# PULA: the mobile Application for FSM

## Inception Report

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| Donor | ViaWater / BMGF |
| Project title | PULA: the mobile Application for FSM |
| Total amount | €290,471 |
| Contribution from ViaWater | €159,525 |
| Start date | 21 September 2017 (contract signed between BoP and ViaWater) |
| End date | 1 November 2018 |

## Context and Need

One of the main challenges experienced by **private service providers** in the faecal sludge management (FSM) market is the multiple inefficiencies that arise in service delivery. Challenges such as unknown customer locations, ineffective marketing and inability to manage fleets of vehicles are preventing providers from adapting and growing to be able to reach all consumers with safe, effective sanitation services. The **public sector** has also been at pains to respond and positively influence the market in terms of improving dumping practices and reaching low-income communities with affordable services.

For both private and public sector stakeholders within the FSM sector, access to data is crucial for making informed and effective decisions. However, such data is often unavailable, inaccurate or difficult to manage and use effectively to improve service delivery – particularly in low-income areas.

To generate such data, this project proposes to develop a mobile, cloud-based application called PULA that will strengthen the management and efficiency of sanitation emptying businesses (hereafter referred to as ‘Client A’), while providing aggregated, anonymised and up-to-date data to sanitation authorities (hereafter referred to as ‘Client B’). This, in turn, will allow for improved sanitation planning, regulation and project implementation, significantly contributing towards achieving universal access to safe FSM services in developing cities.

## Aim of the Project

To develop a minimum viable product (MVP) – a functional mobile Application (PULA) that can be used by both drivers and business owners in the Client A group and by city authorities/municipalities from within the Client B group. PULA will have three versions – one for each stakeholder (driver, owner, authorities) – with data generated from Client A leading into Client B’s version.

## Key Partnerships

* **WSUP** will support the engagement of and creation of partnerships with both Clients A and B in the selected cities, and support in the undertaking of the market assessment;
* **BoPInc** will be engaged in this project by facilitating the market assessment, product and proposition development and business/venture design,
* **UX**,a Mozambican ICT4D organisation, will be leading on developing the app technology, improved user-focused experiences and sustainable business models.



## Key achievements from Ghana and Kenya

WSUP carried out market assessment and validation activities in Ghana (December/January 2017) and Kenya (February/March 2017) to ascertain the context for PULA and the key wants/needs and limitations of Client A and Client B.

During this inception phase, we achieved the following:

* Ghana:
	+ Developed application features based on interviews and workshops with all relevant stakeholders in Accra and Kumasi,
	+ Developed an app prototype linking all features together,
	+ Validated developed application features (prototype) with stakeholders,
	+ Outline the business model for PULA including concept value propositions for Client A and Client B.
* Kenya
	+ Explored needs, wants and limitation related to the Pula application through interviews and workshops with relevant stakeholders in Kisumu and Nairobi.
	+ Gained feedback on the developed features in Ghana,
	+ Ranked existing features and developed new features based on qualitative research in Kenya.
	+ Assessed the business model and value propositions strengthening the case for developing a minimum viable product for PULA

We explored a number of different features and concluded that the most promising features were:

* **Job-Execution and logging of jobs done**: administrating the orders and activities to support the operators in managing their businesses. It’s also envisioned that easy payment (digital payment) services are integrated.
* **Active Customer Acquisition:** this will benefit drivers from Client A (who are mostly paid based on the number of clients they serve/volume of waste they collect) as it would enable them to reach out to more potential customers and hence grow their income. In turn, this will benefit owners from Client A, increasing their revenue. Individual customers/the general public – who will be reminded to empty their pits more frequently and offered reduced rates – will benefit from reduced costs, more efficient services and improvements to environmental/public health as latrines are emptied more often and hence do not overflow.
* **Asset management:** this will benefit owners from Client A, who will have better oversight of their fleet and utilisation of the assets and will be able to direct drivers to jobs more efficiently – saving costs, as well as manage the maintenance of the assets and minimizing risks of down-time of assets. This, in turn, will benefit customers, who will receive the knock-on effect of more cost-effective services – a reduction in fees. This will also benefit Client B, who will gain insight into the state of FSM in their city. It will improve public and environmental health by preventing vacuum tank operators from emptying their tanks outside of designated sewage treatment/disposal sites – which is currently a key issue in the markets PULA will operate in.
* **Performance dashboard:** this will benefit Client B by providing them with insight into how, where and when septic tanks/pit latrines are emptied in their city. This will facilitate informed investment and analysis, and increase their ability to attract funding for sanitation improvements.

