharing of the data through the system.

**Fit Criterion:** The system consists of user management module that allow administrative user to manage all aspect of user accounts, from user creation, editing, updating and deletion of existing accounts. System administrators can moderate what user can see depending on role played by user. The system requires user to login to access any aspect of data presented in it.

**Dependencies:** NFR2, NFR3

### 3.4 Non-Functional Requirements

**ID:** NFR1

**Title:** Data Quality Assurance

**Description:** For each data set, the system should enforce the following data quality issues:

- **Accuracy:** To what extent are the data reported correct?
- **Reliability:** Are the data collected in a consistent manner?
- **Completeness:** Have all reporting units (MVCCs, etc.) reported the data? Have they reported all the required data?
- **Timeliness:** Are data reported when they are needed? Are the reported data current?

**Rationale:** MVC M&E want to ensure that data clearly and adequately represent the result that they intend to measure.

**Fit Criterion:** The data entry forms include support for input validation to check for invalid values and out of range values. Also, the system includes ability to configure set of validation rules for the data set (form) and allow users to run validation check upon completion of the form. Completeness and timeliness will be enforced as per the FR3.

**Dependencies:** FR1,

**ID:** NFR2

**Title:** Confidentiality

**Description:** Information must be protected by the application and not exposed in any manner, other than to authorized personnel.

**Rationale:** MVC M&E requires MVC information to be secured as per existing government social welfare confidentiality protocol and child protection guidelines (2011– 2015).

**Fit Criterion:** The system is implemented such that only authorized users can access the MVC data by using their login account.

**Dependencies:**

**ID:** NFR3

**Title:** Integrating to DHIS2

**Description:** National Most Vulnerable Children (MVC) Monitoring and Evaluation Data Capture and Management Systems shall be integrated into DHIS2.

**Rationale:** MVC M&E requires District Social Welfare officers and other stakeholders to use the existing DHIS 2 for data entry, data backup, and report extraction from the database.

**Fit Criterion:** MVC MIS will be implemented as a separate instance of DHIS2 configured for MVC data processing. Data will be stored into the system according to the reporting structure for MVC (village → ward → council → regional → national). Thereafter; data collected through the DHIS2 MVC instance will be linked to the main HMIS instance at the district level.

**Dependencies:**

**ID:** NFR4

**Title:** Ease of Use

**Description:** The application must be user friendly and intuitive, with readily available help and/or onscreen hints for the user. Clear and precise labels instructions must be apparent on all screens, with more help available at the click of a button and/or keystrokes.

**Rationale:** Users (DSW officers, M&E Focal officer, M&E TWG, IPG, etc.) need to easily understand the application and how to use it for MVC data collection, various data analysis and reporting purposes.

**Fit Criterion:** After their first encounter with the application, majority of the District Social Welfare officers shall be able to use it by following instructions on the available help included in the system.

**Dependencies:** NFR3

#### **4. Supporting Information**

Please refer the following artifacts:

- 1) National Most Vulnerable Children Monitoring and Evaluation Plan (January 2015) by the Department of Social Welfare, Ministry of Health and Social Welfare.
- 2) National Coasted Plan of Action for Most Vulnerable Children NCPA II 2013 – 2017
- 3) MVC Revised tools of April 2017, which included new HIV data fields to accommodate Pact/Kikazi Kipya projects programmatic needs.

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