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Agri VAS Functional Requirements & Best Practice: SMS & IVR

The purpose of this document is to outline the different types of services that can be delivered by an Agri VAS provider using SMS and IVR channels. This will aid Agri VAS providers in identifying the types of services to include and how to plan for different scenarios that arise. The document also contains best practices for both SMS and IVR services.

1. Types of SMS services:

A. On-demand SMS services (Pull services)
- Information is pulled when there is a need. Subscribers send a specific keyword to a short code to pull specific information.
- Special consideration needs to be given to designing the SMS keywords.
- Special logic needs to be developed to handle the incoming SMS
- Special logic needs to be developed to handle the incoming SMS with an invalid keyword

B. Subscription SMS services (Push services)
- A request for information through SMS is made only once and periodically (hourly, daily, weekly etc.) An SMS is delivered to the subscribers automatically until there is a request to stop
- Subscribers send a specific keyword to a specific short code to pull specific information – often the SMS keyword is in a different format to a pull SMS
- Special consideration needs to be given to designing the SMS keywords.
- Special logic needs to be developed to handle the incoming SMS
- Special logic needs to be developed to handle the incoming SMS with invalid keyword
- To reduce risks of human error and customer dissatisfaction:
  i. SMS pushed to the subscribers need to be carefully monitored
  ii. Tariff and charging modality needs to be carefully designed
  iii. Timing of the SMS push to the subscribers need to be carefully decided
  iv. SMS queuing (for big subscriber base) needs to be considered and handled carefully

C. Voting or Opinion polling
The following areas need consideration if voting or opinion polling is an element of the Agri VAS:
- SMS queuing
- Error SMS keyword handling
- Live voting result announcement
- Voting quota per Mobile Number (if any)
- Voting window (time/duration) controlling

D. Quiz and contest services
The following areas need consideration if quiz and contest services are part of the Agri VAS:
- Quiz logic implementation (select a methodology):
  i. Random questions
  ii. Unlimited questions
  iii. Number of correct answers
  iv. Quickest answers
- How the winner will be selected
- How the participants are going to get their score and position
- Quiz window (time/duration)
- Real time reporting
- Error handling

2. SMS reporting requirements

Aside from regular reporting, this is a list of standard considerations for service reporting for any SMS services:

- Number of successful service activation against number of the SMS received
- Log of error keywords (for further analysis)
- Number of successful service deactivation request against number of successful service activation
- Delivery report of the successful SMS sent (message termination/push SMS) against number of push SMS sent
- Service list according to MSISDN
- MSISDN according to service lists
- Scheduled reporting (i.e. schedules report through email distribution)

A. Customer retention management based on the SMS reporting
- Adaptation of error keywords
- Promotional offer to deactivated users
- Run different kinds of promotional campaign for existing users

B. Cross bundling
- Promote keywords of other SMS services within the user group of similar interest
- Analyze SMS reporting to identify users for other related VAS and promote

C. Customer care panel
- View, activate, deactivate users by entering MSISDN
- View, activate, deactivate users by entering service ID or keywords
- View, activate, deactivate users by date ranges

3. Types of IVR Services & Best Practices

A. **Dial in and listen**
   Overview
   - Example: an IVR weather service "Dial 2221 for weather updates"
   - Subscriber dials a number when there is a need or after seeing promotional activities
   - Usually subscribers are offered an IVR menu to interact through DTMF (Dual Tone Multi Frequency) or through voice recognition

   Best practice
   Subscribers should browse as few sub-menu/ sub-levels as possible. At each stage of an IVR menu, users tend to drop off. For example, if the main menu is accessed by 100 users, there is a trend that around 33 users will not access to the second level, 66 users will not access the third level and almost no users will get as far as a fourth level.

B. **Dial in, listen and record**
   Overview
   - Example: customer sends feedback through a voice message
   - Subscriber dials a number when there is a need or after seeing promotional activities
   - Usually subscribers are offered some options to interact through DTMF (Dual Tone Multi Frequency) and given some option to record their voice for a predefined time period.
   - Some basic options are usually given (i.e. listen to their own recording, recording a message, listen to their previous recording etc.)

Best practice
Subscribers should be able to record their voice immediately after they access the short code. If this option is at the bottom of the IVR menu, users are unlikely to find it and will miss out on the opportunity.

