



# **Cassava Smartech**

**Lesotho Micro-loans**

**Functional Specification Document**

**Version 1.0**

**August 2020**

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## Document History

| Version | Description      | Author/Contributor | Reviewed By | Date         |
|---------|------------------|--------------------|-------------|--------------|
| 1.0     | Initial draft    | Primrose Mwanza    |             | August 2020  |
| 1.2     | Multiple lenders | Primrose Mwanza    |             | October 2020 |
|         |                  |                    |             |              |

## Cassava Approvals

| Role                        | Name | Date | Signature |
|-----------------------------|------|------|-----------|
| Project manager             |      |      |           |
| CIO/CTO                     |      |      |           |
| Development manager         |      |      |           |
| Payments Head of department |      |      |           |
| Payments manager            |      |      |           |

## Lesotho Approvals

| Role                    | Name | Date | Signature |
|-------------------------|------|------|-----------|
| Project manager         |      |      |           |
| CIO/CTO                 |      |      |           |
| Development manager     |      |      |           |
| EcoCash product manager |      |      |           |

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## Introduction

### About this document

This document is a functional specification of the Micro-loans system to be deployed in Lesotho. This facility will allow active Ecocash customer to take out a loan which they will be expected to return with an interest charge included. The intended audience for this document is:

1. Cassava technical and business heads for implementation
2. Econet and EcoCash Lesotho technical business heads for review and confirmation of the documented implementation strategy
3. Econet and EcoCash Lesotho technical business heads for implementation

### Business Concept

The Lesotho are creating a micro-loan facility for active Econet subscribers. This will work as a micro-financing option that will benefit the general population that:

1. Are unbanked and use EcoCash as their transacting platform
2. Require small loan amounts that some banks or financial institutions do not pay out

This product has a proven track record of effectiveness as it was successfully rolled out in Zimbabwe, Swaziland and Burundi.

The following sections in this document give a description of the technical implementation specifics for the Lesotho Micro-loans facility. Included are the following:

1. Solution overview mind-map
2. Use cases diagram
3. Process flows for the main use cases
4. Business rules guiding implementation



## Lesotho Microloans Overview

### Business Summary

#### Requirement

Provision of micro-financing solution for the Lesotho customer base. This solution will allow users to request small loans that they can pay back at a competitive interest rate.

#### Objective

Set up a micro-loans facility for Lesotho EcoCash customers

#### Business case

##### Justification for micro-loans facility in Lesotho

- ☒ Additional revenue stream for the Lesotho business
- ☒ Provide micro-finance facility for EcoCash customers

##### Revenue streams

- Earnings on interest charged
- EcoCash charges on loan-repayment**
- Administration fee charged

### Solution Summary

#### Type of development

- ☒ New Development
- ☒ Integration project

#### Actors

##### Lender

Organizations that give customers loans through the Econet Lesotho USSD platform

##### Loanee/Customer

EcoCash subscriber who takes a loan

##### Administrator

EcoCash staff member tasked with administration of the loans facility

##### Customer Care Agent

EcoCash customer care agents

#### Integrations

##### Internal Integration

###### Fintech

###### ☒ Ecocash

- ☒ Subscriber to merchant API
- ☒ Merchant to subscriber
- ☒ Subscriber validation (KYC lookup)
- ☒ Data feeds
  - ☒ Period on EcoCash
  - ☒ Average monthly deposits

###### MNO

- ☒ SMS
- ☒ USSD
- ☒ Data feeds
  - ☒ Period on Econet
  - ☒ Average airtime recharge
  - ☒ Airtime credit history

### Access Channels

#### Web

##### ☒ Back End (Administration Portal)

###### Administrator

EcoCash staff member tasked with administration of the loans facility

###### Use Cases

- Report access
- User management
  - manage other user types (register/edit/delete users)**
- Application configurations
  - update loan application configurations like maximum loan amounts**

