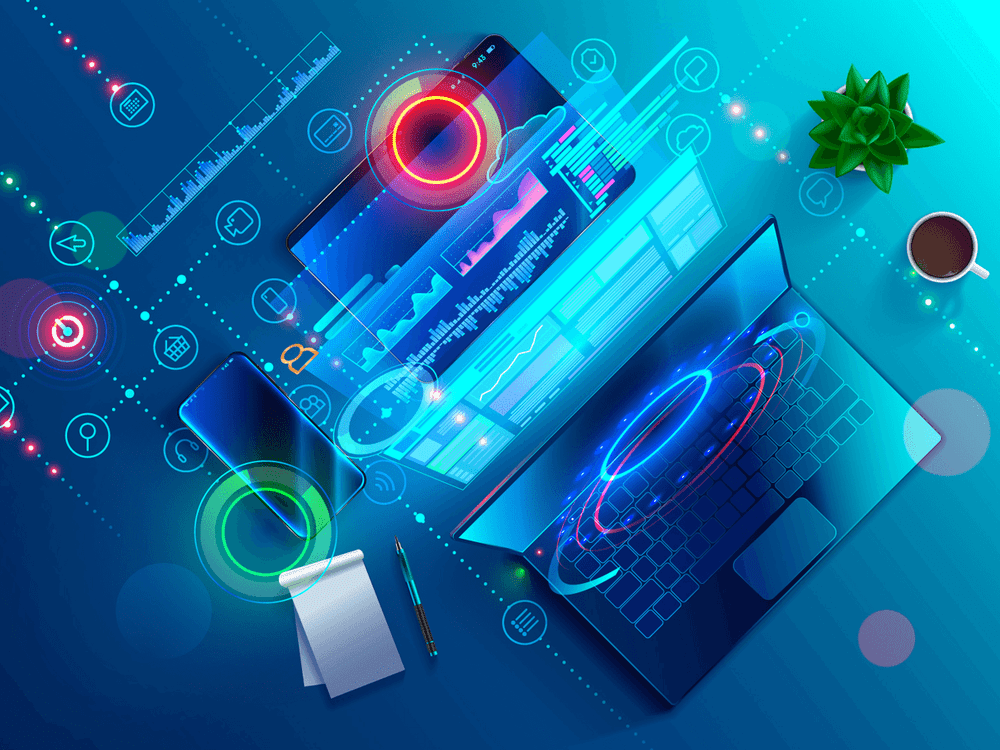
**Software & Application Requirements Specification Document**



**Software Development Project:**

**Date Created: March,2021**

This Requirements Document (RD) provides a comprehensive set of requirements applicable to the software development project together with the relevant justifications. The set of requirements herewith described will be the baseline for the following design and development activities and associated verification.

The document shall enable formal traceability of different requirements, the designer shall associate to each requirement a unique identifier using a suitable methodology. Such methodology shall use a suitable set of acronyms (e.g., UN for User Needs, UR for User Requirements, SR for System Requirements) to facilitate traceability.

**Users** shall document their requirements in detail by completing **Section 1 Introduction, Scope, Audience Description, User Needs, Assumptions and Dependencies, Functional Requirements, Non-functional Requirements, System Requirements Diagrams (1.1,** **1.2, 1.3, 1.4** and **1.5**) and **2.2.**

The rest of the document shall be completed by designer/programmer/application developer.

# **INTRODUCTION**

## **Document Reference**

| Ref. | Reference Number | Title | Rev. |
| --- | --- | --- | --- |
|  | KOTDA/1/15/04/01/RD1 |  |  |

## **Define the Purpose/reason of the application.**

* *The purpose of this project is to collect all information about Konza National Data Centre into a single user interface and present the users with the most relevant information within their context.*

| **No** | **Proposed Application/Software Names** | **Purpose (What is it going to be used for?)** |
| --- | --- | --- |
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## **Brief/ Background of the Software Development Project**

The software development project list stakeholders with access and who will inform the details and content of the SRSD.

| **No** | **Stakeholder(s)** | **Designation** | **Role in the system** | **Contribution** |
| --- | --- | --- | --- | --- |
|  | Champion |  |  |  |
|  | Developer |  |  |  |
|  | Tester |  |  |  |
|  | Project Manager |  |  |  |
|  | Stakeholders |  |  |  |