C. **Dial in, listen, record and order**
   Overview
   − Example: Listen to a voice and order content through SMS or WAP push
   − Subscriber dials a number when there is a need or after seeing promotional activities
   − After recording their voice a user may be offered to download some other content from a WAP site.
   − Alternatively, rather than asking the user to visit the mobile browser, the particular content can be delivered directly to them via SMS push. This kind of SMS is not a simple SMS with a URL- it is a special kind of SMS where the link is hidden and the user can click the download link to download the content.

   Best practice
   Users should be given clear instructions on how to download the content. In addition, users will need an internet connection to download the content so the cost for data should also be considered.

D. **Dial in and provide user information for registration**
   Overview
   − Data mining or pre-registration for any service
   − Subscribers dial an IVR short code and are prompted with a menu with DTMF instruction to provide some information from multiple choice answers.
   − After the user provides an answer to the first question the second question will immediately follow.
   − User information is tracked along with the mobile number.
   − This can be used to determine age, sex, location and other variables.

   Best practice
   Users should not be given both choices for multiple questions. For example, 'please select your gender. If you are male press 1 and if you are female press 2' can be replaced with 'If you are female please press 2'. Therefore, if the users don't press anything within 3-5 seconds then the system will automatically proceed with the male option and the whole IVR menu can be kept short and simple. This also means less DTMF requirement and will increase the % of access to the content and holding time.

E. **IVR Quiz Competition**
   Overview
   − Example: an agriculture knowledge quiz
   − Subscribers dial an IVR short code and are prompted with a menu with DTMF based questions to provide an answer from multiple choices.
   − After the user provides an answer to the first question the second question will immediately follow, then the third question and so on until the question bank is over.
   − The user record is tracked along with the mobile number.

   Best practice
   Users should not be given questions that are overly difficult. The questions should appear in a random order and the answers should also be in a random order. There should not be more than 3 questions, and 2 is preferable. Open ended answers should never be given. In

ideal cases, the quiz module should be time/duration independent (subscribers should be able to restart the game whenever they want). Answers should be repeated if no action is taken after the user listens to the questions (assuming that the subscriber didn't hear/understand the question). The winner should be chosen according to the maximum number of correct answers (not randomly). If there is a tie between two candidates, the player who has given the most correct answers in the quickest time should be announced as the winner.

F. IVR Voting and Public Opinion Polling

Overview
- Example: using an IVR vote to discover what are the most burning issues in agricultural sector
- Subscribers dial an IVR short code and are prompted with a menu with DTMF based choices to vote from multiple choices.
- Users provide their answers or votes. Immediately after answers are provided, the IVR should be disconnected automatically and users hear a thank you note.
- Usually for voting/opinion polling IVR services, huge numbers of calls come in within a very short amount of time. So to ensure the best usage of the IVR capacity, the IVR should be disconnected to allow other users in.

Best practice
Users should not be allowed to vote for multiple options. As soon as the users make their choice, the line should be disconnected. The method of having 1 vote from 1 MSISDN works well otherwise the result of the vote can be skewed by multiple votes from the same users. After the vote/choice is made, access to the system cannot be controlled. If the same user tries to vote for a second time it would not be possible to provide a customised message (such as "you have voted already and cannot vote again") due to the huge surge to the system at the same time. It is always better to communicate this message clearly at the start (for example "Each mobile user is allowed to vote only once. If you vote a second time your vote will not be counted etc.")

G. Dial in, Voice Search for Content or Services

Overview
- Subscribers dial an IVR short code and are prompted to say the word or sentence they are looking for.
- When the user speaks, the system detects the closest possible option and plays the content (i.e. do you mean 'XYZ')
- If the system detects the correct option, the user is asked to confirm by saying "yes".
- If the system detects the wrong option, the system asks the user to repeat the word or sentence they are looking for, perhaps with further instructions ("say it clearly, slowly, loudly or from a quiet place".

Best practice
Users shouldn't be given a voice search option as in most cases they do not work very efficiently, especially services developed for rural audiences. This is due to the differences in dialect, pronunciation and tone of voices. Furthermore, there is no option that can make the voice search navigation option easier than a DTMF.