###### Customer Care Agent

EcoCash customer care agents

###### Use Cases

- View customer profile
- search transactions

#### USSD

##### Customer

Access the USSD code to access loan functionality

###### Settings

###### Short Code

PENDING CONFIRMATION

### Payments

#### Payment Scenarios

##### 1 Manual/ Direct Payments

###### Payment methods

- Mobile wallets
  - ☒ Ecocash

###### Who will be making payments?

- EcoCash micro-loan system
- Customer

###### What scenarios will require payment processing?

- Loan payout**
  - Who triggers payment?
    - ☒ System
- Loan repayment**
  - Who triggers payment?
    - ☒ Customer

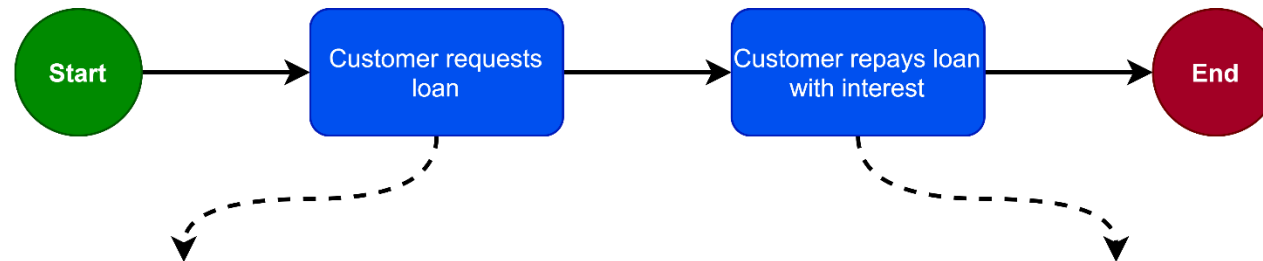
##### 2 Automatic billing / loan auto-recovery

###### Who triggers payment?

- ☒ System
  - Auto-recovery facility

## Product Mechanics

The following is a description of the micro-loans' product mechanics.



Customer will only be able to request a loan amount based on their credit score. The score matrix will be as follows:

|   | Criteria  | Description                              | Decision logic |
|---|---|--|----------------|
| 1 | Previous loan status (Core rule)  | Has outstanding loan                     | Score = 0      |
|   |   | No outstanding loan                      | Score = 1      |
|   |   | Less than 3 months                       | Score = 0      |
| 2 | Period on EcoCash (core rule)   | 3 months or more                         | Score = 1      |
|   |   | Less than 100                            | Score = 0      |
| 3 | Average Monthly value of deposits on EcoCash (Cash in, bank to wallet, payroll) over the past 3 months. (Core rule) | >100 - 200                               | Score = 1      |
|   |   | >200 - 400                               | Score = 2      |
|   |   | >400 - 600                               | Score = 3      |
|   |   | >600 - 800                               | Score = 4      |
|   |   | >800 - 1000                              | Score = 5      |
|   |   | Above 1000                               | Score = 6      |
| 4 | Airtime average monthly for the past 3 months   | Less than 10                             | Score = 0      |
|   |   | 11 - 20                                  | Score = 1      |
|   |   | 21 - 50                                  | Score = 2      |
|   |   | 51 - 80                                  | Score = 3      |
|   |   | 81 - 100                                 | Score = 4      |
| 5 | Age as an Econet subscriber (Core rule)   | Above 100                                | Score = 5      |
|   |   | Less than 6 months                       | Score = 0      |
|   |   | 6 months or more                         | Score = 1      |
| 6 | Airtime credit history (Core rule)  | Last loan returned in More than 48 hours | Score = 0      |
|   |   | Has never taken a loan                   | Score = 1      |
|   |   | Last loan returned in 48 hours or less   | Score = 1      |
|   |   | <b>Maximum score</b>                     | <b>15</b>      |

| Score   | Maximum limit (M) |
|---------|-------------------|
| < 5     | Decline           |
| 5 - 7   | 200               |
| 8 - 10  | 400               |
| 11 - 12 | 600               |
| 13 - 14 | 800               |
| 15      | 1000              |

