



Proposal for project implementation of Milk-E-Way

To be submitted to Dr. Shoab, DRDF, Lahore Pakistan

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Please see attachment “User Guide” for a preview of Milk-E-Way or try out at <http://bit.ly/1Q7EKVY>.

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1. Executive Summary

The objective of the current proposal is to develop a mobile application to be piloted within DRDF's Dairy Project, in particular to be used by Women Livestock Extension Workers (WLEW). Milk-e-Way is a demand aggregation and health tracking system supporting livestock supply chains in the rural areas, it works by aggregating demand of livestock medicine and organizing bulk buys. By providing bulk deliveries of livestock medical supplies, Milk-e-Way seeks to empower women livestock extension workers in South Punjab to ensure access to timely consistent supplies, leading to better quality in animal healthcare delivery.

2. Context and Opportunities for Development

WLEWs are women from rural areas, between the age 18 and 40; usually married; have a basic education level of matriculation. A typical day of an LEW begins early; she makes breakfast for her husband and children. If she receives a call from a farmer, she goes to provide veterinary assistance and then, returns to her home.

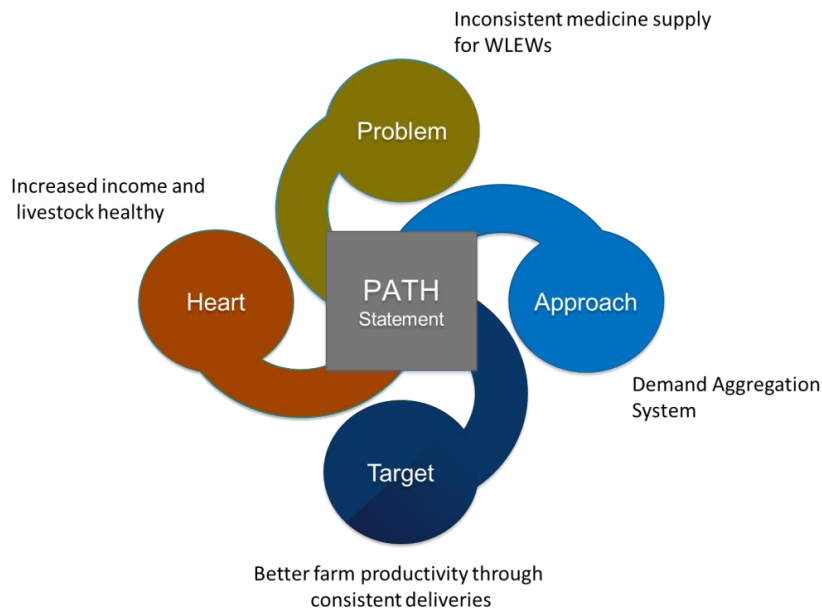
Critical points in the Extension Workers' Supply Chain

Through the International Development Design Summit IDDS Lahore, hosted by IDIN (International Development and Innovation Network) in cooperation with USAID in January 2016, the project team became familiar with the Dairy Project and in particular the WLEW program. Through field visits organized by DRDF and contextual research conducted by the Milk-e-Way team, we have analyzed the active WLEWs and the relevant family dynamics and realized specific critical points in the WELW program that constitute challenges for sustaining the program. The women's work co-exist with their traditional responsibilities of managing the household with the latter having greater priority. Moreover, for women traveling door-to-door and discussing animal health and reproduction, have many social implications. With income relying majorly on commissions embedded in the sale of animal health products, women have to rely on male family members' availability to take them to the city or the nearest station to collect fresh stock of in-demand medicines and get good prices. Hence, distance and cultural issues make it difficult for Women Livestock Extension Workers to access suppliers *timely, cost-effectively* and *on a regular basis* leading to frequent disruptions in livestock medicinal supplies. Further needs of WLEWs are follow-up trainings and better information on the livestock medicine market.

Sustainability Challenges in the Dairy Project: Where Milk-E-Way comes in

The Dairy Project, ensuring education and training for WLEW, will expire by October 2016, which means women will be on their own trying to sustain their entrepreneurial work as extension workers. Follow-up training is not planned so far. Furthermore, it is estimated that half of the WLEWs are actively working while the remaining returned to their usual routines upon completion of training.