H. Dial in and listen to voice streaming

Overview
- Example: IVR news streaming, mobile radio
- Subscribers dial an IVR short code and are provided with some options (in most cases) to live streaming (as live, usually with a delay of 5-10 seconds then the real broadcast).
- Subscribers can interact with the streaming through DTMF

- Usually live streaming is being used to stream any live TV or radio program through a mobile phone.

Best practice

IVR streaming should only be used in cases where timeliness of the content is extremely important. Otherwise IVR streaming should be avoided because it requires very high capacity utilization and in a very demanding situation many users would not be able to connect to the IVR because of busy channels. The cost to the subscribers will be very high if a subscription model if not offered. It is important to factor in that connection (IVR call to the system) will be terminated from the mobile network according to the rules set by the mobile network (usually this is 59.59 minutes).

I. **Content Dedication with Voice Message/ Content Gifting**

Overview

- Examples: dedicating agricultural content to other users, sending recorded feedback, sending recorded queries etc
- Subscribers dial an IVR short code and are provided with some options (in most cases) to record a message along with some instructions about how to send the recorded content to another user (ie. by providing the recipient's mobile number).
- Usually the recording duration is customizable.
- There are other ways to do this. For example by putting a prefix at the beginning of a MSISDN, the IVR menu can be accessed by dialing that MSISDN with the prefix. (i.e. if user A wants to send some recorded message to user B or to a system, then user A simply dials * at the beginning of the MSISDN and instead of being connected to the user B, it connects to the IVR system where the user can record their voice and it will go to the user B as a text notification).
- Subscribers can interact with the recording option: listen to their own recording, re-record, delete recorded message etc.
- The recorded voice can be stored in a single place and can be accessed by other users with or without categorizations. This is also known as IVR Inbox/voice depositing/voice blogging (eg. leaving a voice message to a listener community).

Best practice

IVR recording/voice message can be used for UGC (user generated content). The biggest challenge is the moderation of the content. Without moderation, there is a chance that content is irrelevant or poor quality. Another big challenge is the categorization of the content and logic for categorization – it needs quite good amount of research to identify the appropriate and right content categorization for the subscribers.

J. **Personal Content Album**

Overview

- Example: creating list or favourite menu of most accessed content
- Subscribers dial a number, access an IVR menu, interact with the menu and can bookmark their favorite content and create a favourite content list. Users can access their favourite list anytime and it can be updated. Users should also be able to dial in to the original menu at any point.

K. **Progressive Learning, Personalization, User Profiling**

Overview

- Example: users complete a course about farming maize through their mobile phone
- Subscribers dial a number, access an IVR menu and interact with a menu. The system remembers the content last accessed by the user and the user can progress until they reach particular content/destination.
- Users should be able to go back to previous content but they should be able to move to the next content until they have listened to the end of the current content.

L. **OBD (Out Bound Dialling)**
    Overview
    − Dialling out to subscribers at a predefined time to deliver a voice message or
      recorded voice, or pulling information through DTMF interactivity by users, pulling a
      recording for research.

    Best practice
    OBD is mostly used for promotional purposes or for conducting free sampling. OBD requires
    a huge amount of technical resources if used to deliver content. It is not recommended to
    use the OBD platform to deliver content in cases when the timing of content delivery is very
    important as OBD does not provide value for money.

M. **Call patching**
    Overview
    − Example: subscriber A dials a number, accesses an IVR menu, interacts with the
      menu and finds an option that interests him/her. The subscriber then sends a DTMF
      instruction to register to receive calls from interested people. When subscriber B
      calls the IVR he/she finds a list of interested profiles to choose from and sends a
      DTMF instruction to patch the call to subscriber A. In this scenario the mobile
      number is hidden and when two persons connect to each other, they talk via a
      normal voice call. An example of this feature in use, is where one farmer can be
      connected to another with similar interests.

