

TZ Dairy Information System Development Briefing

Considering the scope and broad potential impact of a National Dairy Information System, it was determined that the system be planned, developed, implemented and analysed in a systematic and holistic way. Thus, the initial scope of work was expanded and structured into three initial phases.

Phase one began on 04/02/2017, when the first meeting with the F2F volunteer and the TDB Secretariat occurred, and is expected to complete on 31/03/2017. (see Appendix A for a timeline of the development process, activities and milestones).

Brief Summary of Activities and Outcomes from Phase I

Planning occurred with the TDB Secretariat to discuss their overall goals. It was learned that due to the vast array of information that TDB was seeking to manage and disseminate to its' stakeholders, combined with the fact that no prior centralized information management system existed, an extensive amount of time would be required to gain a comprehensive understanding of each TDB Secretariat members roles, interactions and individual information needs.

The ICT team gathered requirements for an electronic registration system to improve stakeholder management and an admin dashboard for TDB Secretariat to manage market information, performance data and other statistics on the dairy industry to support decision making. The requirements were analyzed and interpreted into mockup designs for the user interface, which were presented back to TDB to help them envision the end-user journey, provide feedback and generate new ideas. The iterations resulted in creative design ideas and the potential to produce a transformative tool.

From the concepts, the ICT team identified the appropriate technologies for which the system would depend. Thinking holistically, it was important to choose a stack of technologies that were not only free and open-source, but also fast, powerful, scalable and flexible (see Appendix A for discussion on technology). The ICT team then researched affordable, reliable hosting solutions and began configuring an API-centric environment for development.

Phase one will continue through the end of March, with the Farmer-to-Farmer (F2F) volunteer working remotely from the US to complete development of the front-end (user interface). The local ICT guys will continue supporting the back-end coding and database and perform the migration to the permanent hosting solution. Once development is complete, TDB staff will be given a tutorial and documentation on how to access and use the system.

Phase II

The second phase will take steps towards improving communication and information sharing between TDB and dairy stakeholders. Previous analysis revealed weaknesses relating to performance based information sharing to inform stakeholders on dairy development progress and access to other information that will help develop the sector. In order to create an information and communications technology (ICT) system that Tanzanian dairy stakeholders find useful, requires genuine engagement with the end users to understand their lives, needs and development priorities. Due to limitations of time allotted in the initial scope of work, it was determined that a second phase be organized to provide ample opportunity for participation from individual dairy stakeholders and groups of stakeholders.

The primary objective is to reduce the gap between the intended outcomes of a National Dairy Information Management System and the desired outcomes of the individual stakeholders by allowing them to participate in the design process and in the development of an M&E scheme for measuring the effectiveness of the system.

Objective of the Assignment

The F2F volunteer will assist with:

- Firstly, address needs and issues TDB staff have discovered while using the system developed in phase 1
- Secondly, help conduct interviews and focus group sessions with dairy stakeholders in the field and during Milk Week. The interviews and focus groups will help gather a more comprehensive understanding of problems and priorities of dairy stakeholders in Tanzania. Stakeholders will communicate what capabilities they hope to enhance and the associated actions they will take based on these enhanced/new capabilities.
- Analyse and interpret the information gathered during the 21 days of field research and identify key thematic areas. Within these areas, create indicators as a means to monitor and evaluate the project.
- Use the results from the interviews and focus groups to inform design of ‘stakeholder dashboards’ for access to the National Dairy Information Management System.

Anticipated Results from the Assignment

The key outputs from phase two are:

- Concept designs of custom dashboards relevant to each stakeholder group will be created
- The National Dairy Information Management System will have a greater rate of adoption and stakeholder “buy-in”
- The system will better mirror the information that stakeholders value

Proposed Schedule of Activity

Day	Activity
May 5th	Travel from home to US international airport

May 6-7	Rest
May 8-12	Meet with TDB Secretariat to analyze performance of the system and address staff needs/issues
May 15-19	Travel to the Kilosa & Mvomero districts to meet with their respective Dairy Market Hubs (DMHs), then continue to the Iringa, Njombe & Mbeya region to meet with other stakeholders. If time permits visit Ruaha National Park.
May 19-20	Return to Dar Es Salaam
May 21	Rest
May 22 - 26	Travel to Lushoto, Tanga, Handeni, Mheza districts to meet with their DMHs. Then continue to Arusha to visit more stakeholders.
May 26 - 28	Travel from Arusha to Bukoba
May 28 - June 2	Attend Milk Week and the Dairy Development Forum Meeting and assist with focus group session to gather stakeholder requirements for the information system
June 4	Return to Dar Es Salaam
June 5	Day of Rest
June 6-7	Briefing and wrap-up with TDB
June 8	Travel from Dar to home
Post-departure	Analyse data from field research to design stakeholder dashboards and create tools for monitoring and evaluating the system

Phase III - TBD

Following phase two, individuals and groups of stakeholders should be identified to participate in training and piloting sessions. This phase should occur sometime after the entire system has been developed. Based on the availability of the current F2F volunteer, phase three will need to take place sometime between January and March of 2018.

