National MOTECH System (NMS)
System Requirements Specifications

Location

https://github.com/motech-implementations/mim/tree/master/specs

Revision History

Version	Description of changes	Changed by	Date
0.01	First Draft – containing table of contents	Sumit Kasera	26-Nov-2014
0.02	Ready for first review of Functional Requirements	Sumit Kasera	19-Dec-2014
0.03	Updated after review	Sumit Kasera	19-Jan-2015
0.04	Further updates	Sumit Kasera	22-Jan-2015
0.05	Incorporating 2nd round comments from Kamalika	Sumit Kasera	26-Jan-2015
0.06	Created clean version and further updates.	Sumit Kasera	27-Jan-2015
0.07	Fixes for comments on security requirements.	Sumit Kasera	29-Jan-2015
0.08	Fixes for Sara's & Rob's comments	Sumit Kasera	3-Feb-2015
0.8.1	Comments accepted per review meeting	Rob LaRubbio	12-Feb-2015
0.8.2	Comments from Sara	Rob LaRubbio	15-Feb-2015
1.0	Final Signed off version	Rob LaRubbio	15-Feb-2015
1.0.1	Status of all requirements changed from "Draft" to "Approved".	Kamalika Sen	17-Feb-2015
1.1	Created a clean version after approving all changes.	Sumit Kasera	17-Feb-2015
1.2	Updates to fig in 4.4.1 and 6.4.1 related to language handling.	Sumit Kasera	9-Mar-2015
1.3	Updates to Figure 2 and correction to "FLW Details" report in section 8.3 MA & MK Common.	Sumit Kasera	19-Mar-2015
1.4	Updates to MA Reports in section 8.1, Added sub-facility in all reports, Updated GEN.REP.006 and aligned with GEN.LOG.009. Updated NMS.KK.ACCESS.002 & NMS.KK.ACCESS.004 in section 6.2.1	Sumit Kasera	16-Apr-2015
1.5	Merge development maintained v1.1 which added Location Schema. Update document location	Rob LaRubbio	09-Sep-2015

Table of Contents

1 Introduction & Overview

1.1 Overview of Project

The National MOTECH System (NMS) is being scaled to pan-india level. It is characterized by the following:

- Centralized deployment of Mobile Kunji, Academy and Kilkari IVR applications
- Toll Free long code access
- In-bound and out-bound IVRs
- Integration with pan-India SMS gateway
- Powered by back-end MoTech platform

This document captures the requirements for the pan-India NMS system.

1.2 Objective of this document

The purpose of this document is to capture the system requirements of NMS system. This includes functional, non-functional, operability and other miscellaneous requirements.

1.3 Scope of this document

The document is being written in phases. Pending work includes:

- Various open issues (mainly waiting for clarifications from Ministry)
- Updates due to pending action items
- Parts of Appendix A and B (waiting for clarifications from Ministry)
- Appendix C (to be updated document is approved)

1.4 Key Assumptions

- The exact mechanism to get data from MCTS is outside the scope of this document. Some options are below:
  - o MCTS provides web-service to get all the records from MCTS. Mechanism to realize an online means to extract MCTS data via web-services is outside the scope of this document.
  - o Another mechanism to get data from MCTS is to export the MCTS data into appropriate CSV formats and use offline mechanisms to bring the CSV files to NMS data center.
- General wait time for IVR DTMF responses is changed from 8s to 12s

1.5 Open Issues (OI)

Status	Closed	Open	Working Assumption (WA)	Future
Meaning	Issue Resolved	Waiting for inputs	Proceeding with some assumptions	To be handled in future (not in current scope).

#	Issue	Requirement Id	Level	Owner	Status	Remarks

NMS.OI.001 (28-nov-14)	Handling of language setting via IVR in case circle of calling user cannot be identified. This problem is particularly severe in Kilkari where beneficiary do not have the printed cards. It is also not clear in which language, the regional IVR shall be played?	NMS.MA.LANG.002	Major	BBCMA/ GF	Closed	19Jan2015: Updated flowchart drawn
NMS.OI.002 (28-nov-14)	What is maximum frequency of messages/week for Kilkari content and how this maximum value impacts retry logic?	NMS.KK.OBD.001	Major	BBCMA/ GF	Closed	This configuration shall be on national level i.e. all states will have same frequency. Max frequency will be 2 calls per week. 3Jan2015: HW sizing shall be done based on 1 message per week but software implementation shall be done for configurable 1 or 2 per week. Testing has to be done for 1 and 2 per week. Frequency change should be configurable anytime during life of the system and change shall be applicable to all users post change.
NMS.OI.003 (28-nov-14)	How beneficiary details including DOB/LMP shall be updated in MOTECH?	NMS.GEN.MCTS.008	Major	BBCMA/ GF	Closed	19Jan2015: Update possible via CSV upload using MCTS id.
NMS.OI.004 (28-nov-14)	How events like miscarriage or infant death shall be updated in MOTECH?	NMS.GEN.MCTS.009	Major	BBCMA/ GF	Closed	19Jan2015: Update possible via CSV upload using MCTS id.
NMS.OI.005 (28-nov-14)	How shall an MCTS user be identified in the NMS system? Who shall allocate a unique identifier to an MCTS user, specially when the user has multiple packs associated with it. In other words, how a kilkari beneficiary is identified?	NMS.GEN.MCTS.005	Critical	GF	Closed	19Jan2015: MCTS user shall be uniquely identified using MCTS id and state identifier.
NMS.OI.006 (28-nov-14)	How many packs shall be there in Kilkari?	NMS.KK.ACCESS.001	Major	BBCMA/ GF	Closed	Ministry's revert awaited on the decision for 3rd pack. However for all those records coming from backend, the records which will have only LMP will be activated on the pregnancy pack(76 weeks) as per their LMP and the records will have DOB of child will be activated on the child pack(12 month) as per the DOB. **3Jan15:** MOHFW has

						confirmed that there will be 2 packs. 72 week pack- starting from 2nd trimester till the child is of 12 month age. 48 week pack –starting from the child birth till the child is of 12 month age.
NMS.OI.007 (28-nov-14)	How long old data (3m/6m/12/24 month) shall be maintained within MOTECH?	NMS.GEN.REP.003	Major	BBCMA/ GF	closed	Keep beneficiary record in Motech for 72 weeks. Keep FLW records in Motech as long as services are live. However allowed duration for export should be last 3 months. **2Feb15:** We need to keep beneficiary records in Motech for 4-6 weeks beyond the 72 weeks, and then archive it for three years beyond that. This is based on legal advice we received today
NMS.OI.008 (28-nov-14)	Which all fields are mandatory in MCTS data & FLW data?	Section 0	Major	Aricent	Open	Waiting for inputs. 27Jan2015: Inputs received from the ministry. Analysis of the inputs is ongoing.
NMS.OI.009 (28-nov-14)	Should there be 12 digit number with Country code or 10 digit number?	Common	Minor	BBCMA/ GF	Closed	12 digit – The format shall be fixed at 12 digits and if the interface with IVR has 10 digits or 11 digits, then during storage and retrieval, the appropriate conversion shall be done by MOTECH. 27Jan2015: In NMS internal DB, 10 digit shall be stored. Prefix shall not be stored.
NMS.OI.010 (4-dec-14)	Shall there be coded scheme of location data or string based values for location data?	Sec 3.1.1, Sec **Error! Reference source not found.**	Major	BBCMA/ GF	Closed	There should be mapping of codes and locations. If location from MCTS comes as code, these need to be mapped with name string and displayed in report as name string. 19Jan2015: Waiting for master location data from Ministry. 27Jan2015: Inputs received from ministry.

						There is mapping of code versus names for location fields.
NMS.OI.011 (5-dec-14)	How SMS shall be sent to anonymous mobile number if it comprises of location data and the location data is not available for an FLW.	Sec 4.2.2	Minor	BBCMA/ GF	Closed	There is default location code. So SMS will have reference number which will contain default location code.
NMS.OI.012(16-dec-14)	How does the MSISDN change done for Kilkari Beneficiary?	BBCMA/GF	Major	BBCMA/ GF	Closed	19Jan2015: Update possible via CSV upload using MCTS id.
NMS.OI.013(16-dec-14)	How does the Location update done for Kilkari Beneficiary?	BBCMA/GF	Minor	BBCMA/ GF	Closed	19Jan2015: Update possible via CSV upload using MCTS id.
NMS.OI.014 (16-dec-14)	Is there any notion of "verified location" as was the case in earlier case where free text could be entered? Or is it not relevant any more without call center?	NMS.GEN.LOC.004 NMS.GEN.FLW.003	Major	BBCMA/ GF	Closed	23-Dec-2014: There is no notion of verified location in new system.
NMS.OI.015 (16-dec-14)	How Circle shall be used to derive state information because circles have both many-to-one, one-to-one and one-to-many relation with state? Who shall give state information from circle? The capping is also state driven so for users coming via IVR should have corresponding state information.	NMS.MA.LANG.001	**Critical**	BBCMA/ GF	Closed	23-Dec-2014: Requirements captured in section 3.1.4.
NMS.OI.016 (16-dec-14)	Is it ok that for KK, we are deriving language information from registration information and for MA/MK, we are deriving it from incoming call and MSISDN number?	NMS.MA.LANG.001	Major	BBCMA/ GF	Closed	19Jan2015: Refer NMS.OI.015
NMS.OI.017 (16-dec-14)	For MA, is it correct understanding that all quizzes must be taken before the certificate is issued or just the passing marks is the criteria?	NMS.MA.COURSE.002	Major	BBCMA/ GF	Closed	19Jan2015: Full course must be done.
NMS.OI.018 (16-dec-14)	How an FLW (ASHA/ANM/USHA) is identified? Is this unique across the whole state. Does NMS also generate some unique id? If yes, what is the link between these two identifiers? Related questions are: • It is not clear if same FLW ID is used with new number, then will it be accepted/updated or rejected? • It is not clear if new FLW ID is used with same number, then will it be accepted/updated or rejected?	NMS.GEN.FLW.002	**Critical**	BBCMA/ GF	Closed	19Jan2015: By FLW Id along with state id and MSISDN number.

NMS.OI.019 (16-dec-14)	Does the uploaded ASHA Registration data contain the Language Preference?	NMS.GEN.FLW.002	Major	BBCMA/GF	Closed	19Jan2015: Refer NMS.OI.015
NMS.OI.020 (16-dec-14)	Content upload requirements for MA/MK/KK needs to be updated. It is not clear what is the role of MOTECH and what is the role of IVR. Following points have to be clarified: • Update of audio file with new file at runtime. • Incremental deployment over states. • Content may not be available for all states at the time of deployment.	Sec 4.2.6 Sec 5.2.5 Sec 6.2.6	**Critical**	BBCMA/GF	Closed	19Jan2015: Shall be handled during API spec.
NMS.OI.021 (16-dec-14)	Is there any notion of "verified location" now given that location shall be uploaded by CSV upload?	NMS.GEN.FLW.003	**Major**	BBCMA/GF	Closed	19Jan2015: Not relevant.
NMS.OI.022 (16-dec-14)	What is average call duration of MA?	NMS.MA.SCALE.002	**Major**	BBCMA/GF	Closed	Shall be handled in design phase.
NMS.OI.023 (16-dec-14)	What is the relevance and purpose of Kilkari help request report?	Sec 8.4.2	**Major**	BBCMA/GF	Closed	19Jan2015: Not relevant.
NMS.OI.024 (19-Jan-15)	How to clear/archive old data from system.	Sec 3.2.3	**Minor**	BBCMA/GF	Closed	27Jan2015: To be taken up during next revision of this document. 2Feb2015: A data deletion policy needs to be established. But all data must be archived for three years. Added new section in section 3.2.4.
NMS.OI.025 (19-Jan-15)	Security requirements are not finalized	Sec 3.2.2	**Critical**	BBCMA/GF	Closed	27Jan2015: Inputs received from Rob/Kamalika. Analysis ongoing. 29Jan2015: Discussions held and requirement updated.
NMS.OI.026 (19-Jan-15)	VPN access for debugging purpose	Sec 3.2.2	**Major**	BBCMA/GF	Closed	27Jan2015: VPN access shall be available as confirmed by PWC.

1.6 Action Points (AP)

Action Points	Issue	Owner	Status	Remarks
NMS.AP.001 (28-nov-14)	Access to FLW Database Schema.	Prakhar	Closed	Shared and uploaded on Google drive.
NMS.AP.002 (28-nov-14)	Share MCTS document, and format/content of MCTS database csv files. Same for FLW.	Prakhar	Closed	Is already part of open issue so removing duplicate.

	(MCTS db is to be replaced RCH.)			
NMS.AP.003 (28-nov-14)	Share file format of CSV files that shall be uploaded to MOTECH DB.	Prakhar	Closed	Some additional fields have to be added. Shared and uploaded on Google drive.
NMS.AP.004 (28-nov-14)	Session with other team – call Beehyv for managing RefDB – on need basis? Or check the document that has been shared.	Kamalika/ Prakhar	Closed	Sumit to check if documents alone could be helpful or meeting is needed.
NMS.AP.005 (28-nov-14)	Share doc for msisdn change?	Prakhar	Closed	Shared and uploaded on Google drive.
NMS.AP.006 (28-nov-14)	Share the csv file format for changing MSISDN number.	Prakhar	Closed	Shared and uploaded on Google drive.
NMS.AP.007 (28-nov-14)	Share all documents on google doc –	Prakhar.	Closed	Shared and uploaded on Google drive.
NMS.AP.008 (28-nov-14)	FRS sample documents to be shared with Aricent	Kamalika	N/A	Template discussed and agreed.
NMS.AP.009 (28-nov-14)	Share the MK ppts that was given by Sharika	Prakhar	Closed	Kept in Google drive. To be shared again on email.
NMS.AP.010 (28-nov-14)	Share updated FLW API doc	Prakhar	Closed	
NMS.AP.011 (28-nov-14)	Jasper – share the issue raised in community.	Prakhar	Closed	Shared: https://community.jaspersoft.com/questions/844271/facing-issues-while-trying-export-files-csv-format
NMS.AP.012 (28-nov-14)	Share updated XL of Requirements including reporting requirements.	Prakhar	Closed	Shared and uploaded on Google drive.
NMS.AP.013 (28-nov-14)	Share various user roles and associated Documentation. Closure of this issue will need update of NMS.GEN.SECU.001.	Prakhar	Closed	29Jan2015: Inputs shared.
NMS.AP.014 (28-nov-14)	Share login for report access - Read id - Admin id	Prakhar	Closed	Read ID shared Admin ID can't be shared.
NMS.AP.015 (28-nov-14)	Share document/ppt for Kilkari Reference Number syntax	Prakhar	Closed	Shared and uploaded on Google drive.
NMS.AP.016 (28-nov-14)	Create SOW for Aricent scope of work by 4th Dec.	Chinmoy	Closed	Not in scope of this document. Tracked as part of commercials.
NMS.AP.017 (28-nov-14)	Inputs for Scale requirements for Reports (i.e. how many maximum records can exist in one report – preferably per report)	Prakhar	Closed	Whatever max supported by reporting framework. Expected max load can be calculated from the system scale numbers.

NMS.AP.018 (28-nov-14)	MSISDN specify query requirements for enquiry of specific users.	Prakhar	Closed	Shared and uploaded on Google drive.
NMS.AP.019 (28-nov-14)	Creation of new Admin UI interface and its realization	Prakhar	Closed	Not in scope of this document. Shall be handled during support discussion.
NMS.AP.020 (28-nov-14)	Definition of each field in each report (at least the important ones)	Prakhar	Closed	19Jan2015: Details shared by Prakhar but some doubts are still there that shall be discussed and closed on email.
NMS.AP.021 (28-nov-14)	Agree on date format for reports.	Prakhar	Closed	Part of field definition documentation. 27Jan2015: DD-MM-YYYY format is finalized. E.g. 25-12-2014.
NMS.AP.022 (28-nov-14)	Updated scheduling plan for OBD Kilkari	Prakhar	Closed	19Jan2015: Need OBD plan for two messages per week 23Jan2015: To be handled in implementation. Slotted retries will not be used.
NMS.AP.023 (28-nov-14)	Commercial Jasper being used instead of paid one.	Nitu Gupta	Closed	19Jan2015: Tracked via other forums
NMS.AP.024 (28-nov-14)	To use Static or Dynamic VXML	GF/BBCMA/IMI	Closed	Needs to be discussed. Part of interface discussion. Finalized to be static. Further tracking not in scope of SRS.
NMS.AP.025 (28-nov-14)	To provide upper limit on number of records that can be possible in various reports. This shall guide testing team and also help in checking performance aspects of report.	Prakhar	Duplicate	Refer NMS.AP.017
NMS.AP.026 (28-nov-14)	Defining the user access roles in reporting DB	Prakhar	Duplicate	Refer NMS.AP.013.
NMS.AP.027 (28-nov-14)	Next workshop 2-5pm on 4th Dec.	SumitK	Closed	Meeting held.
NMS.AP.028 (18-dec-14)	To check with Prakhar whether to keep capping requirements for MA: NMS.MA.ACCESS.003 and NMS.MA.ACCESS.004	SumitK	Closed	23-Dec-2014: Discussed with Prakhar and the requirements for MA are ok. So it is fine to have capping requirements both in MA and MK.
NMS.AP.029 (28-jan-15)	Migration in and migration out of FLW to be handled in future version of this document. Also to be checked If FLW record contains field specifying whether the record is being added/deleted/updated.	SumitK	Open	Waiting for further inputs.