A solution is needed to provide consistent deliveries and secure regular medicine administration. As the following figure shows, consistent supplies ensure that women's margins for selling animal health products are higher, leading to an increased income. A filled stock of animal health products is the prerequisite for WLEW to execute their work, i.e. deliver the medical service on-demand, by this increasing farm productivity and quality of milk. Finally, this can influence inactive WLEW to pick up their work again.



3. Financial Overview

Scope of plan:

We have devised a 2 year financial plan for Milk-e-way, starting March 2016. A detailed spreadsheet can be found in the Appendix. It lists down the costs, funding opportunities and revenue streams throughout the 2 year period.

Project pilot Vehari:

For the first 7-8 months, we are going to work in collaboration with DRDF for development and deployment of a Milk-e-way pilot in Vehari for WLEWs.

In the pilot phase of the project, Milk-e-way team will design, develop and deploy a solution in Vehari to solve market accessibility issues faced by WLEWs that have been trained by DRDF. The demand aggregation system will form an efficient and sustainable supply chain network in which WLEWs will play a pivotal role.

Pilot costs:

All costs have been listed down in 'expenses' tab of the spread sheet. Following is the explanation of the different sections of the 'expenses' tab.

Human Resource costs:

The human resource costs include remunerations for different positions held by the team; except for the first two months as the core team is going to do *'pro bono'* work to complete development of the functional prototype started in IDDS. The position of UI designer is to be filled by an external resource.

Remuneration for the external resource i.e. UI designer is considered a direct cost, and is supposed to be paid for by the partner(s) (for the duration of the pilot). The salary for the

core team members however is supposed to be paid for by an external grant or other funding partners.

Technology costs:

It has been listed down as “Software Licensing, Hardware and Data warehousing” in the spreadsheet. These costs are an estimation of the buying/renting costs of the technology infrastructure required to develop and deploy the system as well as operation costs. For the duration of the pilot in Vehari, partner organizations will bear all the technical costs.

Travel costs:

The travel and boarding cost of Milk-e-way’s core team member/software engineer, constitutes the major part of the “travel and field visit costs” in the spreadsheet. Before and during the deployment phase of the pilot, we require our software engineer for on-site training and intense testing/debugging/validating with partners and users.

Since this is a direct pilot cost, it is expected to be ensured by DRDF.

Funding and Financial Sustainability:

We have listed down external grants/funding opportunities which our team hopes to secure in order to make the pilot possible and for the company to become sustainable until it is able to post a profit. We hope to secure funding from the listed opportunities for ourselves, but we rely on the help from our partners, in order to raise the required funding, as it is not only crucial for Milk-e-way’s sustainability, but also for the completion of the pilot.

In the future, our plan is to become a profitable and sustainable social business. Once we have the product ready, we are going to find and expand our revenue streams by:

- Replicating the solution to other clusters in South Punjab and other agricultural contexts globally.
- Commercializing the solution as customized deployments.
- Selling anonymized data insights to product manufacturers and distributors.
- Looking for other capacity-building/training programs to sell our solution to.

In addition to the above mentioned revenue streams, we plan to expand our business by creating multiple business models to become a profitable organization by the end of year 2 (post profit stage in the spreadsheet).

4. Business Case

Business Idea and market innovation

The basic principle of Milk-e-Way is that it allows WLEWs to better organize their supplies, making Milk-E-Way a service system using a service-dominant logic. The core principles of service-dominant logic that are most important for Milk-E-Way are:

- Operant resources are the fundamental source of competitive advantage (WLEW aggregating demand and initiating product deliveries).

- The customer (WLEW) is always a co-creator of value.
- DRDF, Supplier Companies and other partners cannot deliver value, but only offer value propositions.
- All social and economic actors are resource integrators.
- Value is always determined by the beneficiary (WLEW, DRDF and suppliers).

We have validated our problem statement, hypotheses and assumptions through two field visits in rural areas near Lahore and several interviews with stakeholders taken over the course of IDDS Lahore in January 2016.