4. Common Best Practices for IVR

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i. **Multimodal Access to Sub-Level Short Code**
    A long IVR tree containing many necessary options is often difficult for users to remember.
    Multimodal access to sub-level short code is a good way around this situation. Users can be
    directed to the main short code or alternatively, a sub-level of the short code can be directly
    promoted to give the users access to their desired option in the IVR tree. For example, if the
    short code for an agriculture information service is 1111 and the weather service is on level
    8, the promotional message for users can be 'Dial 11118 to access the weather service'
    instead of 'Dial 1111 and press 8 for weather'. This makes the user's life easier and at the
    same time makes the promotional activity very specific.

ii. **Menu Structure**
    A long and complicated IVR drives user traffic away from the system and decreases users'
    loyalty. If results from marketing campaigns show that many users try the service but only a
    few are successful in accessing content, then immediate action should be taken to re-design
    the structure of the IVR. Typically IVR users are not be able to remember more than three
    levels of content options at one time. By the time users hear a fourth option they may easily
    have forgotten the first three and will have to repeat the whole menu again. This could mean
    users lose interest and leave the service. Different options can be tested to identify which
    one works better for a particular audience. For example, having the number at the beginning
    of the prompt or at the end of the prompt may have different results (i.e. press 1 if you want
    to listen to weather update or for weather updates press 1).

iii. **DTMF structure**:
    It is suggested that the DTMF structure should be consistent across the IVR menu.

iv. **Clear Instructions**
    When it comes to rural VAS users it is suggested that IVR instructions are very clear and
    each instruction can be repeated to increase chances that the user will follow correctly. (E.g.
    repeat the main menu and repeat the prompt to select the sub-level etc.)

5. Agri VAS Description Template

The following format can be used to provide an overview of a new service:

Background of the Service	Provide a brief background of the service that your company is going to offer.
Introduction	Begin your service specification by providing a general description of the services your company is offering.
Services offered	Provide a detailed description of the services your company is offering and identify who is responsible for these services.
Example text Ownership	Provide a statement that details what your company owns and what the customer owns after the service is delivered.
Disclaimer	Add a disclaimer.

Glossary

- Agricultural input dealer – organization producing and/or distributing agricultural inputs (fertilizers, seeds, pesticides, agricultural equipment, etc.)
- Agribusiness – denotes the collective business activities that are performed from farm to fork. It covers the supply of agricultural inputs, the production and transformation of agricultural products and their distribution to final consumers.
- Agricultural Content Dashboard – free agricultural and health content database in development by ACE Icon Group and Professor Phil Parker under a grant from the Bill and Melinda Gates Foundation.
- Agricultural Crop Cycle –the annual cycle of activities related to the growth and harvest of a crop. These activities include loosening the soil, seeding, special watering, moving plants when they grow bigger, and harvesting, among others.
- Agri VAS – Agricultural Value Added Service available on a mobile network. Agri VAS form part of the Rural VAS portfolio for mobile network operators and VAS providers.
- Agricultural Extension Organization – organization responsible for developing and delivering extension services
- Agricultural Extension– the dissemination of expert agricultural knowledge and practice
- Agricultural Extension Worker – professionals in the extension system responsible for developing and delivering extension services
- ARPU – Average Revenue Per User
- ATP – Ability to Pay
- B2B – Business to Business
- B2C – Business to Consumer
- BMGF - Bill and Melinda Gates Foundation
- CapEx – Capital Expenditure
- CMS – Content Management System
- CRM – Customer Relationship Management

- GSMA – GSM Association. The GSMA represents the interests of mobile operators worldwide. Spanning 219 countries, the GSMA unites nearly 800 of the world's mobile operators, as well as more than 200 companies in the broader mobile ecosystem, including handset makers, software companies, equipment providers, Internet companies, and media and entertainment organisations. The GSMA also produces industry-leading events such as the Mobile World Congress and Mobile Asia Congress.
- LDC – less developed country
- mAgri – short for 'mobile agriculture'
- Mobile Agriculture – emerging area of mobile solutions for the agricultural sector
- MEL- Monitoring Evaluation and Learning
- mFarmer Initiative – GSMA Development Fund initiative to stimulate the development of high-scale, high-impact Agri VAS
- MFI – Microfinance Institution
- MNO – Mobile Network Operator
- NGO – Non-governmental organization
- OpEx – Operating Expenditure
- Pull service – mobile services 'pulled' by the subscriber, specifically queried and requested
- Push service – automated mobile services 'pushed' or broadcasted after an initial subscription by the user
- QA – quality assurance
- Rural VAS – VAS specifically targeting rural subscribers
- VAS – Value Added Service, a non-core service of a mobile operator. The term can be used to refer to all services beyond standard voice-calls. VAS are supplied either in-house by the MNO themselves, or by a third party VAS provider.
- VAS provider – value added service provider, or a content provider
- WTP – Willingness to pay