1.7 System Limitations

Category	Limitations
Kilkari Record	• Service does not handle cases where twin/triplets/etc. are born.
General	• Creation of new states or sub-division of existing states will require additional work and software changes.

1.8 Requirement Structure and Numbering Plan

The requirement/issues/action-points are structured in this document as follows:

NMS.< Category>.<Sub-Category>.<Numbering>

Component	Definition
Product	• NMS
Category	• OI: Open Issue for tracking • AP: Action Points for tracking • GEN: Common/General requirements or Spanning multiple services • MA: Mobile Academy requirements • MK: Mobile Kunji requirements • KK: Kilkari requirements
Sub-Category (optional)	**General/Common Requirements (GEN)** • LOC: Location Data Management • FLW: Front Line Worker (FLW) Record and Data Management • MCTS: MCTS data management & Update of beneficiary details (e.g. DOB or LMP) • LANG: Language Handling Requirements • REP: Reporting Requirements • CFG: Configuration Management • BKUP: Backup & Archiving • SECU: Security and User Access Control • PACK: Packaging and Installation • DEPL: Deployment • MNP: Mobile Number Portability Requirements • MAINT: Maintainability and extensibility • LOG: Logging and Debugging • AVAIL: Availability **Mobile Academy (MA)** • ACCESS: Access to service (e.g. using IVR), Usage and Capping restrictions • COURSE: Course structure • IVR: IVR Handling Requirements • BKMK: Bookmark related requirements • REP: Reporting Requirements • CONT: Content Management and Upload • SCALE: Service Scale (Capacity) **Mobile Kunji (MK)** • ACCESS: Access to service (e.g. using IVR), Usage and Capping restrictions • JOBAID: JOB Aid related Requirements • IVR: IVR Handling Requirements • REP: Reporting Requirements • CONT: Content Management and Upload • SCALE: Service Scale (Capacity)

	Kilkari (KK)
	• Access: Access to service (e.g. using IVR), Packs, Subscribe/Unsubscribe, Usage and Capping restrictions
	• OBD: Outgoing call, Call duration, Call Retries
	• IVR: IVR Handling Requirements
	• DND: DND Handling Requirements
	• INBOX: Inbox services
	• REP: Reporting Requirements
	• CONT: Content Management and Upload
	• SCALE: Service Scale (Capacity)

1.9 Glossary

Abbreviation	Description / Full Form / Explanation
BBC	British Broadcasting Corporation
BBC MA	BBC Media Action
BMGF	Bill & Melinda Gates Foundation
DOB	Date of Birth
ESB	Enterprise Service Bus
FLW	Front Line Worked
GF	Grameen Foundation
IVRs	Interactive Voice Response System
LMP	Last Menstrual Period
MA	Mobile Academy
MCTS	Mother Child Tracking System
MK	Mobile Kunji
MNP Database	Mobile Number Portability Database
MDS	MOTECH Data Services
MoTech	Mobile Technology For Community Health
MoHFW	Ministry of Health and Family Welfare
MSISDN	Mobile Station International Subscriber Directory Number

NMS	National Motech System (Scaled up for Pan India)
OBD Call	Outbound Dialer Call
RFP	Request for Proposal
SMS	Short Messaging Service

1.10 References

[1]. RFP for Scaling MOTECH.pdf

[2]. RFP for NMS_Addendum.pdf

[3]. ShortlistedReportsForNationalScaleup_03122014.xlsx

[4]. Aricent Response Grameen Foundation RFP

[5]. Coding guidelines
(**http://docs.motechproject.org/en/latest/development/coding_conventions.html)**

[6]. Mother and Child Tracking (MCTS) Format (https://nrhm-mis.nic.in/SitePages/HMIS-Download.aspx)

2   System Overview

2.1   Overview

National MOTECH System (**NMS**) is a system that shall make three maternal and child health IVR services, namely Mobile Kunji, Mobile Academy and Kilkari; accessible at a pan India level via a Toll Free, centralized long-code.

- **Mobile Academy** service is an inbound IVR mobile training course on reproductive, maternal, newborn and child health (RMNCH) for Front Line Workers (FLWs), designed to expand their knowledge of life-saving preventative health and enhance their capacity to communicate and engage effectively with families. FLWs can access the course from any phone by dialing a toll free long code, and complete it at their convenience.
- **Mobile Kunji** service includes an IVR based mobile service using a long code and a printed deck of illustrated cards on a ring, which together communicate essential audio-visual information on pregnancy and newborn health. Each card carries a unique card number printed on it. User has to dial the Mobile Kunji long code and enter the card number to access the specific audio content. Mobile Kunji is designed for use during counseling sessions with families and seeks to build support for healthy practices within families and communities.
- **Kilkari** service is an IVR subscription service that delivers time-sensitive audio information about maternal and child health to the mobile phones of husbands, their pregnant wives, and mothers of young children for up to 72 weeks, linked to the woman's stage of pregnancy or and child's age. The service covers the critical time period – where the most deaths occur - from the 2nd trimester of pregnancy until the child is one year old.

IVR services shall be powered by an open-source platform called **MOTECH** (**Mobile Technology for Community Health**). The MOTECH platform has been developed by the Grameen Foundation, a not-for-profit organization headquartered in the United States. The MOTECH platform combines the integration capabilities of an Enterprise Service Bus (ESB) with a flexible open source application development framework.

2.2   Building Blocks

- **National MOTECH System (NMS):** The system that shall make the BBC Media Action IVR services accessible pan India.

- **MOTECH Platform (sometimes referred to as just MOTECH):** the mobile health platform which combines the integration capabilities of an Enterprise Service Bus (ESB) with a flexible open source application development framework to support many standard use cases through its robust, scalable and interoperable core.

- **BBC Media Action IVR Applications (sometimes referred to as VXML call flows):** The BBC Media Action call flow logic (**VXML scripts**) used in the IVR services.

- **IVR (Interactive Voice Response):** Technology that allows a computer to interact with humans through the use of voice and DTMF tones input via keypad.

- **IVR Services**: Refers to Mobile Academy, Mobile Kunji and Kilkari – i.e. BBC Media Action IVR services.

- **IVR System**: The voice service delivery platform used by the IVR vendor to connect with PRI lines to execute the VXML scripts.

- **Front Line Health Workers (FLW):** Is a term used to describe the people engaging directly with the service beneficiaries (pregnant women and children).
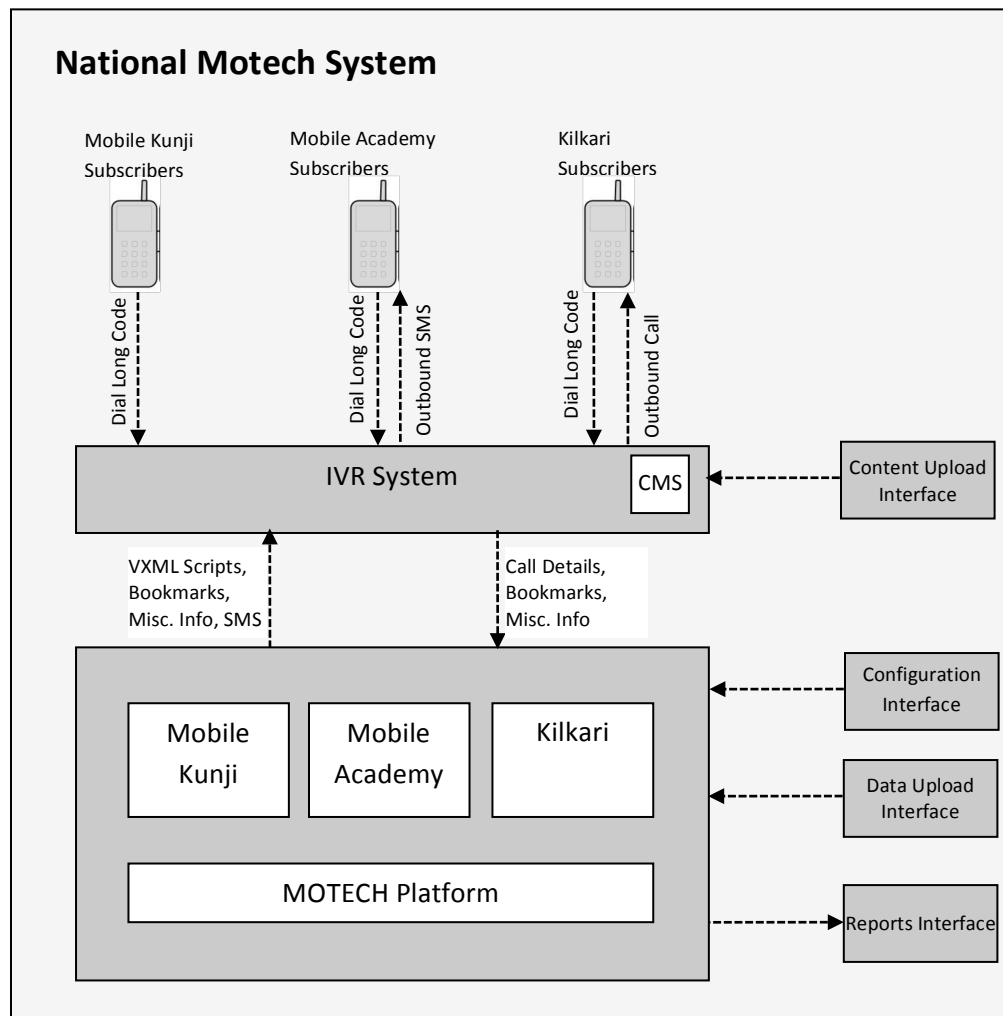
Figure 1: National Motech System (NMS)

Figure 1: National Motech System (NMS) depicts the high-level architecture for the NMS:

2.3 User interfaces

The NMS provides the following user interfaces to perform various functionalities – e.g. upload master data, administers to configure, view and modify parameters, to define filters and generate different reports among others:

- **Data Upload Interface**: Provides an interface to the NMS administrators for uploading the following data - among other data - into the NMS database:-

    - **Master location data**: the list of States, Districts, Taluka, Health blocks, Health Facility (PHC/CHC), Sub-center & Village.

    - **FLW Data**: the FLW details (FLW-id, MSISDN, Name, Designation & location data).

    - **MCTS data**: the woman's Last Menstrual Period (LMP) or the child's data of birth (DOB).

    - **State-Language Mapping**: The mapping between circles/states/district and languages.

- **Content Management System (CMS):** Stores audio content for the IVR services – note that CMS is part of IVR system and not part of MOTECH system.

- **Reports Interface**: Pulls data from MOTECH to deliver online, real time reports on the take up and usage of MK, MA and Kilkari services.

- **Config Interface**: Provides an interface to NMS administrators for viewing and modifying NMS configuration parameters that includes the following:

    - **System Parameters** (e.g. IP address, DB location, FTP/SFTP parameters)

    - **Business Logic parameters** related to NMS service (e.g. Capping rules, Language settings, etc.)

3 System Requirements

3.1 Data & Language Management

3.1.1 Location Data handling

Requirement Id	Description	Comments	Status
NMS.GEN.LOC.001	The NMS system shall provide means to upload location data in CSV file into its internal database via a web interface. Multiple upload attempts shall be supported whereby the complete location data may not be available in the beginning. Errors during location data upload shall be logged.		Approved
NMS.GEN.LOC.002	The NMS system shall manage a location database having the following parameters to manage the location of an FLW for MA/MK service and a Beneficiary for Kilkari: • State • District • Taluka • Health block • Health Facility (PHC/CHC) • Sub center (or Sub-facility) • Village There shall be mapping between descriptive name and codes. The exact definitions of these fields along with presence (mandatory/optional) are provided in Appendix A (refer section **Error! Reference source not found.**).	The location data is used to link a given FLW record with a particular geographical location. There is one to one link from a FLW record to a location record. MCTS follows proposed census codes for all the location fields except Health block, Facility and Sub center. For Health block, facility and sub center MCTS has its own codes. Villages are of two types – Census villages and Non census villages. For Non census villages, data entry person has option to enter the village name. The NMS system will only have one field for Village – regardless of whether it's a census village, Panchayat village, revenue village or otherwise.	Approved

NMS.GEN.LOC.003	The NMS system shall perform the following checks and validation before uploading location data into the location database:
	
	    o None of the Mandatory Location fields can be blank
	
	    o Duplicate location data does not already exist in the system
			Approved

	The exact definitions of these fields are provided in Appendix A (refer section **Error! Reference source not found.**).		
NMS.GEN.LOC.004	The NMS system shall provide means to correct details of location data through a web interface via CSV upload or MDS UI.	It should be possible to do changes in spelling or other details of location	Approved

3.1.2 FLW Data Handling

Requirement Id	Description	Comments	Status
NMS.GEN.FLW.001	The NMS system shall provide means to upload FLW data into its internal database via a web interface via a CSV file. Multiple upload attempts shall be supported whereby the complete FLW data may not be available in the beginning. Errors during FLW data upload shall be logged.		Approved
NMS.GEN.FLW.002	NMS shall internally generate and maintain an FLW-ID for all FLWs that is called the **NMS FLW-ID**. For external interfaces (including IVR and CSV upload), the FLW shall be identified first by the NMS FLW-ID if present. Next the MCTS FLW-ID should identify them if it is provided. If neither of those IDs is provided then the MSISDN should be used. 3.1.2.1.1 Additionally, for FLW records coming via CSV file, the record may optionally contain an FLW-ID provided by MoHFW called the MCTS FLW-ID	MCTS FLW-ID is optional because data uploaded using training data may not have the FLW-ID issued by MCTS.	Approved
NMS.GEN.FLW.003	The NMS system shall maintain the status of an FLW: • **Anonymous:** Refers to any user who has called the MA/MK service and whose MSISDN number, FLW ID, name, and location data is not available in the FLW contact list maintained by the NMS system (in other words – only the MSISDN exists in the database). If an FLW record is uploaded for such a user, existing information (e.g. call records, language information) of the anonymous user shall not be deleted or over-written – however the FLW information not available in the NMS shall be added to the record (at which point they will become an	In case an FLW whose record does not exist in NMS calls via IVR and subsequently, the record of user is updated via file upload (from any source – MCTS or training data), In such case, the status of FLW record shall reflect the changes done via file upload.	Approved

	Active FLW).
	
	 • **Active FLW:** Mandatory fields in the record of an FLW are present and following conditions are met:
	    o FLW must have called NMS system once (via MA or MK)
	    o FLW has a valid location (State and District fields are mandatory and valid; other location fields if present are valid).
	    o FLW has all the following parameters present in its record:
	      ▪ MSISDN number
	      ▪ Name
	      ▪ Designation
	      ▪ Mandatory parts of Location Data (NMS.GEN.LOC.002)
	
	 • **Inactive FLW:** A record of an FLW where all the mandatory fields have been filled in but the FLW has not called NMS system once (via MA or MK).
	
	 • **Invalid FLW:** Records of an FLW are partly/fully present but are not valid any more due to CSV upload procedure marking the FLW as invalid.		