The criteria , decision logic and score ranges will apply to all lenders. The maximum amounts requestable will be different for each lender

Repayment of loan will happen in two ways:

### Customer initiated

Customer will access the USSD application and select the 'repay loan' option. Customer will be able to repay partial amounts up until the full expected amount is re-paid

### System initiated

If the loan is overdue the system will routinely check the subscribers EcoCash wallet for the balance. An intercept will also be added for the following transaction types so that the loan amount is automatically debited (\*)

## Business Rules

The following section give a details description of the business rules governing this solution.

1. Only active Econet and EcoCash subscribers will be allowed to access the micro-loans functionality as customers.
  - a. EcoCash will on-board third-party microfinance and bank organizations (lenders) who are authorised to give out loans by the Lesotho regulations on the Loans administration portal.
2. Customers will request loans from the on-boarded lenders via the Econet Lesotho USSD application.
3. Customers will request loan amounts based on their credit score which measures loan eligibility.
  - a. The **credit score** will be calculated using the following metrics:
    - i. Length of time as an Econet subscriber
    - ii. Average value of recharges done
    - iii. Airtime and date credit history (pokola)
    - iv. Length of time as an EcoCash subscriber
    - v. Average EcoCash monthly value of deposits (cash-in, bank to wallet, incoming remittances) for the past 3 months

Note: These metrics will be fixed for calculating loan eligibility for the on-boarded lenders. The differentiating factor will be the configured minimum and maximum requestable loan amounts for each lender.

- b. The minimum and maximum loan amounts customer can request will be configured for credit score ranges per lender.

### 4. Loan tenor rules

- a. The customer will be able to select which tenor they prefer:
  - i. 14 calendar days
  - ii. 30 calendar days

NB: A different interest rate will be configured for each tenor. The interest rates will differ for each on-boarded lender.

- b. The system will charge a configurable administration fee.
  - i. The administration fee will be configurable as a fixed amount or as a percentage of the loan amount
  - ii. The administration fee will differ for each lender.

The table below shows an example of administration fee configurations.

| Lender (drop down of lenders) | Type (Fixed amount/percentage) | Admin Fee Value | Applicable loan amount |
|-------------------------------|--------------------------------|-----------------|------------------------|
| MicroFinance                  | Fixed                          | M5              | Loan amount < M200     |
| MicroFinance                  | Percentage                     | 4%              | Loan amount >= M200    |
|                               |                                |                 |                        |

- c. The system will deduct an additional penalty fee for overdue loans.
  - i. This penalty will only be applied once as soon as the loan becomes overdue
  - ii. This penalty will be calculated on the current outstanding amount.
  - iii. This penalty will differ depending on the lender and so must be configurable.

The following is an example of calculations showing how all the rules stated above will apply.

Example

Customer requests a loan from lender X.

Lender X has a configured penalty value of 5%.

Lender X has interest rates configured as follows:

- a. 14 day tenor with interest rate of 7%
- b. 30 day tenor with interest rate of 13%

Administration fees for Lender X are configured as follows:

- a. M5 if loan amount is less than M200
- b. 4% of loan amount if loan amount requested is greater than or equal to M200

Customer requests a loan of value M150 on the 14 day tenor. The following are the calculations for the loan amount to award:

|                                 | Formula                         | Amount                |
|---------------------------------|---------------------------------|-----------------------|
| <b>Loan amount</b>              |                                 | <b>M150</b>           |
| <b>Administration fee</b>       | M5 if <= 200; 4% if > 200       | - M5                  |
| <b>Amount to award customer</b> |                                 | <b><u>M145</u></b>    |
| <b>Amount to repay</b>          | 7% for 14 days; 13% for 30 days | <b><u>M160.50</u></b> |

