

Seed Market Service

by Group nr. 12

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Changelog: Based on assignment 1, we added some more options for the users(sellers and buyers) to make the order more detailed. Now sellers can not only choose the type of seeds they want to sell and the price they give to them but also the amount(how many bags) of each seed they sell, for how many days they want to keep this advertisement, and sellers' name and location. The system will have a confirm procedure after every verbal message from users to make sure the record is correct, for instance, after the user set his/her name, the system will ask: To confirm your name press 1, or press 2 to retry. Also, we set a time limitation to record the verbal message so it will not keep recording wrong messages. If the system does not record any message, then it will ask the user to say the verbal message again. We also changed the interaction and communication diagram.

0. Name

Seed Market Service

1. Summary of key idea

This service will give farmers the possibility to advertise the seeds they want to sell. Moreover, customers or advertisers (like radio) will be able to access this service as well. They will be provided with a list of farmers' advertisements dependent on their choices (e.g. customer wants to buy seeds of this specific type, region, etc.). This way farmers will be able to sell a lot more of their productions and there will be natural competition in the market.

2. Actors and goals

Stakeholder	Operational goal	Responsibility in the envisaged system
Farmers buying seeds(buyers)	Check the type, price of seeds sellers have for sale	Use the system to get the information of seeds to buy
Advertisers	Check the type, price of seeds to download and broadcast online	Use the system to get information about seeds to advertise
System developer	Provide a working system	Develop and Maintain the system
Farmers selling seeds(sellers)	Provide accurate seed types and prices	Information sources/provider

Table 1: Stakeholder table

3. Context and scope (max 400 words)

Farmers and buyers/advertisers are the external stakeholders in this use case. Farmers pay attention to the seed types they have and the price they can provide, also the price of the same seed that other farmers give. Buyers/advertisers concern about the lowest price of the seed type they want. The scope of the scenario is that farmers will only provide the seed types and price, and buyers/advertisers will search for the seed they want and get all the advertisements of this seed. We do not consider that farmers will also be the advertiser to search for more information about the market price of the same seed. If farmers can set prices for each type of seed and store in the database, and when buyers/advertisers call for one type of seed they can get all the available information, then we think the system is successful. For infrastructure, we must have a laptop and

mobiles, also the system developer and maintainer. Also numbers of users(farmers, buyers, advertisers) and accurate information.

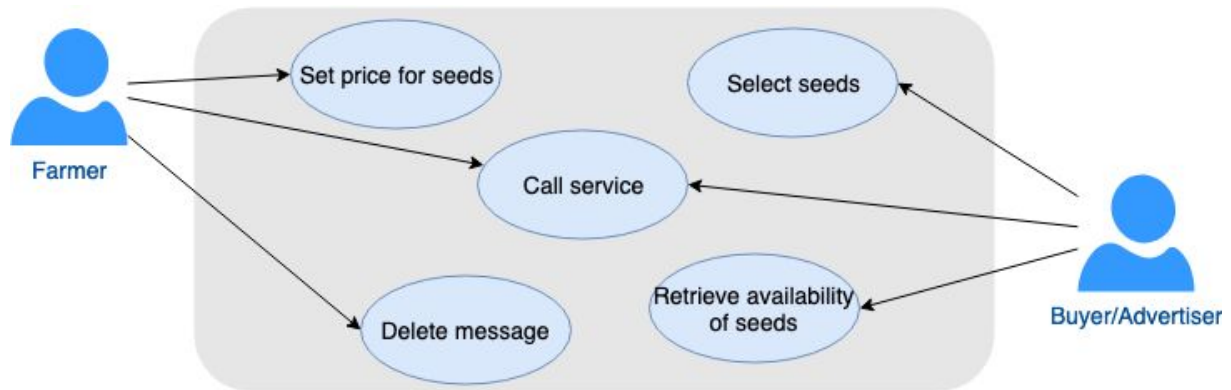


Figure 1. Interaction diagram

4. Use case scenario script (make a conceptual model or storyboard)

1. The end user - a farmer calls the number of services
2. The system receives a call and offers a selection of language
3. The end user chooses a language
4. The system offers a selection of roles to choose from
5. The end user chooses a role
6. The system offers a selection of seed types
7. The end user chooses a seed type
8. The system requests the end user for prices of seeds to set only when the role is a seller
9. The system offers a voice message of seed and price to the end user

5. Interaction and communication (max. 100 words)

In Appendix 1.