NMS.GEN.FLW.004	The NMS system shall perform the following checks and validation before uploading FLW data into the FLW database: • If an FLW's record in NMS already has an NMS or MCTS FLW ID, and new data about this FLW is uploaded in CSV format, then this new data will be considered an Update (see other requirements in this section). • FLW has valid location data (i.e., refer NMS.GEN.FLW.003). • The data shall be validated based on the specified format for each field (i.e. string data, number etc.) and Presence (Mandatory/Optional) as specified in Appendix A.		Approved
NMS.GEN.FLW.005	The NMS system shall allow modification of MSISDN of an existing FLW record using CSV upload by providing new MSISDN number in a record with an existing NMS FLW-ID or MCTS FLW ID. Or via MDS UI by locating the record in	NMS shall allow only one FLW to have any given MSISDN number. Change of MSISDN number is	Approved

	the UI. • If a new MSISDN is uploaded for the same FLW ID (already existing in NMS), say FLW-A, then the old MSISDN will be replaced with the new MSISDN. A history/change table shall be created with old and new MSISDN number for the FLW-A. • If the MSISDN number already exists for a different FLW (with a different NMS or MCTS FLW ID) in NMS the request shall be rejected.	not recommended for an FLW but none-the-less very likely to happen in states where government SIMs have not been distributed.. In order to realize use-case of reusing an existing MSISDN number, either the MSISDN number of FLW-B has to be changed, or FLW-B has to be marked invalid.	
NMS.GEN.FLW.006	The NMS system shall provide means to modify the address/location of a FLW using CSV upload or MDS UI. The language mapping for the FLW does not change due to change in location information.		Approved
NMS.GEN.FLW.007	NMS shall note and make available to the user all rejected/ignored uploaded FLW records		Approved
NMS.GEN.FLW.008	The NMS system shall provide means to mark an FLW as invalid using CSV upload or MDS UI. Once an FLW is marked invalid, any incoming call with MSISDN that is same as that of invalid FLW shall be treated as that of an anonymous caller.		Approved
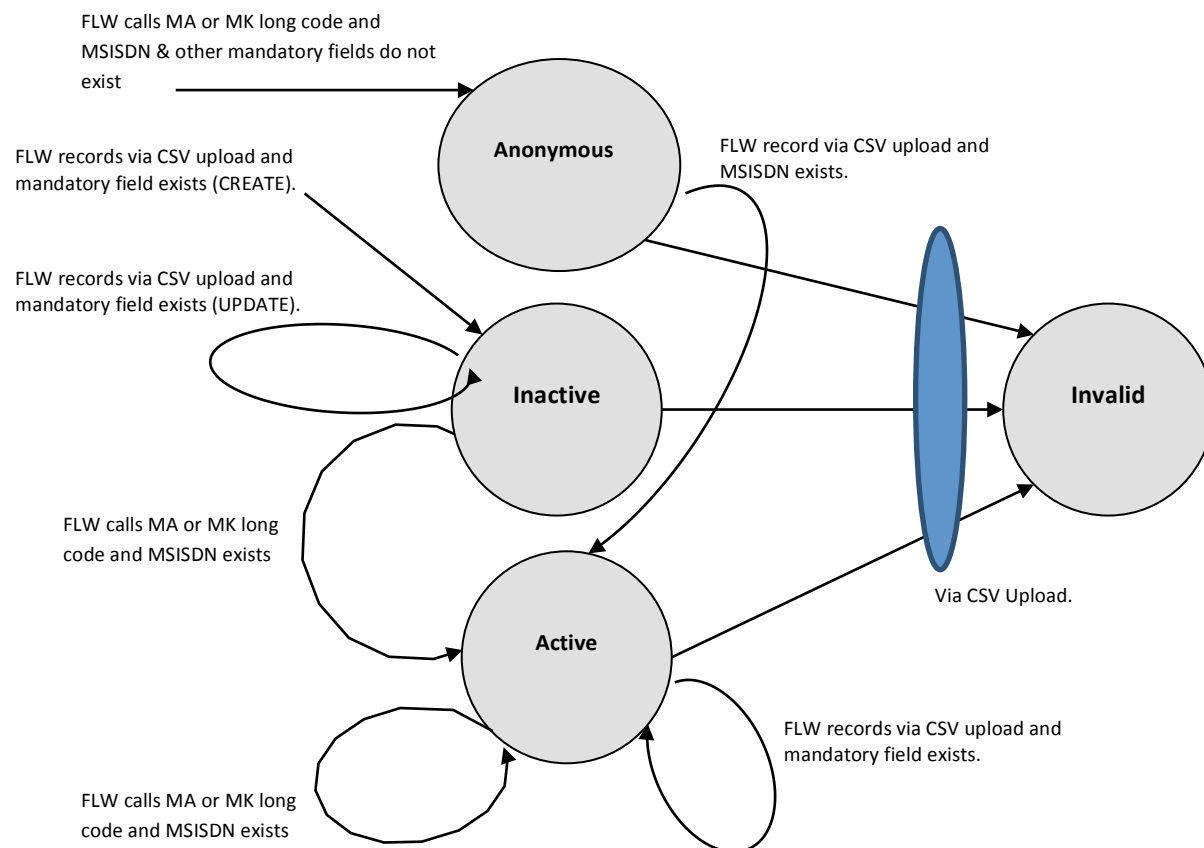
Figure 2: State Diagram for FLW Creation

3.1.3 MCTS Beneficiary Data Handling

Requirement Id	Description	Comments	Status
NMS.GEN.MCTS.001	The NMS system shall provide means to upload MCTS beneficiary data into its internal database via a web interface in a CSV file. Multiple upload attempts shall be supported whereby the complete MCTS data may not be available in the beginning. Errors during MCTS beneficiary data upload shall be logged.	MOTECH Data Services shall provide the web interface to perform upload for MCTS bulk data.	Approved
NMS.GEN.MCTS.002	Deleted	Covered in NMS.GEN.MCTS.001	Deleted
NMS.GEN.MCTS.003	The NMS system shall perform the following checks and validation during upload of MCTS file along with NMS.KK.ACCESS.006 and NMS.GEN.DEPL.004: • MCTS data shall have valid location information (State and District fields are mandatory and valid; other location fields if present are valid).		Approved

	• MCTS data does not have an MSISDN that is already being used by another active MCTS beneficiary for same pack. • If a beneficiary's record in NMS already has an MCTS-Id present, and new data from MCTS is uploaded with the same MCTS ID, then it shall be considered as case of information update (see other requirements in this section). • At-least one out of LMP or DOB must be present in each record that is uploaded from MCTS. • The data shall be validated based on the specified format for each field (i.e. string data, number etc.) and Presence (Mandatory/Optional) as specified in Appendix A.		
NMS.GEN.MCTS.004	A Kilkari Beneficiary shall be identified by a unique identifier that comprises of state specific MCTS Id along with State identifier. However, if the Kilkari subscriber activates their subscription by calling the IVR long codes (one for each pack) then they will remain anonymous unless and until MCTS data is uploaded where a pregnancy or birth record matches with the MSISDN number of the anonymous subscriber. For anonymous subscribers, they are only identified by their MSISDN + pack info. It's possible that a child MCTS record and pregnancy MCTS record could exist at the same time for the same woman. If the pregnancy record is present, then this record will be UPDATED if a new MCTS record is uploaded that contains both a child MCTS ID and a pregnancy MCTS ID, where the pregnancy MCTS ID already exists in NMS. In other words, only one subscription will be maintained for the same woman, the pregnancy pack shall be de-activated (if activated) and child-pack shall be activated based on DOB of the child. If, when a MCTS child record is being uploaded, no pregnancy record is found then only the child-pack shall be activated based on DOB of the child.	For details See Appendix A.	*Approved*
NMS.GEN.MCTS.005	The NMS system shall provide means to modify the MSISDN of a Kilkari Beneficiary by providing new MSISDN information along with existing MCTS id using CSV upload or MDS UI. However,		Approved

	this procedure is not allowed if the number is already being used by another Active Kilkari beneficiary for same pack.		
	A history/change table shall be created with old and new number for the beneficiary whose MSISDN number is being changed.		
	The language mapping for the beneficiary does not change due to change in MSISDN number.		
NMS.GEN.MCTS.006	The NMS system shall provide means to modify the address/location of a Kilkari Beneficiary by providing new address/location information along with existing MCTS ID using CSV upload or MDS UI.		Approved
	A history/change table shall be created with old and new address/location for the existing beneficiary.		
	The language mapping for the beneficiary does not change due to change in location information.		
NMS.GEN.MCTS.007	The NMS system shall provide means to modify the LMP/DOB of a Kilkari Beneficiary by providing new LMP/DOB information along with existing MCTS ID using CSV upload or MDS UI. The updated information shall be used to provide new schedule for the beneficiary.		Approved
	A history/change table shall be created with old and new LMP/DOB for the existing beneficiary.		
NMS.GEN.MCTS.008	The NMS system shall provide means to update mother/child status of a Kilkari Beneficiary using CSV upload or MDS UI. The following information status fields shall be available in internal database of NMS: • Miscarriage/Abortion • Still birth • Child death • Maternal Death		Approved
NMS.GEN.MCTS.009	NMS shall note and make available to the user all rejected/ignored uploaded beneficiary records		Approved
NMS.GEN.MCTS.010	NMS shall store MSISDN number in 10-digit format in its internal database for an FLW/ beneficiary. On any interface if the MSISDN number has 10 digits or 11 digits or 12 digits, then during storage and retrieval, the appropriate conversion shall be done by NMS.		Approved

3.1.4 Language Selection Requirements

Requirement Id	Description	Comments	Status
NMS.GEN.LANG.001	NMS shall maintain a mapping between a geographical location of a state (i.e. set of districts) and the "Language-location code" used in that location. There shall be one and only one "Language-location code" used in a given geographical location. This "Language-location code" shall be same and applicable to all services in that location. The mapping shall be uploaded in NMS when one or more services are deployed in a state.	If there is only one "Language-location code" in the state, all districts shall have same "Language-location code"; else, multiple groups shall be formed, each group having a set of districts and having a unique "Language-location code". Division or reorganization of geographical location for "Language-location code" mapping is not supported and an item for future.	Approved
NMS.GEN.LANG.002	NMS shall maintain a mapping between a telecom circle and the associated districts of a state contained in a circle. This mapping shall be used to determine the state and consequently the "Language-location code" used in the state.	A telecom circle can have various mapping with states: • One-circle-to-one-state mapping (e.g. AP) • One-circle-to-many-state mapping (e.g. North-east, Bihar + Jharkhand or MP + Chattisgarh) • Many-circle-to-one-state mapping (e.g. UP-east and UP-west)	Approved
NMS.GEN.LANG.003	If the location information of FLW/MCTS-beneficiary is known corresponding to the received MSISDN number, then the NMS shall use the language-location code to determine the language to be used for the corresponding number. Else (i.e. the MSISDN number is anonymous and no location information is available), NMS.GEN.LANG.004 applies.		Approved
NMS.GEN.LANG.004	If the location information of FLW/MCTS-beneficiary is not known corresponding to the received MSISDN number, then following rules for language determination apply: • **Case A:** If the circle information cannot be determined, the user is prompted in the national default language by the IVR to enter their Language-location code via DTMF. • **Case B:** If the circle information can be	Case B2 covers two types of cases. One case is of north-east where there are multiple states in a circle and consequently multiple languages. Another case is that where multiple languages are used within a state. Both cases are covered in this scenario.	Approved

	determined and ○ **Case B1:** there is only one "Language-location code" possible in the circle (based on geographical coverage of the circle), then the corresponding "Language-location code" shall be used for the received MSISDN number. ○ **Case B2:** there are multiple languages possible in the circle (based on geographical coverage of the circle), the user is prompted in the circle's default language by the IVR to enter their Language-location code via DTMF.		
NMS.GEN.LANG.005	Once the "Language-location code" of an FLW/MCTS-beneficiary is determined by any of the requirements listed above, the same "Language-location code" shall be used in future and the language determination process shall not be repeated. This also applies to the case across MA and MK service i.e. "Language-location code" determined for a MSISDN number during MA service shall be applicable to MK service and vice versa.		Approved
NMS.GEN.LANG.006	The NMS system shall provide means to modify the language of an FLW/MCTS-beneficiary by providing a new language code along with an existing identifier using CSV upload or MDS UI. A history/change table shall be created with old and new language for the existing FLW/MCTS-beneficiary.		Approved

3.2 Operability

3.2.1 Configuration Management

Requirement Id	Description	Comments	Status
NMS.GEN.CFG.001	The NMS system shall have means to provide configuration parameters to various services. The configuration parameters shall be classified into following: • **System Parameters** (e.g. IP address, DB location, FTP/SFTP parameters) that are handled by property/config files. • **Business Logic parameters** related to NMS service (e.g. Capping rules, Language settings, etc.) that are	The UI interface shall be realized using the existing MDS UI interface offered by MOTECH platform.	Approved

	handled by UI interface.		
	For key configuration parameters, refer section Refer Design & Architecture Spec.		
	Configuration Parameters.		
NMS.GEN.CFG.002	The modification of NMS parameters that critically impacts any of the IVR services shall be done during system downtime. The user documentation shall capture list of such parameters.	This is a support and user documentation requirement.	Approved
NMS.GEN.CFG.003	The NMS system shall be designed such that all configuration parameters are externalized.	Hard coded default shall be avoided.	Approved
NMS.MA.CFG.004	The NMS system level configuration parameters shall be stored in a version controlled file. Changes to any configuration parameter shall be first done in version management system and subsequently taken to use.	Hard coded default shall be avoided.	Approved

3.2.2 Security and User Access Control

Requirement Id	Description	Comments	Status
NMS.GEN.SECU.001	The NMS system shall provide an access control mechanism for viewing and saving reports. The following roles shall be available, each being enabled/disabled separately: • **Administrator:** Admin user who shall have full access rights including user creation, user deletion and access role assignment rights. • **FLW_View:** The users with this role shall have access to reports of FLW services only i.e. reports of MK and MA only. • **Kilkari_View:** The users with this role shall have access to reports of Kilkari only. • **Allow_Export:** The users with this role shall be able to export reports in the allowed formats i.e. pdf, csv etc. • **State_All:** The users with this role shall have access to reports of all states. • **State_<StateName>:** These roles will be state specific i.e. users with specific state role shall be able to view reports of that state only. A user can have roles for multiple states.	CSV upload and configuration changes shall happen locally in data center and no access control mechanism are applicable to them.	Approved

NMS.GEN.SECU.002	The NMS system shall use HTTPS/SSL encryption on all network connections.	Some of the examples where this applies include: • IVR and MOTECH • MOTECH and its databases (ActiveMQ & MySQL)	Approved
NMS.GEN.SECU.003	The NMS system shall ensure that the disk that hosts the database is encrypted. Encryption key to encrypt the database shall be stored on separate server.	Individual fields in the database will not be encrypted.	Approved
NMS.GEN.SECU.004	The NMS system shall not log any personal information that can identify a user.	There may not be an automated way to detect or prevent this. Instead disk encryption for the log files may be used and the log files will be purged on a regular pre-defined schedule (e.g. using logrotated).	Approved
NMS.GEN.SECU.005	The NMS system shall ensure that User Passwords are salted and hashed via Bcrypt or other accepted secure password hashing algorithm.		Approved
NMS.GEN.SECU.006	The NMS system shall follow the following security best practices: • Systems should not run as privileged users • File permissions should be set to the least open setting possible. • All ports should be closed except those required for services etc. • Root user connection over SSH will be disabled • Password policy enforcing strong passwords will be in place • SSH will be installed on a non-standard port • SSH password authentication will be disabled (only key based authentication will be allowed) • Intrusion prevention system like Fail2Ban will be installed. • A process for applying OS patches will be documented and followed		Approved

3.2.3   General Reporting Requirements

Requirement Id	Description	Comments	Status
NMS.GEN.REP.001	The NMS system shall provide an interface for		Approved

Requirement Id	Description	Comments	Status
	viewing and saving of reports.		
NMS.GEN.REP.002	The NMS system shall support generation of reports for a date range that has a start date and an end date. Record for a subscriber for a service appears in the report only if the FLW has accessed the NMS system within the specified date range for the specified service (unless otherwise specified).		Approved
NMS.GEN.REP.003	The NMS system shall support generation of maximum records for a date range in a single report as supported by underlying reporting framework with an absolute upper limit of 90 days (to-from date including both dates).	The following points have to be considered in this requirement: • Max limit on date range shall be decided. • Max number of records.	Approved
NMS.GEN.REP.004	The NMS system shall allow saving of reports in HTML, PDF and CSV formats.		Approved
NMS.GEN.REP.005	The NMS system shall generate and save pre-configured reports at pre-defined periodicity using FTP on pre-configured FTP Server provided by MoHFW in format as per supported formats of underlying reporting framework.	Another alternative was to provide concurrent access to 1000 users which could require considerable processing overheads.	Approved
NMS.GEN.REP.006	The NMS system shall store all call details received from IVR for reporting purpose as specified in various reports in Appendix B of this document.	Also see NMS.GEN.LOG.009.	Approved
NMS.GEN.REP.007	The NMS system shall provide means to access reports over public internet using secure interface (using HTTPS/SSL). No other interface other than HTTPS/SSL will be made available.	No other interface shall be made available on public internet.	Approved
NMS.GEN.REP.008	The NMS system shall provide reports having individual FLW/beneficiary records/call-records at the state level.. Reports at national level shall be supported where an aggregate view is to be provided.	This requirement limits the number of records that can be available in one exported report.	Approved

3.2.4   Backup and Archiving

Requirement Id	Description	Comments	Status
NMS.GEN.BKUP.001	The NMS system shall continue to maintain FLW/Beneficiary data for 6 weeks within its internal database once the corresponding record is marked Invalid (for FLW) or marked deactivated/completed (for beneficiary).	NMS shall not permit deletion of any record marked invalid or deactivated/completed record till 6 weeks of such activity.	Approved