If this customer fails to repay the full amount to repay by the due date, then:

- 1. A penalty will be added to the loan amount (which applies for the first 30 days after the loan was due) 105% of M160.50 = **M168.53**

**5. Loan repayment policy**

- a. There will be two ways in which a repayment can be done:
  - i. Automatic recovery done by the system.
    - 1. On due date of the loan. The system will retrieve the amount to repay directly from the customers EcoCash wallet
    - 2. On a configured retry cycle. The system will routinely check the customers EcoCash wallet balance and attempt to recover the loan amount. Even partial amounts can be recovered,  
The system will run a polling script that deducts partial amounts (or the full amount if available). The polling duration will be configurable.



- ii. Manually by the customer from the EcoCash menu, through the repayment option, customer to be given options to make part payments of any amount before due date towards their account, and an option to pay the full outstanding balance

If the full outstanding amount is not paid back by the due date, then the automatic recovery process described above will kick in.

\*The minimum amount to recover when auto deducting loan amounts from Customers EcoCash Account should be M5.

6. The system will send the customer SMS notifications in the following instances:
  - a. Reminder SMSes before the loan is overdue for repayment.
    - i. 5 days before loan maturity
    - ii. 24 hours before loan maturity
  - b. Confirmation on awarding of a requested loan
  - c. Message on due date advising the customer that the loan was repaid successfully, or that auto-recovery failed. If the customer had already repaid their loan by the due date, this SMS will advise them
  - d. Monthly reminder to pay overdue amount for lapsed loans (once every 5 days for 3 months and then stop).

#### **7. Loan safety nets**

- a. Customers to be given provision to make part payments or full payments towards outstanding amount daily (anytime) before loan maturity
- b. The “auto recovery” facility shall be used on all overdue loans; The loan application will routinely check customers EcoCash balance and recovery the loan amount through a pinless subscriber to merchant transaction.
8. Customers will only be able to request one loan at a time from a given lender. It will be at the discretion of each lender regarding whether they want to give a loan to a customer who has a loan with a separate entity.
9. Once a customer has cleared their current loan, they will be allowed to take another loan immediately.
10. A customer can only take one loan at a time.
11. The customer will have to accept terms and conditions before they can request their first loan. The Ts and Cs are available to read on the Econet website ([www.etl.co.ls](http://www.etl.co.ls)). If the customer does not accept Ts and Cs, then they will not be allowed to access the micro-loan facility.

#### **12. Loan administration**

- a. The loan management system shall receive all requisite KYC information from the EcoCash system.

#### **13. Accounting requirements**

##### **a. Loan disbursements**

The following entries must be passed automatically upon loan approval.

##### Pre-requisites

- Lender has a registered merchant wallet on EcoCash which they regularly prefund

- Econet has administration fee merchant wallet to accept administration fees charged for loan disbursement

For illustration purposes; we shall assume that a subscriber entered **M100** as loan amount and **30 days** as loan term

**Lenders MicroLoan Account**

- i. Debit the lenders merchant wallet with the approved amount which is M100.

**Subscriber EcoCash wallet**

- i. Credit subscriber wallet with M95 (minus the administration fee is an upfront fee that is deducted immediately when the loan is administered)

**Administration fee account**

- i. Credit administration fee merchant account with M5.00.

The system will note the interest amount to be charged for the customers selection at this stage.

**b. Loan Repayment**

The following entries must be passed automatically upon loan approval.