## **Intended Audience**

This details who will use and interact with the system. *The targeted Audience/users of the Software/Application being developed, bought, or integrated.*

* Ministries, Departments and Agencies (MDAs)
* Learning Institutions
* Small and medium-sized enterprises SMEs

| **No** | **User/Audience** | **Role** | **Feature in the application/software to be developed/used** |
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## **Project Scope**

*This details how to achieve application development.*

|  |  |  |
| --- | --- | --- |
| ***Project Scope*** | ***Detailed Description*** | ***Justification*** |
| *Description of Software* |  |  |
| *Benefits of Software* |  |  |
| *Objectives of Software* |  |  |
| *Goals it meant to achieve* |  |  |
| *Decision to Build, Redesign or Procure (Choose B, R or P)* |  |  |

**Risk Definitions**

This is table defines the risk that may be encountered in developing the system and capturing requirements including the use of the system.

|  |  |  |  |
| --- | --- | --- | --- |
| **Risk ID(RID)** | **Risk Description** | **User Affected** | **System/application Feature affected** |
|  |  |  |  |
|  |  |  |  |
|  |  |  |  |

**Dos and Don’ts**

This tables lists the key dos and don’ts when developing the system.

|  |  |  |  |
| --- | --- | --- | --- |
| **No** | **Do’s** | **Don’ts** | **Justification** |
|  |  |  |  |
|  |  |  |  |

**User Needs**

Users should describe the current situation/challenges which necessitated the need for development of the system.

|  |  |  |
| --- | --- | --- |
| **No** | **Description of Current situation** | **User responsible for feature/process** |
|  |  |  |
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List primary user needs for the development of the application:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **No** | **Define Who is going to use the system** | **Define How System will be used** | **Primary user accounts need** | **Secondary User accounts needs** |
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## **User Needs Description**

Any user needs shall be defined based on the following rules. It will be listed in a row of table as presented in Table 1.

|  |  |  |
| --- | --- | --- |
| **ID** | **User Need** | **User Group** |
| UN-001 |  |  |
| UN-002 |  |  |
| UN-003 |  |  |
| UN-004 |  |  |
| UN-005 |  |  |
| UN-006 |  |  |
| UN-007 |  |  |
| UN-008 |  |  |
| UN-009 |  |  |
| UN-010 |  |  |
| UN-011 |  |  |
| UN-012 |  |  |

**User Requirements**

**This translates and describes user needs into what they require based on understanding their user needs and how it should be developed into the systems.**

|  |  |  |
| --- | --- | --- |
| **UNID** | **User Requirement ID (URID)** | **User Requirement** |
| UN-001 | UR001 |  |
| UN-002 | UR002 |  |
| UN-003 | UR002 |  |
| UN-004 | UR004 |  |
| UN-005 | UR005 |  |
| UN-006 | UR006 |  |
| UN-007 | UR007 |  |
| UN-008 | UR008 |  |
| UN-009 | UR009 |  |
| UN-010 | UR010 |  |
| UN-011 | UR011 |  |
| UN-012 | UR012 |  |

**Assumptions and Dependencies**

This lists factors that might impact your ability to fulfil requirements in the Software requirements document specification.

|  |  |
| --- | --- |
| **No** | **List Assumptions** |
|  |  |
|  |  |
|  |  |

List dependencies that will affect development, use and maintenance of the system.

|  |  |
| --- | --- |
| **No** | **List Dependencies** |
|  |  |
|  |  |
|  |  |

**NB: Assumptions in the SRSD could turn out to be false.**

# **FUNCTIONAL REQUIREMENTS**

This section shall be completed by the designer/developer in describing in a structured form the set of statements originated by the users. The section shall describe the functions, performance, and capabilities that the system will bring to users during its utilisation. A mapping between User Requirements and User Needs will be part of this section.