	For this purpose, the NMS system shall maintain the timestamp at which the corresponding record was marked invalid or deactivated/completed.		
NMS.GEN.BKUP.002	The NMS system shall automatically remove all records marked Invalid (for FLW) or marked deactivated/completed (for beneficiary) from internal DB provided they satisfy the conditions listed in NMS.GEN.BKUP.001.	It should be possible to disable such automatic deletion.	Approved
NMS.GEN.BKUP.003	The NMS system shall have a tape drive backup of ALL System/FLW/Beneficiary data every 2 weeks.	The backup procedure on the tape drive is outside the scope of this document. This is basically a support requirement. It is recommended that the tape drive backup is not kept in same physical location as the NMS servers.	Approved
NMS.GEN.BKUP.004	The NMS system shall have maintain the tape drive backup for three years.	The procedure to realize this requirement is outside the scope of this document. This is basically a support requirement.	Approved

3.3 Non-Functional Requirements

3.3.1 Packaging and Installation Requirements

Requirement Id	Description	Comments	Status
NMS.GEN.PACK.001	The NMS shall be packaged and made available in a format and location accessible to installation scripts. .		Approved
NMS.GEN.PACK.002	The NMS shall use installation scripts to deploy the NMS SW.		Approved

3.3.2 Deployment Requirements

Requirement Id	Description	Comments	Status
NMS.GEN.DEPL.001	The NMS system shall ensure that various services can be deployed in phased manner across states. The phasing shall be both service-wise and state-wise (i.e. it shall not be necessary to deploy all 3 services in a state to start with).	It shall not be necessary that content of all states are ready at the time of deployment.	Approved
NMS.GEN.DEPL.002	The NMS deployment shall be relevant for all the states of India (see Appendix D: States, Union	Re-organization of districts and boundaries of states leading to	Approved

Requirement Id	Description	Comments	Status
	Territory and Circles in India). Configuration Information (refer section Refer Design & Architecture Spec. Configuration Parameters) of any given state shall be fed into NMS only when the service is to be brought into service for that state. Information of a state that does not exist as of writing of this requirement (as per Appendix D: States, Union Territory and Circles in India) can be provisioned provided the creation of new state does not lead to geographical re-organization of boundaries.	data re-organization is not supported.	
NMS.GEN.DEPL.003	The NMS deployment shall consider all Union Territories (UT) of India to be mapped to a given state as per Appendix D: States, Union Territory and Circles in India. Any state specific attribute of a UT shall be derived from its mapped state. Towards this objective, Delhi NCR shall be considered a separate state (and not a union territory even though it does not have full statehood).	The mapping of UT to state is derived from the telecom circle to which the UT belongs.	Approved
NMS.GEN.DEPL.004	The NMS system shall maintain deployment status for each service (Deployed/Not-deployed) for each state. If any incoming request is received for a service from a state that is Not-deployed in that state, then appropriate error message shall be played (e.g. Service Not Available in the state) in standard Hindi. Deployment state of service shall not influence the data upload procedures mentioned in Data & Language Management section for MA, MK and KK (i.e. FLW and beneficiary data upload for a given state shall be allowed even if the service is not deployed in the state).		Approved

3.3.3 Mobile Number Portability

Requirement Id	Description	Comments	Status
NMS.GEN.MNP.001	The NMS system shall ensure that the intra-circle Mobile Number Portability (MNP) does not affect the services to an FLW.	Intra-circle portability should be largely transparent to the user. Its records or language or other aspects should largely be unchanged. Number portability shall not lead to change in location	Approved

		information of FLW/MCTS beneficiary unless done otherwise.	
NMS.GEN.MNP.002	The NMS system shall ensure that the inter-circle Mobile Number Portability (MNP) does not affect the services to an FLW.	Inter-circle portability should be largely transparent to the user. Its records or language or other aspects should largely be unchanged. Number portability shall not lead to change in location information of FLW/MCTS beneficiary unless done otherwise.	Approved

3.3.4 Maintainability and Extensibility Requirements

Requirement Id	Description	Comments	Status
NMS.GEN.MAINT.001	NMS system shall follow modular design principles that make addition of new services simple.		Approved
NMS.GEN.MAINT.002	NMS system shall have no duplicate code.	This shall be subject to a threshold of minimum allowed limit as decided in the software coding guidelines [5].	Approved
NMS.GEN.MAINT.003	NMS system shall have no dead code.		Approved
NMS.GEN.MAINT.004	NMS system shall have adequate comments to allow easy comprehension of the code.		Approved
NMS.GEN.MAINT.005	NMS system shall have an implementation approach whereby all IVR interface code shall be contained in its own module such that a new IVR vendor could be added without requiring code changes to the applications or reports.		Approved

3.3.5 Logging and Debugging Requirements

Requirement Id	Description	Comments	Status
NMS.GEN.LOG.001	NMS system shall perform all logging through a logging framework. The log levels shall be runtime configurable.	Printing to stdout should not remain in the production system.	Approved
NMS.GEN.LOG.002	NMS system shall allow the log levels to be configurable. There shall be following log levels: TRACE, DEBUG, INFO, WARN, ERROR, FATAL		Approved
NMS.GEN.LOG.003	NMS system shall maintain history of all changes done in a given FLW record		Approved
NMS.GEN.LOG.004	NMS system shall maintain history of changes done in FLW information database including date-time stamp, number of records successfully		Approved

Requirement Id	Description	Comments	Status
	uploaded, number of records failed to be uploaded, reason of error or error file name etc.		
NMS.GEN.LOG.005	NMS system shall maintain a history of all changes made to FLW and MCTS-beneficiary records regardless of the source of the modification.		Approved
NMS.GEN.LOG.006	NMS system shall maintain a history of all changes done during upload of Beneficiary information including date-time stamp, number of records successfully uploaded, number of records failed to be uploaded, reason of error or error file name etc.		Approved
NMS.GEN.LOG.007	NMS system shall maintain history of all changes done in a given Location record		Approved
NMS.GEN.LOG.008	NMS system shall maintain history of all changes done during upload of Location information including date-time stamp, number of records successfully uploaded, number of records failed to be uploaded, reason of error or error file name etc.		Approved
NMS.GEN.LOG.009	NMS system shall log all interactions with IVR including but not limited to the following: • Incoming Call • Outgoing Call • Outgoing SMS • Bookmark information • Other Message Exchanges	Also refer NMS.GEN.REP.006.	Approved
NMS.GEN.LOG.010	NMS system shall have audit trail logs that includes but not limited to the following: • Any NMS CSV upload • Any changes via MDS UI • Any NMS report access • Any NMS configuration change related to business logic (refer NMS.MA.CFG.001) The audit trail log shall include event details, date/time of event and user credential information among others.		Approved

3.3.6 Availability Requirements

Requirement Id	Description	Comments	Status
NMS.GEN.AVAIL.001	NMS system shall have availability figure of 99% that translates into downtime of over 3.5 days in a year.	This figure excludes planned downtime for configuration changes, data upload and other planned changes.	Approved

4   Mobile Academy (MA): Overview and Requirements

4.1   Service Overview

Mobile Academy (MA) is a mobile based certification course. It is characterized by the following:

- MA service allows Front Line Workers (FLW) to go through a health course on the mobile phone that is divided into 11 chapters and each chapter has 4 lessons. At the end of each chapter, there is a simple multiple choice quiz to assess the comprehension of the FLW of topics communicated in the chapter.

- MA service allows the FLW to start/stop the course anytime using bookmarking. When all chapters are finished, and the FLW obtains 50% or higher score, the FLW is eligible for a certificate from the government.

- MA service is open and by default does not restrict access; though certification necessitates that the user is an Active FLW.

- MA service is accessible via IVR. There are simple DTMF entry options for easy handling and navigation by FLWs.

- MA service is a voice-only service (although one SMS is sent to the FLW at the end of the course) accessible via any basic feature mobile-phone and does not necessitate any smart-phone.

- MA service design is based on the premise that FLWs are primarily middle-aged rural women with education up to grade XII.

4.2   Functional Requirements

4.2.1   Service Access

Requirement Id	Description	Comments	Status
NMS.MA.ACCESS.001	MA shall be accessible via a toll-free long code.	Exact long code shall be finalized during deployment.	Approved
NMS.MA.ACCESS.002	Same as NMS.MK.ACCESS.002		Approved
NMS.MA.ACCESS.003	Same as NMS.MK.ACCESS.003		Approved
NMS.MA.ACCESS.004	Same as NMS.MK.ACCESS.004		Approved
NMS.MA.ACCESS.006	Same as NMS.MK.ACCESS.006		Approved
NMS.MA.ACCESS.007	Same as NMS.MK.ACCESS.007		Approved

4.2.2   Course Structure & Certification

Requirement Id	Description	Comments	Status
NMS.MA.COURSE.001	MA course shall have many chapters each divided into set of lessons. • The course shall have 11 chapters. • Each chapter shall have 4 lessons. One lesson is conveyed to the FLW via single	Each lesson is approximately 2.5 minutes long Each quiz is approximately 6 minutes in length The whole course is approximately 240 minutes in	Approved

	message. • Each chapter shall have a quiz with fixed set of 4 questions at the end of the chapter.	length, including prompts.	
NMS.MA.COURSE.002	An MA course shall be considered to have successfully finished if: • The FLW has finished listening to all the lessons of all the chapters. • The FLW has taken all the quizzes of all the chapters. • The FLW has attained at least 50% marks in the quiz (22 or greater marks out of 44). Once course is completed, the call shall be disconnected and the bookmarks are reset. When the user dials next time, the user is automatically taken to welcome message.		Approved
NMS.MA.COURSE.003	If FLW completes MA course successfully (either first time or during re-attempt) then MA service shall send an SMS to the FLW with a reference number. The SMS sent to user shall be in native language in Roman Characters. The NMS system shall track delivery notification of the SMS and continue retry of SMS once every day till successful delivery for configurable number days.	The reference number is concatenation of MSISDN, Location Id and Course-Repeat attempt. An FLW currently takes the SMS to their ASHA Divas meeting at the Block Level, where the certificates are handed out. MoHFW may devise a different process for handing out certificates in the future. The certificates are given to FLWs who are identified as being genuine by the local health authority. It is outside the scope of this document if certificates are re-issued if the FLW successfully completes the course and gets a certificate but for some reason decides to do the course again. From SW point of view, the handling of first successful attempt and re-attempt shall be same. Location Id is a unique identifier for a particular record of location data. For an anonymous user, location Id is set to default value (refer section Refer Design &	Approved

		Architecture Spec. Configuration Parameters).	
NMS.MA.COURSE.004	MA service shall maintain count of number of times the course is attempted and also allow the user to reattempt the chapter or restart the whole course from beginning.	There shall be no limitation on number of re-attempts.	Approved
NMS.MA.COURSE.005	The MA service shall save the last quiz score of a given chapter. Re-attempt of quiz shall lead to overwriting of the score of the re-attempted chapter with new score without any other consideration.	MA service shall not check if the score has increased or decreased.	Approved
NMS.MA.COURSE.006	The MA service shall provide means to manually trigger Course Completion SMS (NMS.MA.COURSE.003)	This is needed in case FLW has accidentally deleted the SMS. Exact mechanism for manual trigger is to be studied. The SMS module of MOTECH allows manual sending of SMS.	Approved

4.2.3   IVR Handling

Requirement Id	Description	Comments	Status
NMS.MA.IVR.001	MA course shall have simple DTMF options for easy handling and navigation of FLW.	This is based on the premise that the FLW are typically middle-aged rural women with education up to grade XII. Typical IVR menu shall have two DTMF options to take user inputs.	Approved
NMS.MA.IVR.002	The IVR menu of MA service shall move ahead if the user does not provide any input twice or if the user provides any wrong input.	Consequently, after expiry of two loops of 12 seconds, the IVR shall deem to have got inputs to proceed.	Approved
NMS.MA.IVR.003	The MA IVR menu tree shall realize the call flow as specified in section "Welcome Message and First Time Access Call Flow" of this document.	The call flow shall be normative part of this document.	Approved
NMS.MA.IVR.004	The MA IVR menu tree shall realize the call flow as specified in section "Course and Bookmark Call Flow" of this document.	The call flow shall be normative part of this document.	Approved
NMS.MA.IVR.005	The MA IVR menu tree shall realize the call flow as specified in section "Course Completion and Certification Call Flow" of this document.	The call flow shall be normative part of this document.	Approved

Requirement Id	Description	Comments	Status
NMS.MA.IVR.006	If there is service capping, the MA IVR menu tree shall play "end of usage" message if the usage for month is exhausted. If the message has already been played twice in a month, then the message shall not be played again and the call shall be disconnected.		Approved

4.2.4 Bookmark Handling

Requirement Id	Description	Comments	Status
NMS.MA.BKMK.001	MA service shall support course bookmarking whereby user can start or stop the course anytime without having to repeat the previously completed parts (as per last bookmarked position).		Approved
NMS.MA.BKMK.002	The realization of bookmarking in MA service shall be realized whereby if the call drops during the call, the call is restarted from nearest bookmark location. Exact bookmarking points shall be specified in the MOTECH-IVR interface document.		Approved

4.2.5 Reporting

Requirement Id	Description	Comments	Status
NMS.MA.REP.001	MA service shall support creation and handling of "MA usage report". The details of the report are specified in Appendix B.		Approved
NMS.MA.REP.002	MA service shall support creation and handling of "MA repeat visit report". The details of the report are specified in Appendix B.		Approved
NMS.MA.REP.003	MA service shall support creation and handling of "MA Chapter, lesson, quiz completion report". The details of the report are specified in Appendix B.		Approved
NMS.MA.REP.004	MA service shall support creation and handling of "MA quiz score report". The details of the report are specified in Appendix B.		Approved
NMS.MA.REP.005	The NMS system shall support creation and handling of "IVR Content Report". The details of the report are specified in Appendix B.		Approved
NMS.MA.REP.006	The NMS system shall support creation and handling of "FLW Status Details Report". The details of the report are specified in Appendix		Approved

	B.		
NMS.MA.REP.007	The NMS system shall support creation and handling of "Individual FLW inquiry Report". The details of the report are specified in Appendix B.		Approved
NMS.MA.REP.008	The NMS system shall keep FLW records in Motech at least as long as the services are live.	Refer NMS.GEN.BKUP.001.	Deleted
NMS.MA.REP.009	The NMS system shall support creation and handling of "MA Date Wise Report". The details of the report are specified in Appendix B.		Draft

4.2.6 Content Management and Upload

Requirement Id	Description	Comments	Status
NMS.MA.CONT.001	NMS shall allow upload and modification of content files for MA service.	The content files shall be managed by CMS which is part of IVR and not part of MOTECH.	Approved
NMS.MA.CONT.002	MA service shall support the course content to vary based on the needs of specific states. The number of chapters/lessons shall be fixed for all states.		Approved

4.3 Non-Functional Requirements

4.3.1 Scalability Requirements

Requirement Id	Description	Comments	Status
NMS.MA.SCALE.001	MA service shall be designed to handle maximum of 1,177,478 registered FLW users.	"At time of launch, the hosting infrastructure will be sized to handle 154,500 ASHAs and 850,000 beneficiaries"	Approved
NMS.MA.SCALE.002	MA service shall be designed to handle simultaneous calls of maximum of 2001 FLW users.	Calls per month | Calls per Day | Peak Hour Call 12 & 1 pm MA: 1,412,974 | 47,099 | 17% or 8,006 This data is for all servers. Per server call rate shall be lower.	Approved
NMS.MA.SCALE.003	The Congestion and Overload for incoming calls of MA shall be handled by the IVR system of the NMS where some of the incoming calls may be rejected during overload.	There shall be no restrictions on FLW subscriber provisioning in NMS.	Approved

4.4 Call Flows

API spec between the IVR and MOTECH applications shall detail the interaction required between them to achieve the below call flows, SMS send and retry logic and hence specify the functionality requirement from each system (IVR and MOTECH) individually.