6. Information concepts (as UML diagram)

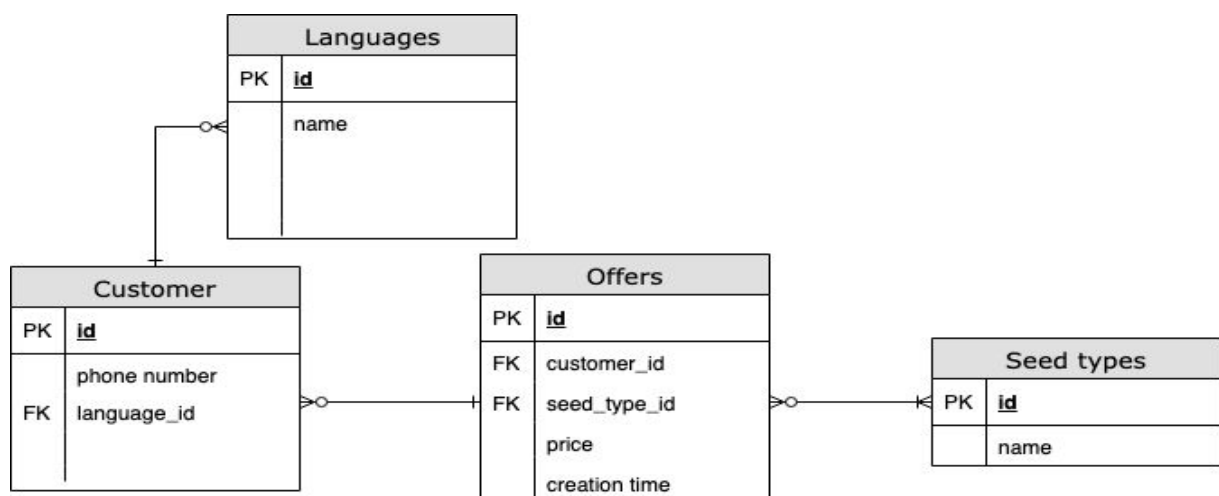


Figure 3. Database diagram

7. Technology infrastructure (as UML diagram)

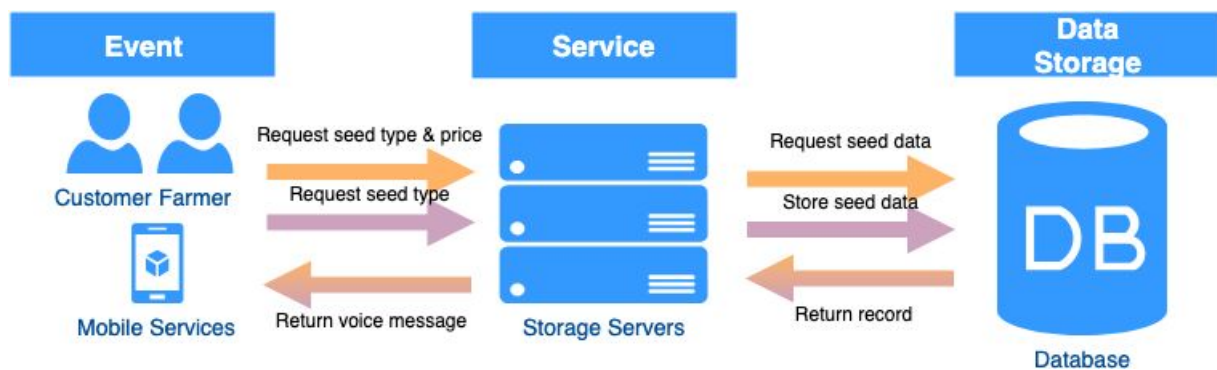


Figure 4. Infrastructure diagram

In this scenario both Web Service (developed later) and voice service will be hosted on KasaDaka. We have to ensure, that the radio stations have chance to connect to the KasaDaka Raspberry PI (RPI). But in some places this will not be the case and instead the radio broadcaster will be able to play lower quality recording using mobile phone by calling the service.

8. Cost considerations (as a table)

Cost type	Cost	Cost carrier
Operational cost	Mobile services fee and calling fee	Farmers
Investment cost	Advertisement	Farmers and software owner
Development cost	To develop and maintain the system	Software owner and developers
	To add local language component	Software owner
In/outsource cost	To record and broadcast offers	Farmers

Table 2. Cost table

9. Feasibility and sustainability (max. 150 words)

From the perspective of technical and financial, this system can be developed anywhere with Internet access, so it's not a problem to maintain the system in Mali, also the expense for development will spend some budget, but won't spend too much for maintaining it.

With this system, end-users will save a lot of time collecting information and save human effort. That will be the motivations for farmers to use it.

But still the problem we focus most on is the quality of the sound, also we are not sure if the quality for French, Bomu, and Bambara are the same. It will be a lot easier for the text interface.

10. Key requirements (as a table)

So-called MoSCoW list of requirements (Must have, Should have, Could have, Won't have) as a starting point for further architecture design, and system and component development.

MoSCow List	
Must have	Mobile services with local telephone number
	A database to store all the data and information
	A component to ask users to select from choices
	A component to transfer information to voice
	Software developers to create and maintain the system
Should have	Advertisement to make the system known
	Local number to call to have less calling fee
Could have	Local Malian language to announce information
	Language components to switch(English, French, etc)