## **Functional Requirements Description**

*<This section shall be completed by developer/designer>*

The designer/developer shall define user requirements based on the following rules. It will be listed in a row of table as presented in Table 2.

|  |  |  |  |
| --- | --- | --- | --- |
| **FR ID** | **Functional Requirement Name** | **Description** | **URID** |
| FR001 |  |  | UR001 |
| FR002 |  |  | UR002 |
| FR003 |  |  | UR003 |
| FR004 |  |  | UR004 |
| FR005 |  |  | UR005 |
| FR006 |  |  | UR006 |

Table 2: Functional Requirements

Where:

* **ID**: unique identification composed of the UR prefix, followed by a serial number composed of four digits (e.g., **FR001** etc.). It is suggested to use for the numbering scheme the same criteria used for the User Needs (e.g., start from UN001 and proceed in steps of 1 per requirement).
* **Functional Requirement**: Define the user needs functional requirement through a concise name.
* **Description:** Describes the requirement in more details and about the impact on the system definition
* **User Need Ref**.: Define the cross reference with respect to the satisfied need.

**Non-Functional Requirements Specification**

The table below depicts the non -functional Requirement specification.

|  |  |  |
| --- | --- | --- |
| NFRID | Non-Functional Requirements Description | Implementation Specification |
| NFR001 | Performance |  |
| NFR002 | Safety |  |
| NFR003 | Security |  |
| NFR004 | Quality |  |
| NFR005 | Usability |  |

# **SYSTEM REQUIREMENTS**

The system requirement shall be originated by the designer about what the system shall do and/or shall be to fulfil the User Requirements (e.g., associated to constraints, environment, operational and performance features).

This section shall identify, allocate and specify the System Requirements defined by the designer. A mapping between System Requirements and User Requirements (if applicable) or User needs is part of this section.

## **System Requirements**

The designer shall define any requirement based on the following rules. It will be listed in a row of table as presented in Table 3.

| **SRID** | **System Requirements** | **Priority** | **Description** | **Verification Method** | **FRID** |
| --- | --- | --- | --- | --- | --- |
| SR001 | Data rate | M | The system shall use this xyz service profile of this xyz Internet service provider | T | FR001 |
| SR002 | User terminal ODU | M | The ODU shall have an antenna of 1.2 m diameter and 2W BUC | I | FR002 |

Table 3: Requirements Description

Where:

* **ID:** unique identification composed of a prefix, followed by a serial number composed of four digits (e.g., **SR001, SR002** etc.).
* **Priority**: define whether the requirement is:
  + Must have **(M**) – must be implemented in the system.
  + Should have **(S)** – must be implemented but may wait until a second increment.
  + Could have **(C)** – could be implemented but it is not central to the project objectives.
  + Wish to have **(W)** – will not be implemented but it will be considered for a future phase.
* **Description**: describes the requirement.
* **Verification Method**:
  + Inspection **(I)** – Verification by inspection shall consist of visual determination of physical characteristics. Visual inspection of either graphical interface, textual results, user manual, or equipment manufacturer specifications. It will require an analysis of the documentation and/or visual inspection, providing evidence of the correct implementation that satisfy the requirement by means of screenshot, extraction of sections from operational manuals, etc. Therefore, no specific test procedure with detailed operations is envisaged.
  + Analysis **(A)** – Verification by analysis is done when other methods are not appropriate or too cumbersome to perform a verification by test. It is usually done by collecting data like test results related to some part of the system, and then, knowing the system design, an engineering-based judgement is performed to infer whether the verification was successful or not.
  + Demonstration **(D)** – Verification by demonstration is done verifying the behaviour of the system, either once or more than once, without special test equipment or instrumentation. Demonstration can be documented in different ways, such as with pictures or screen captures.
  + Test **(T)** - Verification tests consist of measuring product performance and functions under representative environments.

# **SYSTEM REQUIREMENT DIAGRAM**

The system requirements will be depicted as flowchart, sketches, use case diagram, system context diagram, mind map, sequence diagrams, process maps, UI mockup, class diagrams, wireframes, user story map.