4.4.1 Welcome Message and First Time Access Call Flow
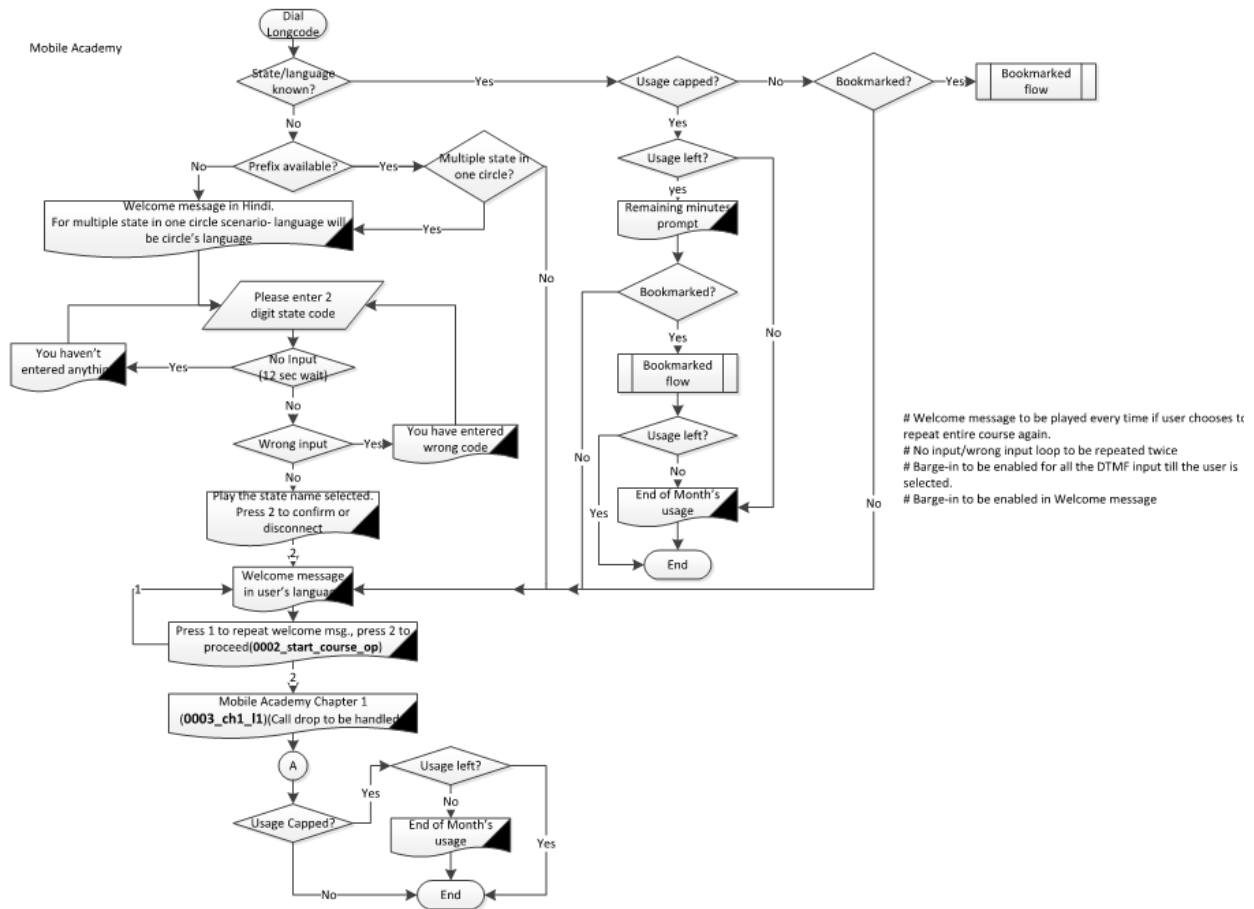
Figure 3: Mobile Academy Welcome Message and First Time Access

Key points to note:

1. Welcome message has no explicit bookmarking. It shall be played again and again till the user has heard the welcome message completely and moved ahead.

2. Usage related messages shall be played only if the STATE has the usage as "capped". If the usage is not "capped", related messages shall not be conveyed.

4.4.2   Course and Bookmark Call Flow
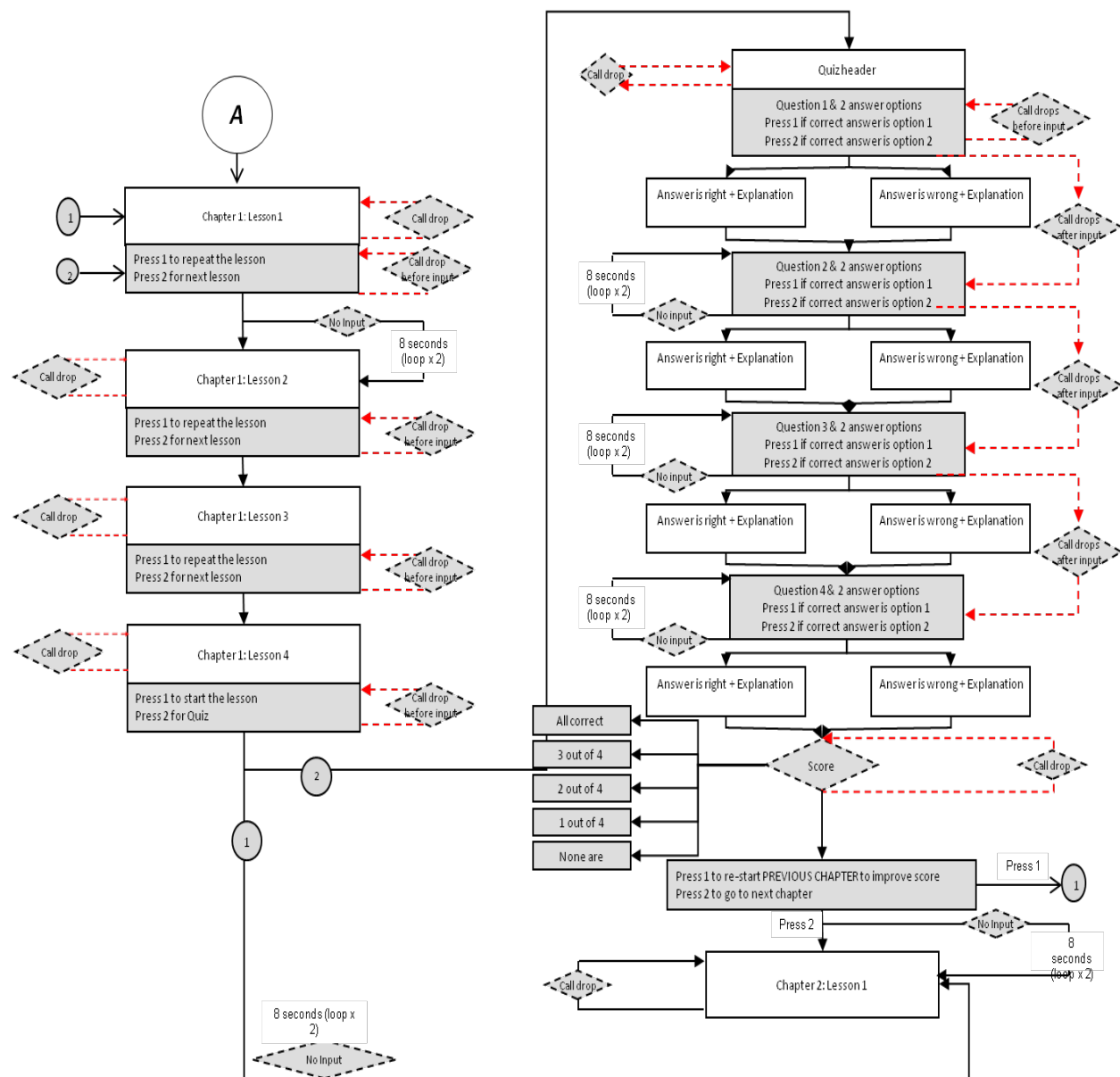
Figure 4: Course and Bookmark Call Flow

4.4.3 Course Completion and Certification Call Flow

Prompt 1-
Didi ! Congratulations on successfully completing the training course. Out of maximum possible 44 marks you have scored <XX marks>

Prompt 2A-
I am happy to say that now you can get your certificate. In a few minutes, you will receive an SMS on your mobile. Take this SMS to your monthly sub-center meeting and show it to the Community Co-ordinator. They will give you your certificate. Don't worry if you delete the SMS by mistake, we will know when you have finished the course and will bring your certificate to the monthly sub-center meeting. If there is no sub-center meeting in your area, we will call your mobile and ask you where to send the certificate. Just call 5771102 to start the course again from the beginning.

Prompt 2B-
You may do the course once again to improve on your score and earn a certificate. Just call 5771102 to start the course again from the beginning.

Figure 5: Course Completion and Certification Call Flow

5   Mobile Kunji (MK): Overview and Requirements

5.1   Service Overview

Mobile Kunji (MK) is an IVR based mobile service and a printed deck of illustrated cards on a ring, which together communicate essential audio-visual information on pregnancy and newborn health. It is characterized by the following:

- MK card carries a unique card number printed at bottom.

- MK service allows Front Line Workers (FLW) to go through MK service on the mobile phone using unique long code and then dialing in the card number to access content of a particular card.

- MK service is planned to be free in nature and does not have access restrictions. (However, from software implementation point of view, the minutes consumed by a user shall be maintained. Also, the capping of the service shall be configurable – in case a particular state so requests).

- MK service is open and does not restrict that the user is a registered FLW.

- MK service is accessible via IVR. There are simple DTMF entry options for easy handling and navigation by FLWs.

- MK service is a voice-only service accessible via any basic feature mobile-phone and does not necessitate any smart-phone.

- MK service design is based on the premise that FLWs are primarily middle-aged rural women with education up to grade XII.

5.2   Functional Requirements
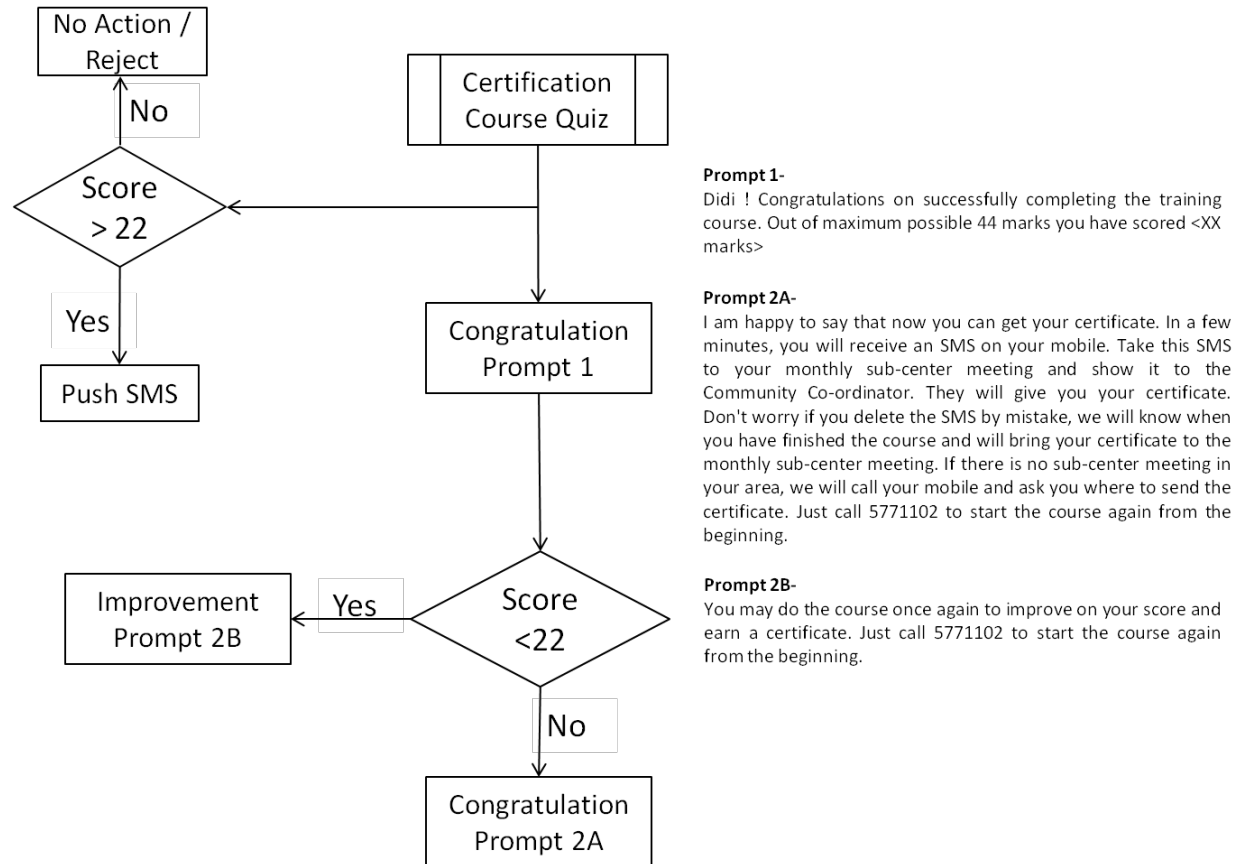
5.2.1   Service Access

Requirement Id	Description	Comments	Status
NMS.MK.ACCESS.001	MK shall be accessible via a toll-free long code.	Exact long code shall be finalized during deployment.	Approved
NMS.MK.ACCESS.002	MK, as default configuration, shall allow unlimited usage. However this must be configurable as capping on usage may be introduced at any point by MoHFW.		Approved
NMS.MK.ACCESS.003	MK shall allow to set capping rules as follows: • No Capping Or • National Capping Or • State-specific Capping (Capped/Uncapped) If the service is capped, then the usage limit shall be as per NMS.MK.ACCESS.004.	By default, the MA service shall be Uncapped (i.e. No Capping). However, it shall be possible to set single cap across whole nation or state specific capping policy.	Approved
NMS.MK.ACCESS.004	For national capping, it shall be possible to set single usage limit across the nation – in number of pulses – for MK usage.	By default this option shall not be used. However, if some state wants to restrict usage, then certain restrictions can be	Approved

	For state-specific capping, it shall be possible to set per STATE usage limit – in number of pulses – for MK usage.	imposed so this option is provided by the software.	
NMS.MK.ACCESS.005	MK content shall be accessible by dialing double-digit card number (double digit DTMF entry) after the long code.		Approved
NMS.MK.ACCESS.006	MK access shall by default be open to all without any access validation related to status of an FLW with restrictions specified in NMS.GEN.DEPL.004.		Approved
NMS.MK.ACCESS.007	NMS shall be configurable at a state level allowing a whitelist of CUG SIM/MSISDN numbers to be uploaded through MDS via a csv file. The whitelist can be on or off at a state level. When whitelisting is on, the calling number should be compared to the uploaded whitelist. If the number is found in the list the call shall proceed as normal. If the number is not in the list the call should be disconnected.		Approved

5.2.2 Job Aid

Requirement Id	Description	Comments	Status
NMS.MK.JOBAID.001	MK service shall have a maximum of 99 health cards.	There may be state specific variations in # of cards per state and usage of card. Although please note MoHFW has signed off a version of Kunji with only 44 cards at time of writing of this document.	Approved
NMS.MK. JOBAID.002	MK service shall maintain the pulses consumed by FLW for MK usage.		Approved
NMS.MK. JOBAID.003	MK service shall maintain the allowed pulses for the FLW, in case the service is capped.		Approved

5.2.3 IVR Handling

Requirement Id	Description	Comments	Status
NMS.MK.IVR.001	The IVR menu of MK service shall play the welcome message only once.		Approved
NMS.MK.IVR.002	IVR Menu of MK shall allow user to input a new double digit card number after content of a given card number has played out to play another audio file.		Approved

NMS.MK.IVR.003	IVR shall allow wrong input or no input only twice (consecutively) and then call shall be disconnected.		Approved
NMS.MK.IVR.004	The MK IVR menu tree shall realize the call flow as specified in section "Mobile Kunji Access" of this document.	The call flow shall be normative part of this document.	Approved
NMS.MK.IVR.006	The MK IVR menu tree shall play "end of usage" message if the usage for month is exhausted. If the message has already been played twice in a month, then the message shall not be played again and the call shall be disconnected.		Approved

5.2.4 Reporting

Requirement Id	Description	Comments	Status
NMS.MK.REP.001	MK service shall support creation and handling of "MK Date Wise Report". The details of the report are specified in Appendix B.		Approved
NMS.MK.REP.002	MK service shall support creation and handling of "MK usage report". The details of the report are specified in Appendix B.		Approved
NMS.MK.REP.003	MK service shall support creation and handling of "MK Card usage report". The details of the report are specified in Appendix B.		Approved

5.2.5 Content Management and Upload

Requirement Id	Description	Comments	Status
NMS.MK.CONT.001	NMS shall allow upload and modification of content files for MK service.	The content files shall be managed by CMS which is part of IVR and not part of MOTECH.	Approved
NMS.MK.CONT.002	MK service shall support the course content to vary based on the needs of specific states.		Approved

5.3 Non-Functional Requirements

5.3.1 Scalability Requirements

Requirement Id	Description	Comments	Status
NMS.MK.SCALE.001	MK service shall be designed to handle maximum of 1,177,478 registered FLW users.	Refer NMS.MA.SCALE.001	Approved
NMS.MK.SCALE.002	MK service shall be designed to handle simultaneous calls of 1282 FLW users.	Calls per month | Calls per Day | Peak Hour Call 12 & 1 pm MK: 14,424,106 | 480,803 | 8% or 38,464. The is for all servers	Approved

NMS.MK.SCALE.003	The Congestion and Overload for incoming calls of MK shall be handled by the IVR system of the NMS where some of the incoming calls may be rejected during overload.	There shall be no restrictions on FLW subscriber provisioning in NMS.	Approved

5.4 Call Flows

API spec between the IVR and MOTECH applications shall detail the interaction required between them to achieve the below call flows, SMS send and retry logic and hence specify the functionality requirement from each system (IVR and MOTECH) individually.