Objective of this Phase

The F2F volunteer will assist with:

- Sorting out the logistics of the pilot, for example, ensure DMHs and other stakeholders have been lined up, determine how training will be conducted and how much time will be spent at each site
- Collecting information and feedback on how the system is working, also using metrics and indicators to help assess successes (this process could take months)
- Making necessary improvements to the system
- After kinks have been worked out and the system is successful, help develop a roadmap for full-scale implementation

Appendix A Development Timeline

The following table is a timeline of the development process, key activities and milestones for phase one:

Phase	Activities & Milestones	Anticipated Dates	Actual Date
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Planning	Meet with TDB personnel to plan & discuss overall goal	04/02/2017	04/02/2017
Learning	Review requirements from TDB, gather insights, generate ideas, refine hypothesis	05/02/2017 - 06/02/2017	05/02/2017 - 21/02/2017
	Met with the Executive Secretary of the Tanzania Milk Processors Association (TAMPA)		08/02/2017
	Visit farmer / processor to conduct an information needs assessment survey of	11/02/2017	11/02/2017
Designing	Analyze info gathered / learned and begin creating mockups of the user interface to elaborate new ideas, envision end-user journey and outline the tool	08/02/2017 - 10/02/2017	05/02/2017 - 21/02/2017
	Interpret mockups and begin outlining the database schema	08/02/2017 - 10/02/2017	13/02/2017 - 21/02/2017
	Discuss hosting. Contact e-Gov about their services.		15/02/2017
	Present mock-ups to TDB & board chair to gather insights		16/02/2017
	Meet with local OpenStreetMap team to gain insights on mapping rural dairy		13/02/2017

	<p>stakeholders.</p> <p>Note: The interface will include a stakeholder map to allow stakeholders to identify nearby service providers (i.e. - producers, processors, collection centers, etc)</p>		
Developing	<p>Shift from concept to realization. Prepare the development environment by configuring the server with the appropriate technologies.</p> <p>Note: Currently we are deploying on a test server as a long-term host has yet TBD</p>		21/02/2017 - 23/02/2017
	Use mockup designs to begin developing the registration forms in React (user-interface)	17/02/2017 - 10/03/2017	17/02/2017 - Present
	Create vector map of TZ. This component will allow users to interact with data by district & region	22/02/2017 - 23/02/2017	22/02/2017 - Present
	Use the db schema to create the tables in MySQL	23/02/2017	23/02/2017 (Completed)
	Configure API & test “routes” from user interface to backend, which will enable potential to build	23/02/2017 - 28/02/2017	23/02/2017 - Present

	<p>huge infrastructures that are easy to scale and manage. Also provides a solution that can communicate with other technologies via API's, very important going into the future.</p>		
	<p>Meet with TDB to discuss hosting options. Will share the reply from e-gov, received on 22/02/17 regarding their hosting charges.</p>	24/02/2017	24/02/2017
	<p>Met with CRS Country Director for briefing, feedback & planning</p>	27/02/2017	27/02/2017
	<p>Visit e-Government office to discuss details of hosting</p>	27/02/2017	27/02/2017
	<p>Visit TTCL data center to discuss their hosting solutions</p>	28/02/2017	28/02/2017
	<p>Assist TDB in making decision on long-term hosting</p>	01/03/2017	01/03/2017
	<p>Create users (TDB staff) and begin testing passing login credentials from user interface</p>	24/02/2017 - 27/02/2017	
	<p>Build queries for datasets identified by TDB staff</p>	27/02/2017 - 03/03/2017	
	<p>Help TDB migrate their website/domain</p>	06/03/2017 - 10/03/2017	

	to the new web host Note: The new information system will use subdomains		
	Migrate the database and development environment to TTCL's virtual server	06/03/2017 - 10/03/2017	
	Develop the admin dashboard	06/03/2017 - 31/03/2017	
	Build charting components in React	06/03/2017 - 31/03/2017	
	Create documentation / tutorial for TDB staff	13/03/2017 - 31/03/2017	
	Develop stakeholder dashboards	13/03/2017 - 31/03/2017	Postponed until phase two
	Create stakeholder maps of nearest service providers. Note: Because there is no easy number-street-identifier for many stakeholder addresses, this will involve training of district inspectors to assist with collecting GPS coordinates (plus codes) of stakeholders' locations in order to accurately plot them on the map.	TBD	
	Create scheduler for inspection management	TBD	

	Build and test mobile version	TBD	
Testing	TDB staff can begin registering stakeholders into the system and providing feedback	20/03/2017 - ongoing	
	Begin training of Inspectors from Districts	TBD	
	Identify stakeholders and groups of stakeholders for pilot testing	TBD	
Monitoring & Evaluation	Plan with TDB Secretariat and pilot stakeholder groups to develop a participatory monitoring and evaluation scheme to measure the project's effectiveness. Indicators of M&E should be based on the development priorities of the stakeholders	TBD	

Appendix B

Technology Components

The team has chosen an open source stack of technologies for this project. The framework will be built on a MVC (Mode-View-Control) architecture.

Database:	MySQL
Back-end:	REST, Laravel (PHP Framework)
Front-end:	React, JQuery, Bootstrap
Web Host/Virtual Server:	TTCL
Testing:	Karma, Jasmine, PhantomJS
Source Control:	Github