Project Outcomes

- Measurable benefits of project (Turnover, Profit)
- Added value for Dairy Industry
- Supply reliability (+ more incomes and profit to WLEWs)
- Dependable treatment of livestock (+ productivity to dairy farmers)
- Better visibility & user-level analytics (more opportunities to increase market of the suppliers)

Business Model Canvas

Key Partners:

- DRDF (program manager)
- ICI (manufacturer)
- Other animal health manufacturers
- Pakistan Medicos (distributor)
- Telenor (mobile payment and

Key activities:

- Suppliers, distributors and retailers prospect
- Platform awareness and training
- Data mining and analysis
- Content management
- Software development and systems/database administration

Key resources:

- Physical: mobile devices to implement messaging gateways
- Intellectual: our value proposition relies heavily on users inputting data to the system, even actively (i.e. by reporting/tracking animal health or medicine administration) or passively (by placing orders)
- Human: members of our team and their expertise
- Financial: we need to secure funds to carry out design cycles, system development and platform deployment

Cost structure:

- Fixed costs: salaries to team, travel and board, communications and team management resources

- Variable costs: Platform as a Service (PaaS) and infrastructure costs, mobile costs (SMS, payment systems)

Value proposition:

- We deliver better medicine supply to rural areas which, in turn, secures better dairy outcome
- We are solving the problem of bad access to animal medicine faced by WLEW's and farmers
- To the end users, we are offering a mobile platform that helps them get better deals, discounts and easy access to animal medicine suppliers through group buys
- To retailers and distributors we are offering access to their customer base by helping them reach lower layers of the value chain
- To manufacturers and suppliers we are offering data on demand, customer retaining, purchase profile and geo-localization
- In short, we are solving the problem of suppliers not reaching customers because they don't know where they are or what they need; and the problem of customers not reaching their products because they cannot access facilities normally offered to larger buys only (doorstep delivery and payment by credit)

Customer relationships

- So far we have established relationships with key partners in each of the roles in our system (DRDF, WLEW's, suppliers and distributors)
- End users won't expect a close personal relation from the product team, as they might perceive it as "an app" they interact with (self service and automated interaction)
- On the other hand, we want WLEW's to appropriate the technology that we deliver, for what we'll have to develop a community sense within our user-base. That can be achieved by co-creation and heavy feed-backing.
- Suppliers and partners, when seen as customers, might expect a closer relation. We have addressed that by having local Pakistani team members to be in close contact with those partners. (dedicated personal assistance)

Channels

- SMS
- Internet (webapp, app)
- Brochures
- Talks about our product's benefits
- Trainings delivered by program managers
- Integrate use of app within WLEW's work routine (notes on notebook)
- Interaction with not end-user customer segments through account managers

Customer segments

- Specialized mass market
- Customer segments well diversified (rural workers, suppliers, manufacturers, agencies and foundations)
- Multi-sided platform (offers different products for different customer segments)

Revenue streams

- Grants and sponsorship

- Transaction fees
- Advertising and product showcasing fees
- Selling of anonymized geo-localized demand data

Sustainability Model

First year: grants from institutions like USAID and IDIN, sponsorship from suppliers, key partners and DRDF.

Second year: charging suppliers administration fees upon each transaction. Charge commissions and sell branded content plans from suppliers.

We expect to post our first profit by the end of year two.

Scalability: early research indicates that similar programs in Pakistan, Brazil and Kenya might need a demand-aggregation system.

Primary Investments proceeding in this proposal

Approximately 1200 working hours accumulated in project development so far plus some funds for minimal technological resources.

5. Technical Objectives

Deliverables

The main requirements of the Milk-e-way demand-aggregation system are:

- Set-up and maintain an instant and electronic communication channel between WLEWs, their cluster heads and medicine retailers.
- Track the status of current demand and predict future demand of medical supplies.
- Enable WLEWs to report their current and future demand of medical supplies to aggregating demand over clusters.
- Connect WLEWs with retailers or distributors to automatically initiate orders depending on demand.
- Enable payment systems that don't require credit cards or a bank account.
- Collect data on demand aggregated by clusters over time as a viable resource for DRDF and Suppliers.