5.4.1 Mobile Kunji Access

Figure 6: Mobile Kunji Job Flow

6 Kilkari (KK): Overview and Requirements

6.1 Service Overview

Kilkari is the IVR service that uses Out Bound Calls (OBDs) to deliver time-sensitive audio information about maternity and child health to the subscribed beneficiaries (l pregnant women, new mothers, and mothers of children up to the age of one and their families) via mobile phones. Kilkari service is characterized by the following:

- Kilkari service covers the critical time period, during which the most deaths occur during maternity (for mother and child): from early stages of pregnancy until the child is one year old.

- Kilkari Service has two subscription packs based on when the service is started (72 week pregnancy pack and 48 week after delivery pack).

- Kilkari Service allows beneficiaries to subscribe to the desired subscription packs via IVR long codes.
    - Each pack has a separate long code.

- Kilkari Service also allows beneficiaries to be automatically subscribed to a suitable pack, by manually uploading MCTS data into the system, based on the Last Menstrual Period (LMP) of the pregnant woman or Date of Birth (DOB) of the child provided in MCTS Data.

- Kilkari Service delivers weekly messages to the subscribed Beneficiaries, based on the stage of pregnancy or child's age. Week is computed from LMP or DOB.

- Each message is approximately 2 minutes in length.

- Kilkari service tries to deliver each weekly message from 8am to 8pm (with different retry logics based on whether the subscriber's phone is busy, out of network range, switched off etc).

- Kilkari Service retries the attempt to deliver the messages which were not delivered.

- The Kilkari service is Toll Free.

- Kilkari service allows users to call the Toll Free inbox long code to listen to last OBD message again.

- A Kilkari beneficiary can be in any one of the following statuses in the system as depicted in Figure 6.
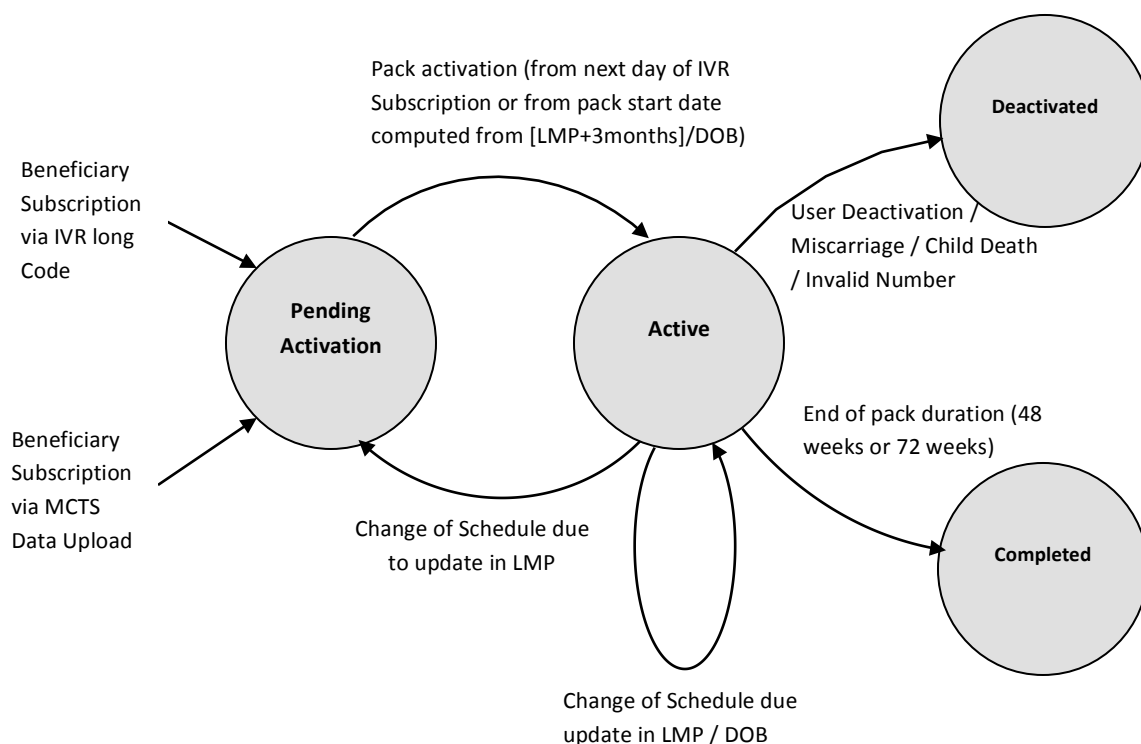
Figure 6: Kilkari beneficiary state transition

6.2 Functional Requirements

6.2.1 Service Access & Subscription

Requirement Id	Description	Comments	Status
NMS.KK.ACCESS.001	Kilkari shall offer following packs to the beneficiaries: • **18 Months Pregnancy Pack:** Starting from 2nd Trimester of pregnancy (4th month) until the child is 1 year old for a duration of 72 weeks. • **12 months Child Pack:** Starting from birth until the child is nearly one year old for a duration of 48 weeks.		Approved
NMS.KK.ACCESS.002	Kilkari Services for a beneficiary can be subscribed via IVR Long code. There shall be separate long codes for Each pack. Service shall be "activated" from next day of the date of IVR call (subscription state = Active).	Exact long code shall be finalized during deployment. Subscription via IVR would imply that the location and other vital information of the beneficiary shall not be available in the NMS (only MSISDN and LMP/DOB shall be	Approved

		determined based on date of call) such that subscription for various packs start from next day. IVR system shall identify the circle that the user is calling from (from their mobile number) in order to identify their language preference. If there are multiple languages available in the circle (North East for example) the user will be prompted to enter a language code, obtained from their ASHA, to set the language. The default prompt will be in the default language for their circle, or Hindi if circle is not known. Refer section 3.1.4 for details on language selection.	
NMS.KK.ACCESS.003	Kilkari services shall be offered to beneficiary free of cost.	Subscriptions shall not be suspended as service is free.	Approved
NMS.KK.ACCESS.004	If the subscriber does NOT call the IVR long code/s, and is subscribed automatically from the back end via an upload of data from MCTS, then the subscription pack for a beneficiary and the week that the message will start in will be based on the LMP or DOB provided in MCTS Data upon data upload (refer NMS.GEN.MCTS.001) as per following rules: • If DOB is present (with or without LMP) in the data, then Child pack (12-Months-Pack) shall be subscribed. Service shall be "activated" (i.e. first OBD shall be sent) on the day-1 of the week (as computed from DOB) that follows the date of data upload (subscription state = Active). • If LMP is present without DOB then pregnancy pack shall be subscribed. Service shall be "activated" (i.e. first OBD shall be sent) on the day-1 of the week (as computed from [LMP + 3 Months]) that follows the date of data upload (subscription state = Active) except for case of "early subscription" (for which refer NMS.KK.ACCESS.007).	If a woman is subscribed to Kilkari via MCTS data, the service could start at any point during the 72 week or 48 week schedule. Since we cannot assume that her ASHA or ANM will have informed her about Kilkari, we will need to play her an initial welcome message before any other content is played. This welcome message will introduce her to Kilkari. Once this welcome message has been played in the first week of the service starting, then the next week's content, as per the LMP or DOB, will be played. Since the first OBD message is sent on day1 of the week, that follows upload date, the message corresponding to the week in which upload is done shall be missed or not delivered to subscriber.	Approved
NMS.KK.ACCESS.005	Kilkari shall allow subscription of service for	MCTS data records with same	Approved

	different packs on the same MSISDN (via bulk upload of MCTS data or via IVR).	MSISDN with one having DOB and other having only LMP shall	
	For same pack, if an old subscription has completed/deactivated, then an additional subscription can be made.	be allowed to subscribe to different packs.	
NMS.KK.ACCESS.006	Kilkari Service shall not allow multiple "Active" or "Pending Activation" subscriptions for the same pack on the same MSISDN via bulk upload of MCTS Data or via IVR. In particular, subscription request with a particular MSISDN, shall be rejected IF: • DOB (with or without LMP) is present in the MCTS record and there is an already "Active" subscription to Child Pack on this MSISDN • LMP (without DOB) is present in the MCTS record and there is an already "Active" or "Pending Activation" subscription to Pregnancy Pack on this MSISDN. • IVR Subscription is requested and there is an already "Active" or "Pending Activation" subscription to that Pack on this MSISDN. If Subscription for a pack is completed or gets deactivated, then only new subscription for the same pack on the same MSISDN shall be allowed.	In case of MCTS bulk upload, rejected record should be logged. In case of IVR, the subscription failure message should be played to the user.	Approved
NMS.KK.ACCESS.007	Kilkari shall support "Early subscription" to Pregnancy pack only via MCTS bulk upload (subscription state = Pending Activation).	"Early subscription" refers to the case where Kilkari OBD message delivery for pregnancy pack shall be started from 2nd trimester (computed from LMP date), even though the MCTS record is uploaded before the actual date of 2nd trimester's start.	Approved
NMS.KK.ACCESS.008	Kilkari shall support activation of service via bulk upload without service disruption.	It is recommended that the upload procedure is done when the user activity is lowest by observing system activity at various points of time.	Approved
NMS.KK.ACCESS.009	Kilkari shall offer the option to deactivate the Subscription via OBD (subscription state = Deactivated) at the end of every OBD call. To deactivate the service, the user has press a number on their key pad to unsubscribe and then to confirm the deactivation request (double DTMF).		Approved

NMS.KK.ACCESS.010	Any of the events listed in NMS.GEN.MCTS.008 related to events for mother/child shall lead to stopping of Kilkari service (subscription state = Deactivated).	The service shall stop immediately if maternal death, infant death, miscarriage or abortion is reported via MCTS	Approved
NMS.KK.ACCESS.011	Kilkari shall schedule the delivery of weekly messages to the beneficiary based on the activation date of the pack. Week is computed from LMP or DOB.	Also see comment in NMS.KK.ACCESS.004.	Approved
NMS.KK.ACCESS.012	Kilkari shall support change of schedule of weekly messages based on update of DOB/LMP.		Approved
NMS.KK.ACCESS.013	Kilkari access shall be open to all without any access validation related to subscription status of a beneficiary with restrictions specified in NMS.GEN.DEPL.004.		Approved
NMS.KK.ACCESS.014	Kilkari service shall be completed after the Service Pack runs for its scheduled duration (subscription state = Completed).		Approved
NMS.KK.ACCESS.015	Kilkari shall manage the subscription state as below: • **Active:** Kilkari shall set the status of the subscription to "Active" on the start date of the subscribed pack. • **Completed:** Kilkari shall set the status of the subscription to "Completed" after delivery (including retries if any) of the last message of the subscribed pack. • **Deactivated:** Kilkari shall set the status of the subscription to "Deactivated" after a beneficiary has chosen the option to deactivate or due to other reasons (NMS.KK.ACCESS.010, NMS.KK.OBD.008 & NMS.KK.DND.002) • **Pending Activation:** Kilkari shall set the status of the subscription to "Pending Activation" if the start date of the pack is in future.		Approved
NMS.KK.ACCESS.016	Kilkari shall store the reason for deactivation (e.g. from user as per NMS.KK.ACCESS.009 or by an event as per NMS.GEN.MCTS.008.		Approved

6.2.2 Outbound Dialling (OBD)

Requirement Id	Description	Comments	Status
NMS.KK.OBD.001	Kilkari shall support the configurable number		Approved

|	of messages per week, minimum 1 and maximum 2 per week.		
NMS.KK.OBD.002	Kilkari shall schedule OBD dialing of the messages. IVR based activation shall have first OBD message sending from next day.		Approved
NMS.KK.OBD.003	Kilkari shall handle the following OBD Delivery failure status: - No Attempt - Busy - Not Answered - Switched Off - Number does not exist - Do Not Disturb - Others	IVR shall map all the status returned by telecom to these failure status.	Approved
NMS.KK.OBD.004	Kilkari shall retry the OBD Dialing of weekly messages for which delivery fails. - For single message per week, there shall 1 fresh + 3 retry days. - For two messages per week, there shall 1 fresh + 1 retry day.		Approved
NMS.KK.OBD.005	Kilkari shall allow user to deactivate the pack after the weekly message is played to the beneficiary via OBD. If multiple subscription is present for a particular MSISDN, then it shall result in deactivation to the pack based on the corresponding pack for which OBD was ongoing.		Approved
NMS.KK.OBD.006	Kilkari shall disconnect the OBD call if beneficiary doesn't provide DTMF input to Deactivate the pack for 12 seconds.		Approved
NMS.KK.OBD.007	Kilkari IVR menu tree shall realize the call flow as specified in section "OBD Call Flow" of this document.	The call flow shall be normative part of this document.	Approved
NMS.KK.OBD.008	Kilkari service shall deactivate a user with appropriate deactivation cause if the error "user number does not exist" is received for all delivery attempts during a scheduling period for a message,	There is no point in delivery of a message to a non-existent number. Thus, after re-trying for finite number of times, the service shall be deactivated for that number.	Approved
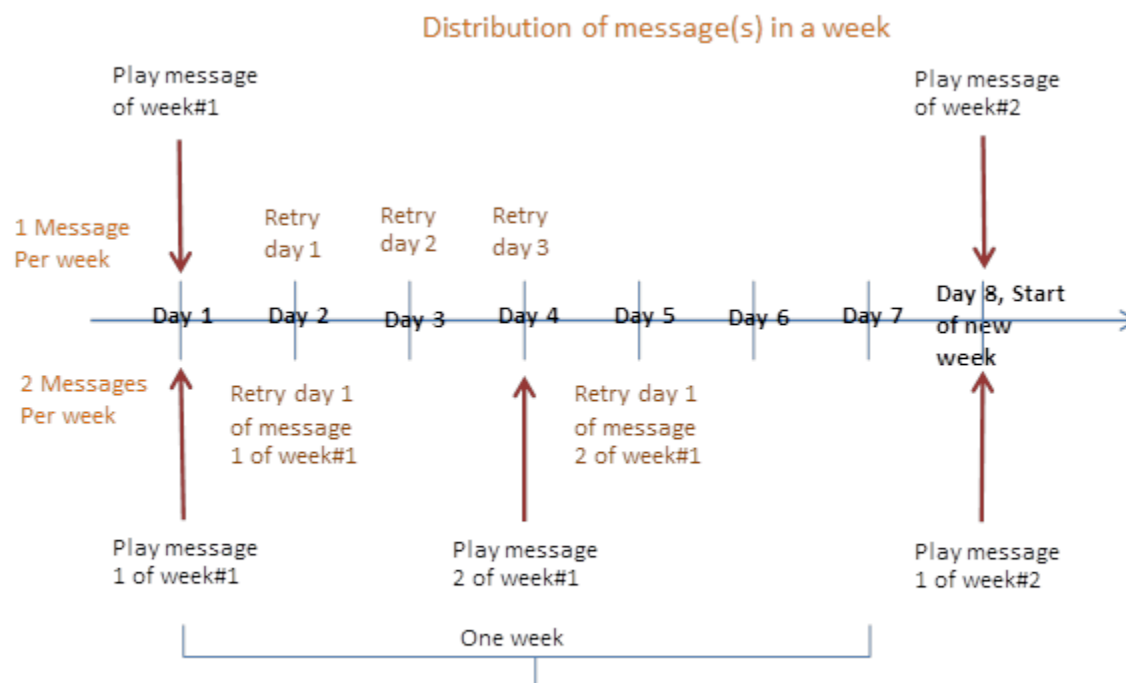
Figure 7: Kilkari OBD Message distribution

6.2.3 IVR Handling for Incoming Call

Requirement Id	Description	Comments	Status
NMS.KK.IVR.001	Kilkari shall play a welcome message on receiving an IVR Incoming call for Subscription of a pack.	Also see comment in NMS.KK.ACCESS.004.	Approved
NMS.KK.IVR.002	Kilkari shall play a different welcome message for the beneficiary who accesses the Inbox and has "Early Subscription" subscribed via MCTS upload which is not activated yet.	Refer NMS.KK.ACCESS.007 for description of "Early Subscription".	Approved
NMS.KK.IVR.003	Kilkari shall ensure that beneficiary must give consent via DTMF twice before activating the subscription.	Typically, a VAS service requires that the user feeds the consent twice and that the second consent is stored in a separate consent gateway (irrespective of whether service is free or paid). However for NMS service, exception from this rule is being sought from TRAI by MoHFW. We are awaiting confirmation from MoHFW in writing.	Approved
NMS.KK.IVR.004	Kilkari shall repeat the request once again to give consent if no DTMF input is provided by	Wait time to give DTMF input	Approved

Requirement Id	Description	Comments	Status
	caller in the first request.	for consent shall be 12 seconds. See Call Flow for "Kilkari Subscription	
NMS.KK.IVR.005	The KK IVR menu tree shall realize the call flow as specified in section "Welcome Message and Kilakri Subscription via IVR" of this document.	The call flow shall be normative part of this document.	Approved
NMS.KK.IVR.006	In case a beneficiary whose subscription has "completed" calls the inbox, Inbox will contain the last message played to user till 7 days after completion. After 7 days the inbox will be deleted and promotional tune shall be played.		Approved