	Laptop with Internet to download and store data
	Radio stations to announce and broadcast offers
Won't have	Components to report their extra information

Table 3. MoSCow table

11. Prototype description:

Based on the use case of Seeds system in rural Mali from the AOPP, we designed the system named Seed Market Service. The system will cover the main function of the use case that users can select the role as a seller or a buyer/advertiser to execute further steps, and also select the language. As a seller, we consider that users can select the types of seed that users want and sign their price which will store in the database. As a buyer, we will provide all the advertisements about the seed users want after they choose the type of seed. After all the selection, customers will require a voice message as confirmation or advertisement which depends on their role. Now we partially implemented the voice service and did not yet implement the web service.

12. Pointer to the VXML code

<http://unsalted-sound.000webhostapp.com/ict4d.xml>

13. Pointer to how to access the application

Seed service was created using KasaDaka VSDK, Django, KasaDaka Raspberry PI and hosted on Heroku and FTP server.

The service is hosted on heroku right now and can be tested using KasaDaka-ready Raspberry PI. The URL to access the start of the service is: <http://shrouded-river-30847.herokuapp.com/vxml/start/2>.

Usage recording of the application: <https://youtu.be/iUf9sijhP9Is>.

We plan to extend the VSDK with multiple number input in the later phases as well as adding modes to the application as described in section Information Concepts. This way it will be easier to work with the data entered by users.

14. Short Usage scenario

For now, the application is working with the dummy data (when listing offers). Otherwise, all options in the service are functioning well. To see the short usage please watch the video above.

15. Feedback questions

Customers

- Are farmers able to call the number if they heard it in the call?
- If no are they able to call the number they got in SMS?

System developer

- Is the price for sent SMS by system relevant part of the system costs?

Is it good to have natural competition in this market?

Can there be some real life problems caused by this?

Appendix 1: Activity diagram