The technical deliverables of this project are as follows:

- Frontend: mobile application (web and Android) with user interface for end users (suppliers and extension workers)
- Backend: server application composed of database, data warehouse, business logic and administrative user interface (for system administrators, program staff and partners).
- SMS platform: interactive SMS platform with broadcasts and demand aggregation reply processing.

- Mobile payment system connected with local mobile payment processor
- User documentation for end users (WLEW's and suppliers).
- Technical documentation for back office users (system administrators and partners).

6. Project Plan

Work Packages

Overview of work packages and features is as follows. Each work package starts immediately upon completion of the previous.

Prototype 0 (functional prototype): no design cycle apart from validation and user feedback – refined and functional prototype to be tested within team and partners

Prototype 1 (MVP): complete demand aggregation feature set including supplier integration. To be tested on site in a limited area

Prototype 2 (pilot): payment system implemented on top of demand aggregation feature set. To be rolled out in Vehari

Prototype 0 (currently working or under refinement):

Frontend

- User authentication at milkeway.co (with username and password)
- Create single-SKU (product) wish list.
- List current and past wish lists (Dashboard).
- Input (aggregated) demand (by head).

SMS platform

Localized SMS broadcast when wish list is created.

Admin side

- User authentication at neverworm-dev.herokuapp.com/admin.
- Create/edit/delete contacts (supplier and WLEW).
- Create/edit/delete villages and clusters.
- List/edit/delete wish lists.
- Create/edit/delete users/passwords.

Prototype I (MVP):

Frontend

- Interface in Urdu (with Urdu script).
- Submit wish list to supplier (by e-mail, SMS or both) delivery).
- Better "home" and "about" pages.

Backend

- Customized screens.
- Login for suppliers with restricted access (only to each suppliers' own orders).

Create/edit/delete products and price lists (product price per supplier).
Supplier confirms order (from backend interface).
f"import" wizard for contact data (partner).

SMS platform

Process SMS reply (from any worker) with demand and compute.
Broadcast message when order is confirmed by supplier (with amount worker will pay upon).

Prototype II (pilot):

Frontend

Pay order from app.
List past orders.
Signup page (with invitation).
Use phone number as login.
Choose language menu.