Pre-requisites

- Lender has a registered merchant wallet on EcoCash which they regularly prefund
- Econet has administration fee merchant wallet to accept administration fees charged

**Customer Wallet**

- i. Debit customer wallet with outstanding balance which is M107; that is the loan amount including the interest

**Loan Account**

- i. Credit loan account with M107

**Reporting requirements**

Proposed daily and monthly Reports

1. Daily report

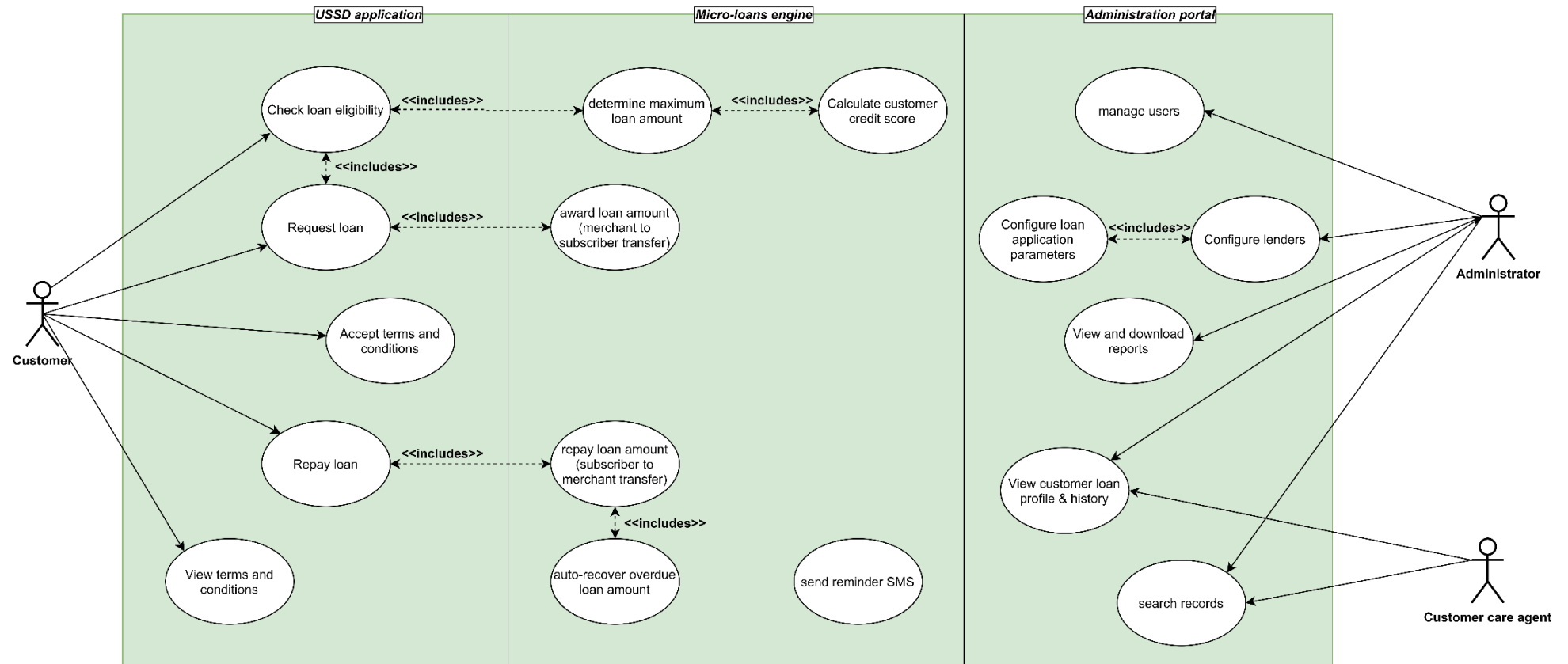
- a. Loan transactions (Loans taken)
- b. Loan transactions (Admin fee collected)
- c. Loan transactions (Interest charged)
- d. Qualifying Clients (Not yet taken the loan)

2. Monthly Report (Including cumulative loan transaction data)
  - a. Outstanding Loans as at the last day of the month
  - b. Bad debts (Loans not recovered within 6 months)
  - c. Recovered Loans
3. Loan summary report – give cumulative counts and values for the loans by status. User will enter the date range.

## System Actors

The diagram below shows the system actors and their respective applicable use cases.