6.2.4 Inbox Handling

Requirement Id	Description	Comments	Status
NMS.KK.INBOX.001	Kilkari shall make available a single message of current week in the inbox corresponding to each pack, as soon it is scheduled for OBD delivery.	Even if a pack is configured to deliver multiple OBD messages per week, only the last scheduled message is saved in the inbox. There shall be no user prompt/welcome message in the inbox.	Approved
NMS.KK.INBOX.002	Kilkari shall allow beneficiaries to call in a single long code (common for all packs) to access the inbox message(s).		Approved
NMS.KK.INBOX.003	Kilkari shall play the inbox messages on receiving incoming call on Inbox long code	Messages corresponding to multiple packs for a MSISDN shall be played one after the other when Inbox is accessed. If one subscription is case of early subscription, then that pack shall have no message in the inbox.	Approved
NMS.KK.INBOX.004	Kilkari shall play Kilkari intro/promotion messages on receiving incoming call on Inbox long code when there is no message available in the inbox.	For whatever reasons if no message is stored in the inbox, then the Kilkari intro/promotion message shall be played.	Approved
NMS.KK.INBOX.005	The KK IVR menu tree shall realize the call flow as specified in section "Inbox Access" of this document.	The call flow shall be normative part of this document.	Approved

6.2.5   Reporting

Requirement Id	Description	Comments	Status
NMS.KK.REP.001	KK service shall support creation and handling of "Kilkari active user report". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.002	KK service shall support creation and handling of "Inbox access report". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.003	KK service shall support creation and handling of "OBD messages delivery report". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.004	KK service shall support creation and handling of "pack completion report". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.005	KK service shall support creation and handling of "Kilkari popular days and time slot report". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.006	KK service shall support creation and handling of "Kilkari deactivation report". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.007	KK service shall support creation and handling of "Kilkari activation request report". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.008	KK service shall support creation and handling of "Kilkari activation status report with age on the service". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.009	KK service shall support creation and handling of "Inbox access for MSISDN". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.010	KK service shall support creation and handling of "Subscription details of MSISDN". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.011	KK service shall support creation and handling of "Weekly messages for MSISDN". The details of the report are specified in Appendix B.		Approved
NMS.KK.REP.012	The NMS system shall at least keep records of Kilkari beneficiary in Motech for the period for which the beneficiary is Active.	refer NMS.GEN.BKUP.001.	DELETED

6.2.6   Content Management and Upload

Requirement Id	Description	Comments	Status
NMS.KK.CONT.001	NMS shall allow upload and modification of content files for KK service.	The content files shall be managed by CMS which is part of IVR and not part of MOTECH.	Approved
NMS.KK.CONT.002	MK service shall support the course content to vary based on the needs of specific states.		Approved

6.2.7   Do Not Disturb (DND) Handling

Requirement Id	Description	Comments	Status
NMS.KK.DND.001	NMS shall not initiate any OBD call to a beneficiary if the beneficiary has the MSISDN registered in the DND database and the activation has happened via CSV upload. The DND restriction does not apply for those beneficiary that have activated via the IVR.	To realize this requirement, NMS system shall maintain a DND database. The exact mechanism to realize the DND database is outside the scope of this document. The DND restrictions apply to OBD call for Kilkari service only. They do not apply to incoming services like MA and MK. For MA, it also does not apply to course-completion SMS.	Approved
NMS.KK.DND.002	NMS shall mark a beneficiary as deactivated with associated reason if the beneficiary has its MSISDN number added to the DND database. This requirement applies to both cases listed below: • The beneficiary is called for first time • The beneficiary has added its MSISDN number to the DND database while the OBD service is ongoing	In case a beneficiary removes its number from DND database, then such a use-case is currently not handled by the software.	Approved
NMS.KK.DND.003	NMS shall allow a subscriber deactivated due to DND restrictions to activate the Kilkari service again via IVR.		Approved

6.3   Non-Functional Requirements

6.3.1   Scalability Requirements

Requirement Id	Description	Comments	Status
NMS.KK.SCALE.001	Kilkari service shall be designed to handle at least 9,718,577 beneficiaries.	Refer NMS.MA.SCALE.001	Approved
NMS.KK.SCALE.002	Kilkari service shall be designed to handle 3.9 million calls per day.		Approved

	If number of service messages per week is doubled, the number of calls per week is also doubled.		
NMS.KK.SCALE.003	The Congestion and Overload for outgoing calls of KK shall be handled by maintaining a configurable parameter to limit number of active KK subscribers. Once this limit is reached, new subscribers activation shall not be allowed (either via CSV upload or via IVR based activation). Rejection of uploaded subscribers due to over-capacity shall be logged.	The "early subscription" shall be considered as part of active subscriber list for purpose of calculation. In some cases, it can reject more users than it could have handled (e.g. due to early subscription).	Approved

6.4 Call Flows

API spec between the IVR and MOTECH applications shall detail the interaction required between them to achieve the below call flows, SMS send and retry logic and hence specify the functionality requirement from each system (IVR and MOTECH) individually.

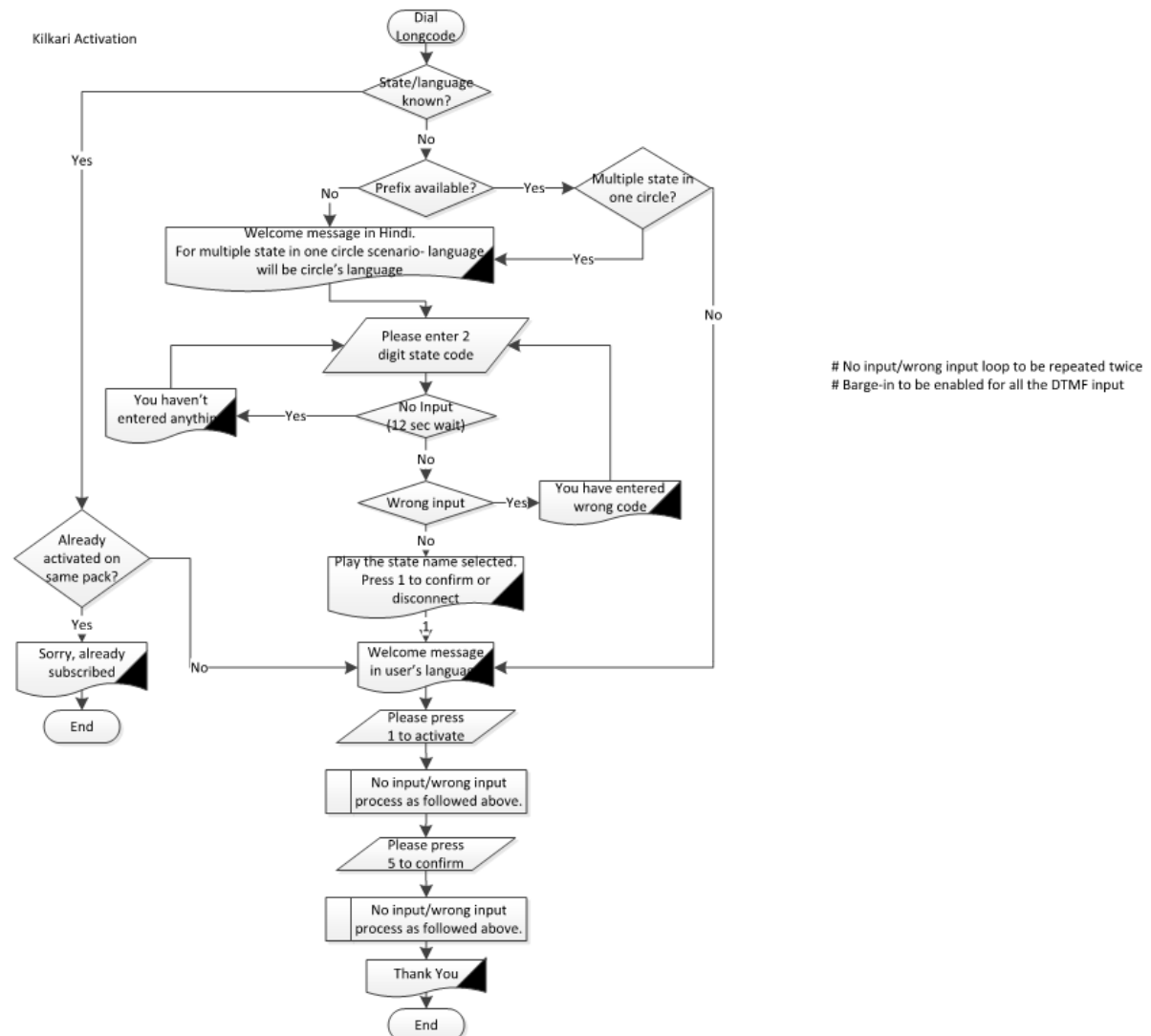## 6.4.1 Welcome Message and Kilakri Subscription via IVR

Figure 8 : Welcome message and Kilkari Subscription via IVR

6.4.2 Inbox Access

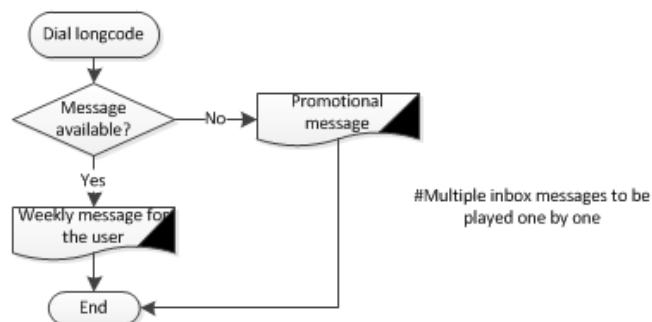**Figure 9: Inbox Access in Kilkari**
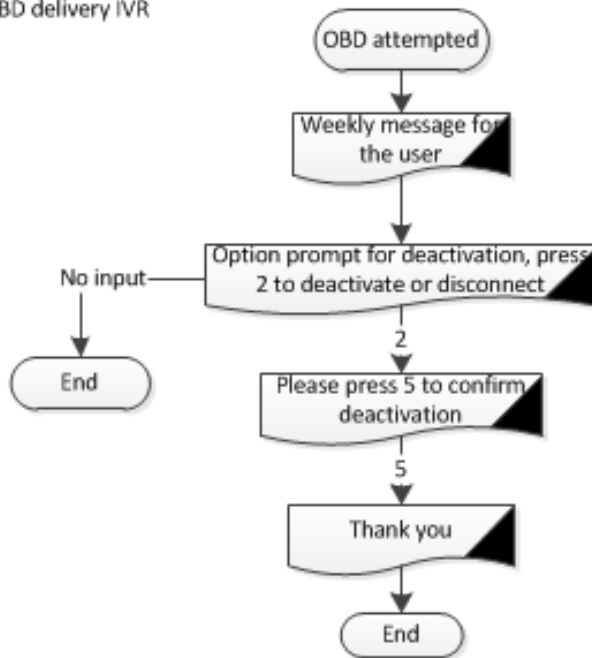
6.4.3 OBD Call Flow

Figure 10: OBD Call in Kilkari

7   Appendix A: Input Parameter Elements and Definitions

7.1   Location Data

7.1.1   District

#	Data Field	Description	Data Format	Max Size	Mandatory /Optional	Validations	Default Value	Remarks
1	DCode		int		M	Not null		
3	Name_G		nvarchar	100	M	Not null		Regional language
4	Name_E		nvarchar	100	M	Not null		English Name
5	StateID		int		M	Not null		

7.1.2   Taluka

#	Data Field	Description	Data Format	Max Size	Mandatory /Optional	Validations	Default Value	Remarks
1	TCode		varchar	50	M	Not null		
2	ID	identity	int		M	Not null		
3	Name_G		nvarchar	100	M	Not null		Regional Name
4	Name_E		nvarchar	100	M	Not null		English
5	DCode		int		M	Not null		

7.1.3   HealthBlock

#	Data Field	Description	Data Format	Max Size	Mandatory /Optional	Validations	Default Value	Remarks
1	BID		int		M	Not null		
2	Name_E		varchar	35	M	Not null		English Name
3	Name_G		nvarchar	50	M	Not null		Regional Language
4	HQ		nvarchar	50	M	Not null		
5	DCode		int		M	Not null		
6	TCode		varchar	6	M	Not null		

7.1.4 HealthFacility

#	Data Field	Desc ripti on	Data Format	Max Size	Mandatory /Optional	Validations	Default Value	Remarks
1	PID		int		M	Not null		
2	Name_E		varchar	50	M	Not null		English Name
3	Name_G		nvarchar	50	M	Not null		Regional language Name
4	DCode		int		M	Not null		
5	TCode		varchar	6	M	Not null		
6	BID		int		M	Not null		
7	Phy_VCode		int		O	NULL		If in Physical village then village code
8	Facility_Type		int		M	Not null		Type of institution(PH C/CHC/etc)
9	Is_Tribal		tinyint		M	Not null		Is a tribal place

7.1.5 HealthSubFacility

#	Data Field	Desc ripti on	Data Format	Max Size	Mandatory /Optional	Validations	Default Value	Remarks
1	SID		int		M	Not null		
2	Name_E		varchar	100	M	Not null		
3	Name_G		nvarchar	100	M	Not null		
4	PID		int		M	Not null		
5	TCode		varchar		M	Not null		
6	DCode		int	6	M	Not null		
10	Is_Tribal		tinyint		M	Not null		Is a tribal place?
11	Is_Notional		tinyint		M	Not null		Is a notional Subcentre?

7.1.6 Village

7.1.6.1 Non-Census Village

#	Data Field	Description	Data Format	Max Size	Mandatory /Optional	Validations	Default Value	Remarks
1	SVID		int		M	Not null		Codes greater than 100000
2	Name_E		varchar	50	M	Not null		
3	Name_G		nvarchar	50	M	Not null		
5	TCode		varchar	7	M	Not null		
6	DCode		int		M	Not null		
7	VCode		int		O	NULL		If associated with any census village then code of that village

7.1.6.2 Census Village

#	Data Field	Description	Data Format	Max Size	Mandatory /Optional	Validations	Default Value	Remarks
1	VCode		int		M	Not null		
2	Name_E		varchar	50	M	Not null		English Name
3	Name_G		nvarchar	50	M	Not null		Regional language name
4	TCode		varchar	7	M	Not null		
5	DCode		int		M	Not null		

7.2 FLW Data

7.2.1 FLW Id

·   FLW ID is a running number generated by MCTS which is unique within a state

·   FLW ID in MCTS can be of 4 or 5 digits

·   Combination of state ID and FLW ID is unique in MCTS across states

7.2.2 FLW Parameters

Refer Design & Architecture Spec.

7.3 MCTS Data

7.3.1 MCTS ID

· During every pregnancy, a mother is assigned a mother ID which is generated by MCTS application (MCTS ID for mother) and this ID remains the same, even after Child Birth. This MCTS ID is a unique 18 digit ID (see format below)

· After the birth of the child, the child is registered with a new MCTS ID, which is the child ID (child registration is mapped to the mother MCTS ID)

· There are records in MCTS for the babies who have a child MCTS ID but no mother MCTS ID as their mothers were not registered during their pregnancy.

· MoHFW is in the process of transitioning MCTS to RCH (however, the MCTS can be used for current purpose). RCH application shall also have a unique ID for mothers but it will be a 12 digit ID; furthermore post the transition to RCH, there shall be mapping between RCH IDs and MCTS IDs

· MCTS Team confirmed that Tamil Nadu, Rajasthan, Gujrat, Tripura, Chhattisgarh and Karnataka have their own formats for IDs in the MCTS, which is not 18 digit and varies from state to state. So a strict format for MCTS may not be assume as of now.

· There shall be a web-service to fetch all new or newly updated records since last fetch from MCTS. However, this interface is outside the scope of this document.

· MCTS team confirmed that the application does not have a unique MSISDN mapping i.e. same MSISDN can be linked with multiple mother records. For the NMS, one MSISDN can map to two records

· Any field update in records shall come as update in entire record

7.3.2 Format
Updated:

Digits (Nos)	Item
01-02 (2)	State Code
03-04 (2)	District Code
05-07 (3)	Block PHC/CHC Code
08-10 (3)	Health Sub-Centre Code

11-11 (1)	Pregnant Woman – Code 1 Child – Code 2
12-13 (2)	Year Code
14-18 (5)	To be given serially to each mother
Total: 18 digits	

Outdated:

Slightly outdated format is available at [6] as per following format. This format is not to be used and captured here for information purposes only.