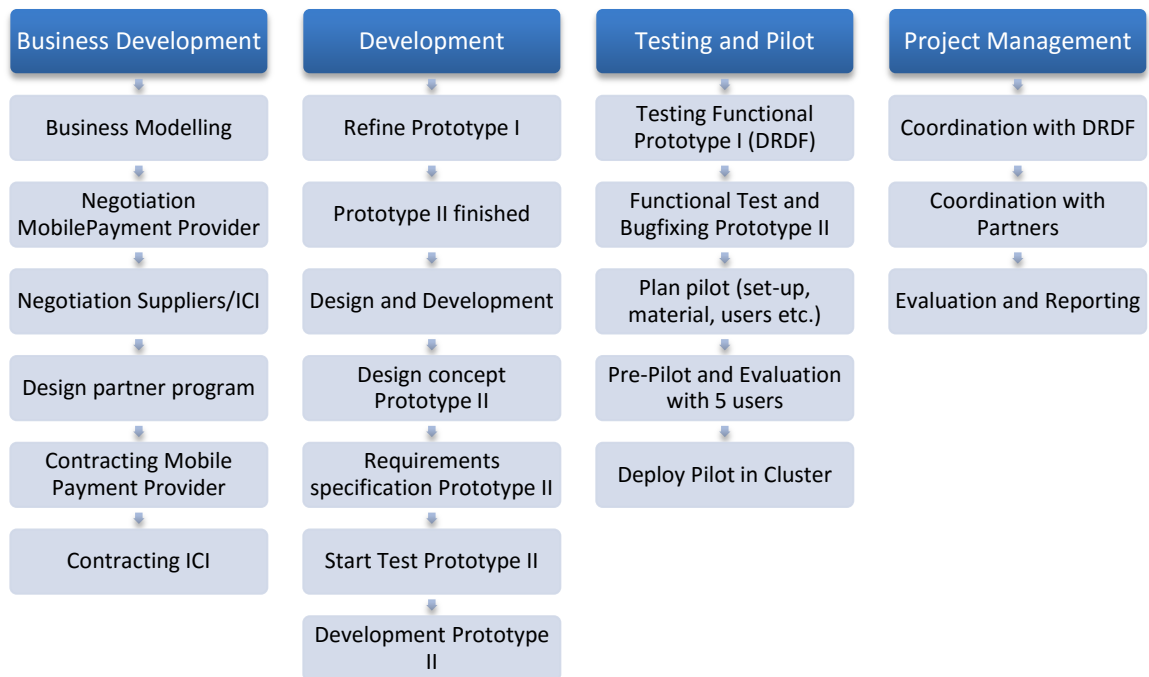
Backend

Process payment orders.
List past order confirmations.
Configure payment system properties.

SMS platform

Send signup invitation by SMS.
Send password by sms when user created.
Send payment confirmation/denial messages.

Overview of the Pilot Plan:



Important Milestones

Prototype I refined	04/28/2016
Agree on Design Concept Prototype II	05/23/2016
Agree on partner program	05/16/2016
Prototype II finished	07/18/2016
Go/No-Go for pilot	08/15/2016
End pilot	09/12/2016

For the detailed Project Timeline please refer to Appendix.

7. Partner programs

Data warehousing and management:

Data generated by the system and its users will be stored, managed and utilized by Milk-e-Way. It can and will be used to improve the usability and functionality of the system. Anonymized data can be used, mined and processed by Milk-e-way to create useful insights which can either be fed back to the system or channeled to partners in order to help them plan for future demand, allocate sales people and develop new products based on detailed and localized information that they do not have access to by present means.

The Information Technology University of the Punjab (ITU) has been an important stakeholder in identifying the problem and enabling the partnership between the Milk e way team and DRDF. ITU was the official local partner of IDIN (International Development and Innovation Network) and host of IDDS Lahore, during which the first prototype of Milk-e-way was developed.

Umar Shehzad, a core team member of Milk-e-way, is a research assistant at ITU and has taken on the project as his dissertation topic and was successful in getting it approved by his committee of examiners. ITU is interested in becoming the research partner for the project and is willing to play its role in enabling and facilitating the collaboration and data sharing between the Milk-e-way team and DRDF.

The official document signed by registrar ITU and senior faculty member will be provided separately.

Mobile payment platform

The Milk-e-way team is in close contact with Telenor through our team member Abdullah Saqib, who is also working with their Mobile Agriculture team, to prospect a partnership in enabling a mobile payment system within Milk-e-way to collect funds from users and relay them to suppliers.

8. Minimum Viable Solution

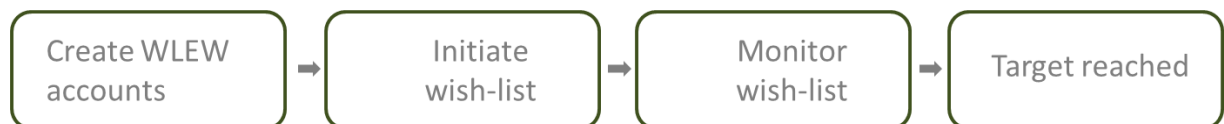
With time constraints and the intricacies of the dairy value chain, in view, we simplified our solution to keep it desirable, feasible and scalable. Our ideation focused on addressing pain points of each stakeholder: WLEWs (making work profitable and society appreciable to their cause), supplier (getting greater visibility of the supply especially at a village level), distributing (making each delivery feasible) and DRDF (maximizing value through the Dairy Project).



The solution, Milk-e-Way, is a demand aggregation platform which will allow WLEWs to team up under Cluster Head (who herself is a WLEW) and collectively bid for in-demand medicines. Once the demand reaches a specific threshold, it will trigger the distributor to send the respective batch of products to the Cluster Head's doorstep. In addition, discounts on bulk buying will also enable them to earn better profit margins. Our target, at the first step, is to consolidate the already existing clientele of WLEWs and improving quality of service (leading to increased satisfaction and positive word of mouth) to enable growth in the long-term.