# **Software Development Workplan**

This table will give the high level workplan for development life cycle of the system.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **FRID** | **SDLC Stage** | **Duration for Planning** | **Duration of Design** | **Duration for Development** | **Duration for Testing** | **Date of Testing** |
| FR001 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |
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# **SOFTWARE AND APPLICATION DEVELOPMENT STANDARD OPERATING PROCEDURES AND PROCESSES**

**Proposed Mix Process for Application and Software Development**

1. **Discovery phase:**

* Research
* Feature mapping.
* Software requirements specification;( Documentation required)
* the setting of costs and deadlines. (Documentation required)

1. **Design**

* Sketch
* Wireframe
* Prototype

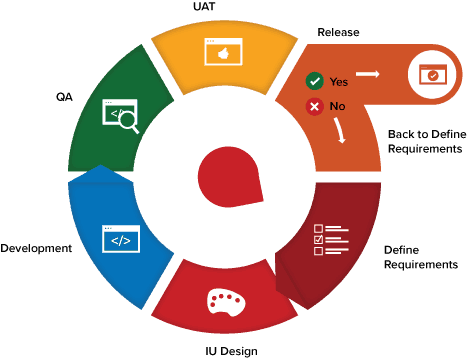
1. **Development**

* Backend Development
* Front End Development

1. **Quality Assurance (Documentation Required)**

* Auto test
* Manual test

1. **Release to the store – deployment.**
2. **Maintenance, technical support, and further software development.**

* User guides (Documentation required)
* Manuals (Documentation required)
* Continuous improvement
* Refining

## **Appendix 1: KNDC Software and Application Development Cycle**



## **Appendix 2: Software and Application Requirement Specification**

The Authority shall use this appendix to serve as Guideline to develop Requirements during KoTDA’s Applications Projects.

The following diagram show the Software and Application Requirements Specification Process



Logical separation of the requirements depending on the involvement of the different agents:

**Functional Requirements – the “WHAT”**

*Proposed definition*: Statement originated by the users describing the functions and

capabilities that the system shall bring to them during its utilization.

* Related to a process that the user must be able to accomplish using the system / service.
* Derived from the analysis of user expectations, problems, needs, constraints, and scenarios.
* Originated by users, based on an in-depth interaction with the designer. This dialogue helps to translate the user needs into verifiable user requirements.
* Should not propose solutions or technologies.

**System Requirements – the “HOW”**

*Proposed definition:* Statement typically originated by the designer about what the system shall do and/or shall be to fulfil the User Needs or Requirements (e.g., associated to constraints, environment, operational and performance features)

* Derived from the user needs or requirements, need to be verifiable and traceable to the user needs or requirements.
* Originated by designer/system engineer.

**Ground rules applicable to SR**

* They shall be agreed and meaningful for both users and designer (i.e., need of constant dialogue)
* They shall be limited to a single thought, concise, simple, and stated in a positive way.
* SR shall be needed (i.e., responding to at least one UR and or need)
* They shall be verifiable and attainable.
* They shall be presented in formal documents.
* Each requirement shall be accompanied by:
  + Description: helps to understand and interpret the requirement, and to transform knowledge in project asset. Needs to be documented and linked to the requirement, likely in a design document (e.g., Design Justification File).
  + Test Verification method: needs to be considered and documented while writing the requirements.
  + Hint: words such as “adequate, easy, high speed, maximise, minimise, quickly, robust, sufficient, use’-friendly” are likely to indicate unverifiable requirements and should not be used.
  + Traceability: needed to identify a requirement source, helps correct omissions, redundant or unnecessary requirements. Requirements can be traceable by assigning unique identifiers to each requirement. Traceability matrices can be used to quickly check the SR dependences.

## **Appendix 3: Project Management**

This Appendix provides some ground rules for Project Management towards Requirements and Development process:

Inclusion of a Requirements Review in the projects, as part of the BDR. It is Characterized by the following:

* This will include the Users and Designers.
* Gives the opportunity to the designer to explain the System Requirements and the associated rationale.
* Collect User feedback on System Requirements.

|  |  |  |
| --- | --- | --- |
| **Stage of Software Development Lifecycle** | **Documentation required** | **Stakeholder** |
| Software requirements specification | Software and Application Requirement Specification Documentation | Developer |
| the setting of costs and deadlines. | Project Workplan | Project Manager |
| Quality Assurance | Test plan | Developer |
| User guides | User Guides | User |
| System and Software Manuals | Manuals | Developer |

## **Expected Development Date of Completion**

|  |  |  |  |
| --- | --- | --- | --- |
| **User Date of System Completion** | **Date of Completion of System Development** | **Reasons/Justification** | **Risks** |
|  |  |  |  |
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## **Sign-off**

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| **No.** | **Name** | **Date** | **Sign** |
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