Our key findings can be expressed in the table below:

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|  | **CLIENT A** | **CLIENT B** |
| **Drivers** | **Owners** | **Authorities** |
| **Problem** | Difficulty in optimising execution of work and reporting on progressLack of work during dry season | Lack of oversight of fleet and status of assignments and assets | Lack of data to inform future planning |
| **Main app feature** | Execution Support Active Customer Acquisition Reaching more customers as a way of obtaining more revenue | Assignment & Asset (truck) TrackingImproved fleet management dueto better oversight | Performance DashboardBetter planning/evaluation ofinterventions because of reliableup to date data |

The user research and market assessment led to the development of an app prototype.

Next stages

As this has been based on qualitative research with vacuum tank owners, drivers and authorities in Kenya and Ghana, we are now able to move quickly into the MVP stage.

Based on our experience working with vacuum tank business around the world we hypothesise that the issues vacuum tankers and authorities face are similar. The research in Ghana and Kenya further supported this notion.

Therefore, rather than starting from scratch, we will get feedback on the developed features and adjust them to the local context in Mozambique and Zambia.

## Planned activities for Zambia and Mozambique

The activities described below are set-up to apply agile iterative development in a market based (user-centric) approach. The overall objective is to develop a MVP that can be beta-tested with a range of early adopters in Zambia and Mozambique and will allow the PULA team to develop and prepare for the future PULA service development and delivery.

With each of the activities below, as with the previous work conducted in Ghana and Kenya, the PULA team will ensure that learnings from each location will be applied and transferred to new ones as appropriate. Although differentiated as separate activities in this document, we envisage the project as a fluid and gradual development towards an overall MVP, that will incorporate all relevant findings.

**Activity one: Design sprint Zambia (6th November – 2nd December)**

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| **Design Sprint sub Activities** | **Description** | **Output** | **Duration** |
| Research | Speaking to vacuum tanker owners, vacuum tank drivers and authorities to validate current features and explore their needs, wants and limitations related to PULA. Gathering insights to inform business model of PULA. | Insights to inform the Pula Zambia app prototype  | 2 weeks  |
| Design | Design features, user journey and application workflow based on the feedback and insights from the research to develop a first version of a Pula Zambia app prototype. Refining business model and business plan. | First version of a Pula Zambia app prototype  | 1 week  |
| Iteration | Get feedback on the developed features, user journey and workflow from owners, drivers and authorities, adapt the application to develop second, refined version of a Pula Zambia app prototype as the basis for the Development team to start developing the architecture and core of the PULA app. | Second, refined version of a Pula Zambia app prototype  | 3 weeks  |

**Activity two: design sprint Mozambique (15th January – 16th February)**

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| **Design Sprint sub Activities** | **Description** | **Output** | **Duration** |
| Research | Speaking to formalised manual emptiers, vacuum tanker owners, vacuum tank drivers and authorities to validate current features developed in Zambia, Ghana and Kenya, and explore their needs, wants and limitations related to PULA. Gathering insights to inform business model of PULA. | Insights to inform the Pula Mozambique app prototype  | 2 weeks  |
| Design | Refining features, user journey and application workflow developed in Zambia based on the feedback and insights from the research to develop a first version of a Pula Mozambique app prototype. Refining business model and business plan. Further analysing different user work arrangements (e.g. single truck owner / multiple drivers for the same company / formalised manual emptiers etc.)  | First version of a Pula Mozambique app prototype  | 1 week  |
| Iteration | Getting feedback on the refined and developed features, user journey and workflow from owners, drivers and authorities. Adapting the application to develop a second, refined version of a Pula Mozambique app prototype. | Second, refined version of a Pula Mozambique app prototype  | 3 weeks  |