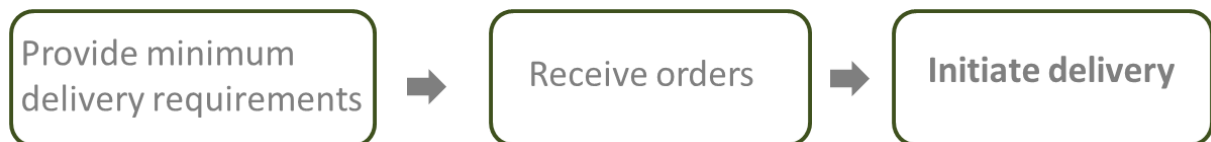
User Flow

Initially, **DRDF** will be facilitating the process of creating wish-lists, such that WLEW accounts are created using the Milk-e-Way web interface. Once a target is successfully reached through successful initiation and monitoring of wish-lists, this responsibility can then be shifted to capable Cluster Heads.



Once a wish-list is created, the respective WLEWs in the specific cluster will receive SMS Alerts from the Milk-e-Way platform. In response, they can either reply to the SMS or contact the Cluster Head directly (via Call, SMS or face to face meet-up) to communicate demand. Such visibility around demand and targets to ensure timely deliver is expected to increase collaboration and competition (not amongst each other) but against time in order to achieve the target.

The Distributor, on the other hand, must provide details on targets for each medicine supported by Milk-e-Way and will be notified when the target is about to be reached so that relevant measures can then be undertaken.



For the cluster head, the 4-step process promises consistent supply at her doorstep while encouraging WLEW peer support in their daily line of work.

1



Cluster Head
creates **Wish-list**

2



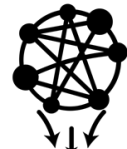
WLEWs receive
SMS **Broadcast**

3



Cluster Head records
demand in her **Notebook**

4



Aggregated demand
submitted to the **system**

In response to aggregated demand, as mentioned earlier, home-delivery of products will be made feasible to the cluster head who can then distribute supply to her fellow colleagues earning respect as well as strengthening relationships.

9. Anticipated risks and challenges

Our main challenge at the moment is securing the minimal funds to continue the development of the ICT solution, and then to implement a pilot.

Our second challenge is having our solution accepted and adopted by WLEW's and other actors of the dairy supply chain.

There is a risk of WLEW's not adhering to the platform due to leaving their extension work after the Dairy Project is over. We choose to *accept* that risk in hope that Milk-e-way will actually stimulate WLEW's to keep doing their work, that is the sole existence of Milk-e-way itself reduces that risk if we achieve our goals.

There is a risk of the solution not being adopted due to the technical challenge posed by introducing a new technology (mobile app). The widespread use of mobile payment systems in Pakistan and the broad adoption of SMS as a means of communication can *mitigate* that risk.

There is a risk of the solution not being adopted due to the novel aspects involved (crowd-sourced data collection, crowd funding, mobile commerce). We choose to *exploit* that risk in the sense that launching a solution to a large audience that has been so far ignored in terms of mobile technology gives us a big competitive advantage in an unexplored market.

10. Optional packages within Milk-E-Way

Follow up and Training

Post-training / quiz campaign to check engagement and retention

Through ICT, help WLEW connect with other WLEWs to share good practices, experience and relevant information.

Offline/online database on diseases

Catalogue of products (medicine, nutrition, semen)

WLEWs monthly get together

Manuals and training materials by ICT / mobile devices

Sms-for complex cases

Support/advice

Expanding Services

Engage other actors: education, local government, etc.

Address selling / dairy product & services, milk quality, cheese, butter, eggs

Expand Milk-e-way functionality to become a livestock health tracking system that will help agriculture workers better manage their resources and provide the system with more data, which, in turn, will help us predict demand with more accuracy.

Incentive systems

Points-gif gamification to motivate exchange (between WLEWs)

Give promotions

WLEW of the month

Badges: "This farmer is a WLEW certified farmer.

Improving WLEWs experience. Identifying lead WLEWs.

11. List of Appendices

Milk-e-way detailed project timeline

Milk-e-way's 2 year financial plan

Milk-e-way User guide