Digits (Nos)	Item	Description /Remarks
01-02 (2)	State Code	As per Census codes
03-04 (2)	District Code	As per Census codes
05-07 (3)	Block PHC/CHC Code	As per Census codes given to Block HQ
08-09 (2)	Health Sub-Centre Code	To be serially given by Block HQ.
10-10 (1)	Pregnant Woman – Code 1 Child – Code 2	
11-12 (2)	Year Code	
13-16 (4)	To be given serially to each mother / child from 1st December, 2009 starting from 5000	From **1st April** each year, the codes will be given afresh starting from 0001.
Total: 16 digits		

7.3.3 MCTS Parameters
Refer Design & Architecture Spec.

7.4 Configuration Parameters
The following are key configuration parameters used by NMS system:

- **MA:**
    - Capping information (refer NMS.MA.ACCESS.003, NMS.MA.ACCESS.004)
    - Configurable # of days of retry for course SMS delivery
- **MK:**
    - Capping information (refer NMS.MK.ACCESS.003, NMS.MK.ACCESS.004)

- **KK:**
    - # of Messages/week (NMS.KK.OBD.001)
    - Maximum # of active KK subscriptions allowed as per current deployed system including HW

- **Nation**
    - Default location for anonymous users (for MA service)
    - Default language used by a service in whole nation

- **State Specific Parameters:**
    - Language Mapping to group of districts of a state (location-language code)
    - List of cards used in MK service per state
    - State specific content files
    - State-circle-district-Location_language mapping

- **Circle**
    - Default language used by a service for any circle (used especially when there are multiple states per circle)

- **Reports:**
    - FTP information for saving reports on FTP server

- **System:**
    - Log Levels

8 Appendix B: NMS Reporting Types and Parameters

8.1 MA

Name of Report	Fields
MA usage report	This report should be generated as per the date range specified. The fields of this report shall be: • MSISDN • Operator • Circle • FLW Name • FLW ID • Language • State • District • Taluka • Health block • PHC • Sub-facility • Village • Status • Designation • Course Start date • Course End date • Chapters completed • Lessons completed • Quizzes completed • Individual score for each chapter • Overall Score • Course completion flag • Total Minutes used • SMS Sent flag • SMS Reference Number
MA Date wise Report	This report should be generated as per the date range specified. The fields of this report shall be: • MSISDN • Operator • Circle • FLW Name • FLW ID • Status • Designation • Date of call • Call time • Call duration (seconds) • Call duration (pulses) • Language
MA repeat visit report	**This report should be generated as per the date range specified. The report should contain** • MSISDN • Operator • Circle • FLW Name • FLW ID • Language • State • District • Taluka • Health block • PHC

	• Sub-facility • Village • Status • Designation • Total Calls
MA Chapter, lesson, quiz completion report	This report should be generated as per the date range specified. The fields of the report shall be : • MSISDN • Operator • Circle • FLW Name • FLW ID • Language • State • District • Taluka • Health Block • PHC • Sub-facility • Village • Status • Designation • Course Section • Course Status • Repeat Count
MA quiz score report	This report should be generated as per the date range specified. The report should contain MSISDN wise average quiz score. The fields of the report shall be : • MSISDN • Operator • Circle • FLW Name • FLW ID • Language • State • District • Taluka • Health block • PHC • Sub-facility • Village • Status • Designation • Chapter Name • Overall Score • Avg Score • Min Score • Max Score

8.2 MK

Name of Report	Fields
MK Date wise Report	This report should be generated as per date range specified. It should contain: • Operator of the caller • Circle of the caller • MSISDN • Name of FLW • FLW ID • Designation of FLW • Status • Date of call

	• Card number
	• Call time
	• Call duration (seconds)
	• Language
MK Card Usage Report	**This report should be generated as per the date range specified. It should contain minutes of usage on each card for the MSISDNs who have accessed MK in that date range. The fields should be:**
	• MSISDN
	• Operator
	• Circle
	• FLW Name
	• FLW ID
	• State
	• District
	• Taluka
	• Health block
	• PHC
	• Sub-facility
	• Village
	• Status
	• Designation
	• Columns for all the card numbers
	• Language
MK Usage Report	**This report should be generated as per the specified date range. The report should contain total list of MSISDN numbers who have called the service, and associated details if they exist. The fields of the report should be**
	• MSISDN
	• Operator
	• Circle
	• Name
	• FLW ID
	• Designation
	• Status
	• Call count
	• Usage(mins)
	• Average Usage (mins)
	• Language

8.3 MA & MK Common

Name of Report	Fields
IVR Content Report	It should be possible to generate reports over a specified date range with a minimum granularity of a day (24 hours). The maximum date range will be dependent on the capability of the system (please advise). The report should contain: Number of times each audio content file has been accessed for each card (identified by unique content ID and card number - excluding voice prompts) Number of times each audio content file (identified by unique content ID - excluding voice prompts) has been listened to completely for each mobile service (identified by unique content ID and card number - excluding voice prompts) Number of times each audio content file (identified by unique content ID - excluding voice prompts) has been partially listened to: 0%, 25%, 50%, 75% **Fields :-** • Mobile Service (MA/MK) • File Name • <25% • 25-50% • 50-75% • 75-100%

	• 100% • Total Accessed Count **Filters:-** • Date range • State • Mobile Service (MA/MK)
FLW details	This report should be generated as per the date range specified. This report should have all the details of all those unique MSISDNs that have called in the specified date range. The fields of the report should be: • MSISDN • FLW ID • Operator • Circle • FLW Name • State • District • Taluka • Health block • PHC • Sub-facility • Village • Status • Alternate Contact Number • Designation • Old Mobile Number • Preferred language • Sub centre • FLW MCTSID • Creation Date
Individual FLW inquiry	This report should have option to input 10 digit MSISDN of FLW. This report shall provide MK and MA usage details of entered MSISDN. This should have 2 types of details Details of MK as provided in MK datewise report Details of MA as provided in MA usage report. This report also should have call details • Call Id • Start Time • End Time • Duration • Called Number • Type Content Name • Content File Name

8.4 Kilkari

8.4.1 Individual Reports

Name of Report	Fields
Inbox access for MSISDN	This report shall take MSISDN as input. The summary should have fields as: • Message Id • # Of Times Message Played The detailed underlying report shall have fields as: • MSISDN • Call Status • Duration(sec)

	• Operator • Subscription Pack • Language • Percentage Listened To • Campaign (Week no.) • Start date • Start time • End date • End time
Subscription details of MSISDN	This report shall provide subscription details for any MSISDN. The report shall take MSISDN as input. The summary reports should be for Subscription status changes, Subscription pack changes, Subscription schedule changes The reports shall have fields • MSISDN • Subscription ID • Pack • Status
Weekly messages for MSISDN	This report shall have details of all the messages delivered/scheduled to the MSISDN. The input of report shall be MSISDN. **Summary report fields:-** • Subscription ID • Subscription Pack • Subscription Status • Total OBD messages Successfully picked up • Total OBD messages not picked up/delivered after all retry • Total OBD messages not made due to Suspension • Total OBD Calls duration listened to(Sec) • NA count • ND count • SO Count **Detailed report fields:-** • Week Number • NA Count • ND Count • SO Count • Call Delivered Start Time • Percentage Listened

8.4.2 Aggregate Reports

Name of Report	Fields
Kilkari active user report	This report shall provide aggregate view of all the active users in the system. The reports should have option of generating data as per: • Date range • Operator • Channel of activation • State • District • Taluka • Health block • PHC • Sub-facility • Village The report should have summary of Active users count and active users by day. The underlying fields in the detailed report should be: • Date

	• Subscription Id • MSISDN • Subscription Pack • Status • Beneficiary Name • Beneficiary Age • Date of Birth • LMP • Language • Week Number • State • District • Taluka • Health block • PHC • Sub-facility • Village
Kilkari Inbox access report	This report should have details of all those users who have accessed the inbox. The reports should have option of generating data as per: • Date range • Operator • State • District • Taluka • Health block • PHC • Sub-facility • Village The report shall have summary of message pick up and per pack usage. The underlying detailed report of message pick up shall have the fields as: • Week Number • 10% - 25% • 26% - 50% • 51% - 75% • > 75% • Total The detailed report of per pack usage shall have fields as • Subscription Id • MSISDN • Subscription Status • Duration (sec) • Duration In Pulses • Operator • Subscription Pack • Percentage Listened • Language • Week • Start Date • Start Time • End Date • End Time
Kilkari OBD messages delivery report	This report should have details of all the OBDs. The reports should have option of generating data as per: • Date range • Operator • State • District • Taluka • Health block • PHC • Sub-facility

	• Village
	The report shall have
	    • **Summary of % listened OBD:** The summary of % listened shall have fields as:
	        ○ Week Number
	        ○ < 25%
	        ○ 25% - 50%
	        ○ 51% - 75%
	        ○ 76% - 100%
	        ○ >100%
	        ○ Total
	    • **Summary of average weekly message listened:** The summary of avg weekly OBD shall have fields as:
	        ○ Week Number
	        ○ Pack 1
	        ○ Pack 2
	        ○ Campaign Average
	        ○ Actual Duration
	    • **Summary of OBD pickup per pack:** The summary of OBD pick up per pack shall have fields as:
	        ○ Week Number
	        ○ Pack 1
	        ○ Pack 2
	    • **Summary of call delivery status:** The summary of call delivery status shall have fields as:
	        ○ Pack
	        ○ Total Messages Picked Up in First Attempt
	        ○ Total Messages Not Picked Up/Delivered After All Retries
	        ○ Average Number of Retries before Message is Picked up
	        ○ Total Calls
	    • The MSISDN wise underlying detailed report shall have fields as:
	        ○ MSISDN
	        ○ No. Of Messages Delivered Successfully
	        ○ OBD Calls Not Listened To After All Retries
	        ○ No. Of Not Answered
	        ○ No. Of Not Delivered
	        ○ No. Of Switched Off
	        ○ Total Retries
	    • The call wise underlying detailed report shall have fields as:
	        ○ Subscription Id
	        ○ MSISDN
	        ○ Call Status
	        ○ Duration (seconds)
	        ○ Operator
	        ○ Subscription Pack
	        ○ Percentage Listened
	        ○ Week Number
	        ○ Language
	        ○ Start Date
	        ○ Start Time
	        ○ End Date
	        ○ End Time

Kilkari pack completion report	This report should have details of all the completed packs. The reports should have option of generating data as per:
	    • Date range
	    • Operator
	    • State
	    • District
	    • Taluka
	    • Health block
	    • PHC
	    • Sub-facility
	    • Village
	The report shall have fields as:
	    • Subscription Pack

	• < 25 % • 25 % - 50 % • 51 % - 75 % • 76% - 100% • Total
Kilkari popular days and time slot report	This report shall provide the information about the call deliveries in respective hourly time slots. The reports should have option of generating data as per: • Date range • Operator • Pack • State • District • Taluka • Health block • PHC • Sub-facility • Village This report shall have percentage (success/ total attempt) summary as per following fields: • Day • 15 column of hourly time slot (7:00 to 22:00) The underlying detailed report shall have following fields: • Subscription ID • MSISDN • Call Status • Attempt no. in that week • Duration(In Secs) • Operator • Language • Subscription Pack • Percentage Listened • Campaign ID • Start Date • Start Time • End Date • End Time
Kilkari deactivation report	This report shall have all the deactivations happened the given date range. The reports should have option of generating data as per: • Date range • Operator • Pack • State • District • Taluka • Health block • PHC • Sub-facility • Village The summary report shall have fields as: • Subscription Packs • Total Deactivations • User Unsubscription The detailed underlying report shall have fields as: • Subscription Id • MSISDN • Subscription Status • As Of Date • Subscription Pack • Operator • Beneficiary Name

	• Beneficiary Age • State • District • Taluka • Health block • PHC • Sub-facility • Village • Deactivation mode
Kilkari activation request report	This report shall provide the information about the activation requests in the given date range. The reports should have option of generating data as per: • Date range • Operator • State • District • Taluka • Health block • PHC • Sub-facility • Village The summary should have fields as: • Subscription Packs • New Activation Requests • Total Activations The detailed underlying report shall have fields as: • Subscription ID • MSISDN • Subscription Pack • Channel • Operator • Activated date • Beneficiary Name • Beneficiary Age • State • District • Taluka • Health block • PHC • Sub-facility • Village • Date of Birth • LMP • Language • Week Number
Kilkari activation status report with age on the service	This report shall provide aggregate view of the activation/subscription status of all the beneficiaries. The reports should have option of generating data as per: • Date range • Operator • Pack • State • District • Taluka • Health block • PHC • Sub-facility • Village • Channel • Subscription status The detailed report shall have fields as:

	- Subscription Id - MSISDN - Subscription Pack - Channel - Operator - Subscription Status - Requested Date - Activation Date - Completion /Unsubscription Date - Age On Network(days) - Beneficiary Name - Beneficiary Age - State - District - Taluka - Health block - PHC - Sub-facility - Village - DOB - LMP - Language - Week Number - Total OBD to be delivered - Total OBD picked up - Total OBD not picked up - Total Attempts done - Avg Percentage Listened (Duration of picked up calls only)

9   Appendix C: Mapping of Functional Requirements to Sub-systems

<Mapping of Requirements to various components including Platform, Implementation Module and IVR>

Req Id	Motech P/F	Motech Imp	IVR	Remarks
	N	Y	N	<how it is realized>

10 Appendix D: States, Union Territory and Circles in India

The information in this appendix is for reference. Exact names of various parameters are not specified in this section and may vary in actual implementation.

10.1 States and Union Territory of India

(Source: http://en.wikipedia.org/wiki/States_and_union_territories_of_India)

10.1.1 List of States

#	Name	Official language(s)
1	Andhra Pradesh	Telugu
2	Arunachal Pradesh	English
3	Assam	Assamese; Regional: Bodo, Bengali
4	Bihar	Hindi, Bhojpuri, Magadhi, Maithili, Urdu
5	Chhattisgarh	Chattisgarhi, Hindi
6	Goa	Konkani
7	Gujarat	Gujarati
8	Haryana	Hindi, Haryanvi (regional), Punjabi
9	Himachal Pradesh	Hindi, Pahari (regional)
10	Jammu and Kashmir	Dogri, Kashmiri, Ladakhi, Urdu[5]
11	Jharkhand	Hindi
12	Karnataka	Kannada
13	Kerala	Malayalam
14	Madhya Pradesh	Hindi
15	Maharashtra	Marathi

#	Name	Official language(s)
16	Manipur	Manipuri
17	Meghalaya	English, Garo, Hindi, Khasi, Pnar,
18	Mizoram	Mizo
19	Nagaland	English
20	Odisha	Odia
21	Punjab	Punjabi
22	Rajasthan	Hindi, Rajasthani
23	Sikkim	Nepali, Bhutia, Gurung, Lepcha, Limbu, Manggar, Newari, Sherpa, Sunwar, Tamang
24	Tamil Nadu	Tamil
25	Telangana	Telugu, Urdu
26	Tripura	Bengali, Tripuri
27	Uttar Pradesh	Hindi, Urdu
28	Uttarakhand	Hindi, Sanskrit
29	West Bengal	Bengali, English, Nepali[9]

10.1.2 List of Union Territory

#	Name	Official language(s)	Mapped State
1	A&N Islands	English, Hindi	West Bengal
2	Chandigarh	English, Hindi, Punjabi	Punjab
3	Dadra & Nagar Haveli	English, Gujarati, Hindi, Marathi	Gujarat

#	Name	Official language(s)	Mapped State
4	Daman & Diu	English, Gujarati, Hindi, Marathi	Gujarat
5	Lakshadweep	English, Malayalam	Kerala
6	National Capital Territory of India	English, Hindi, Punjabi, Urdu	Delhi (NCT)
7	Puducherry	French & Tamil	Tamil Nadu

10.2 Circle Information

22 telecom circles below span all states and UT of India. (Source: www.trai.gov.in)

Telecom circle	State/UT
Andhra Pradesh	· Andhra Pradesh · Telangana
Assam	· Assam
Bihar & Jharkhand	· Bihar · Jharkhand
Delhi	· Delhi (NCT) (includes Local Areas served by Delhi, Ghaziabad, Faridabad, Noida, and Gurgaon Telephone Exchanges)
Gujarat & Daman & Diu	· Gujarat (state) · Daman & Diu (UT) · Dadra & Nagar Haveli (UT)
Haryana	· Haryana
Himachal Pradesh	· Himachal Pradesh
Jammu and Kashmir	· Jammu and Kashmir
Karnataka	· Karnataka
Kerala & Lakshadweep	· Kerala · Lakshadweep (UT)

Telecom circle	State/UT
Kolkata	· Kolkata
Madhya Pradesh & Chhattisgarh	· Madhya Pradesh · Chhattisgarh
Maharashtra & Goa (excluding Mumbai)	· Maharashtra (excluding Mumbai) · Goa
Mumbai	· Mumbai
North East	· Arunachal Pradesh, · Manipur, · Meghalaya, · Mizoram, · Nagaland, · Tripura
Orissa	· Orissa
Punjab	· Punjab · Chandigarh (UT)
Rajasthan	· Rajasthan
Tamil Nadu	· Tamil Nadu · Puducherry (UT)
Uttar Pradesh(East)	· Uttar Pradesh(East)
Uttar Pradesh(West) & Uttarakhand	· Uttar Pradesh(West) · Uttarakhand
West Bengal(excluding Kolkata)	· West Bengal(excluding Kolkata) · Sikkim (state) · Andaman & Nicobar Islands (UT)