**Activity three: coding (February – July 2018)**

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| **Coding sub Activity** | **Description** | **Output** | **Duration** |
| Kick off | Validate features from Design Sprints;Tools research, assessment, choice and adoption;General System Architecture design and adjustments;Base server setup (will host system and server-side components);Communication channel setup (to provide intercommunication between App and Web Server);Database Schema design, adjustments, developing; | All necessary tools and systems are in place for the Application to be coded | 2 weeks1 week2 days2 days1 week |
| Mobile app development | All features coded to the specification detailed by design sprints and validationComponent Integration / Testing / Refinements | Functional Beta App | 3 months1 month |
| Environment replication and go-live | PULA launched and used by Clients A in practice | Function Version 1.0 App | 1 week |

**Activity four: testing in Mozambique and Zambia (June – August 2018)**

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| **Testing sub activities** | **Description** | **Output** | **Duration** |
| Set up phase | Offer training to Clients A and B, ensure phones are working and that App is functional | Clients A and B are ready to use the app | 2 weeks |
| Testing phase | Clients A and B are both using the application; Whatsapp group and Google Analytics will support analysis of the application’s actual use and practical functionality | Clients A and B are using the app;Analysis offers insight into how App can be improved | 4 months (and ongoing as Clients continue to use PULA) |
| Feedback from users | Meetings and workshops to ensure PULA meets the needs of both Clients A and B | Insight into the successes and challenges of the App | 1-2 weeks |

**Gender mainstreaming in project activities**

As project activities are primarily targeted at vacuum tanker operators and municipalities, opportunities to mainstream gender inclusion in project design are limited. From our experience of working with Client A and B in Mozambique and Zambia during other projects, we know that the majority of representatives are male, which will make this challenging.

However, we will endeavour to consult with representatives from both genders during the process wherever possible. For monitoring and evaluation purposes, and to ensure that the overall project takes gender into consideration, we will gather data on the gender of those consulted and seek to readdress any imbalance when possible.

Women are represented in WSUP’s workforce in both Mozambique and Zambia, including the WSUP Zambia Business Lead, who is central to the implementation of this project. We recognise that WASH projects are far more likely to be successful if they the views of often under-represented groups at the heart of the process throughout and will strive to do this as far as possible.

## Timeline

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|  | **Oct** | **Nov** | **Dec** | **Jan** | **Feb** | **Mar** | **Apr** | **May** | **Jun** | **Jul** | **Aug** | **Sep** |
| 1. **Design sprint Zambia**
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| * 1. Engage and validate with businesses, municipalities and other key stakeholders
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| * 1. Define requirements & value proposition
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| 1. **Design sprint Mozambique**
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| 1. Engage and validate with businesses, municipalities and other key stakeholders
2. Define requirements & value proposition
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| 1. **MVP Coding Maputo**
	1. Development
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| * 1. Testing and refinement
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| 1. **Beta Testing**
	1. Mozambique and Zambia
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| 1. **Learning and Dissemination**
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| * 1. Prepare learning and dissemination strategy and share with ViaWater
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| * 1. Mid term report (narrative)
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| * 1. Final report due (financial and narrative)
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| * 1. WSUP publications: practice note / topic brief – TBC
	2. External presentations (x2) – date TBC
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## Reporting deadlines and requirements

**Mid-term report due: 01/04/2018**

This report will include key achievements, challenges faced and next steps on activities one and two described above.

**Final report due: 01/11/2018**

This report will be a more general round-up of the whole project, including key achievements, challenges faced and next steps for scale-up across other cities/countries, further iteration, bidding by potential owners or whatever else is advised.

**AKVO reports: quarterly**

Reporting on key project phases.

## Learning Agenda

**Practice note 1:** introducing the purpose and functionality of the PULA App, and outlining how data could fuel improved planning for FSM (published in December 2017).

**Practice note 2:** detailing a specific aspect of programme activities in Zambia and/or Mozambique (for publication 2018). The focus of this Note will be defined once the programme is underway in response to emerging findings.

**Topic brief 3:** presenting in-depth learning from the programme and next steps (for publication in Autumn 2018).

**External presentations:** to be decided following PULA development and opportunities as they arise. The first conference we will attend to present PULA will be Seedstars in Maputo, Mozambique, on 14th December 2017.

Some of the opportunities we are considering are:

* Skoll World Forum in Oxford, UK – April, 2018
* WISA South Africa in Cape Town, South Africa – June 2018
* WEDC Conference in Nakuru, Kenya – July 2018
* World Water Week in Stockholm, Sweden – August 2018
* AAE/AfWA – TBC – November 2018