### Microloans System



## **Solution Architecture**

The system will be comprised of the following components.

### **Micro-loans Engine**

This is a backend service suite that handle the core system functionality i.e.:

1. Rules engine
2. Integrations to other Econet/EcoCash services
3. Business logic

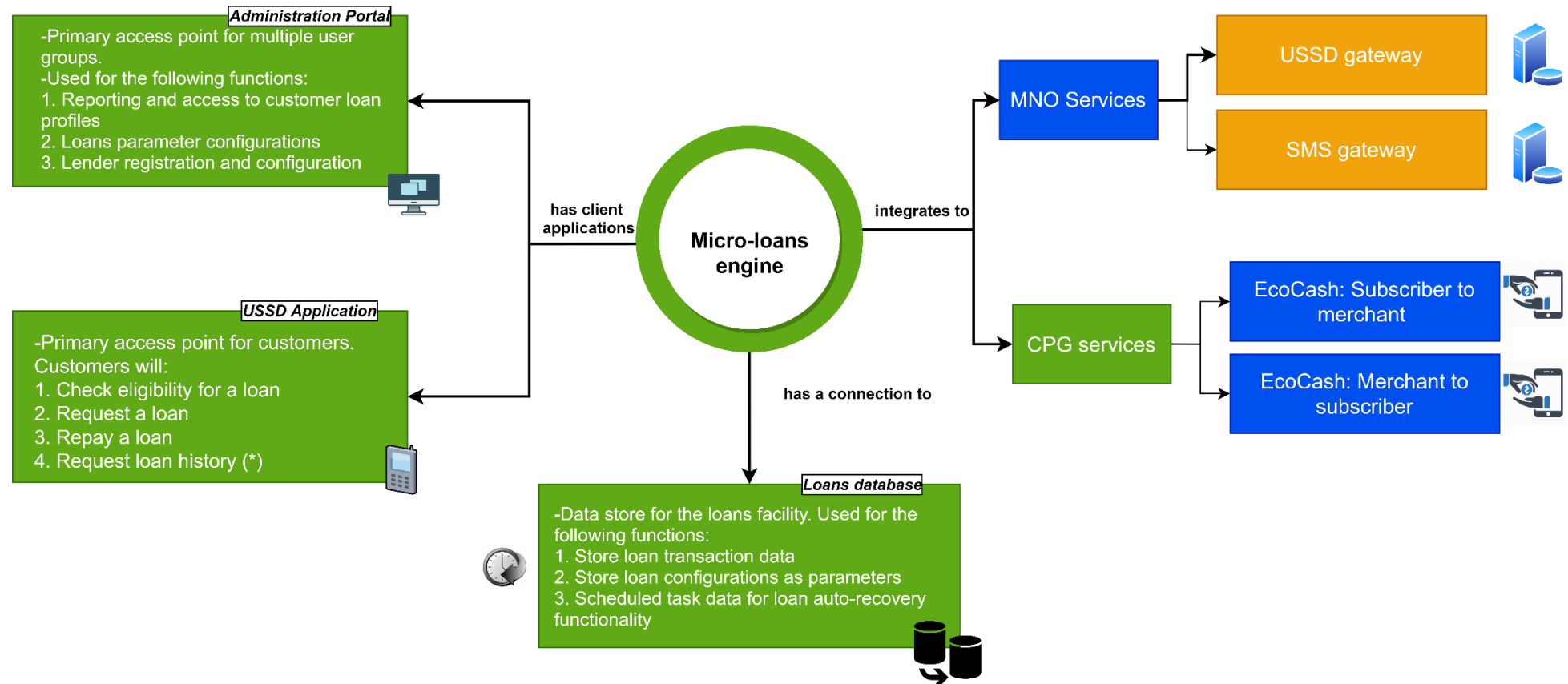
### **USSD application**

The micro-loans customers will access the functionality via a USSD application. Through it, customers will be able to request loans and other associated functionality.

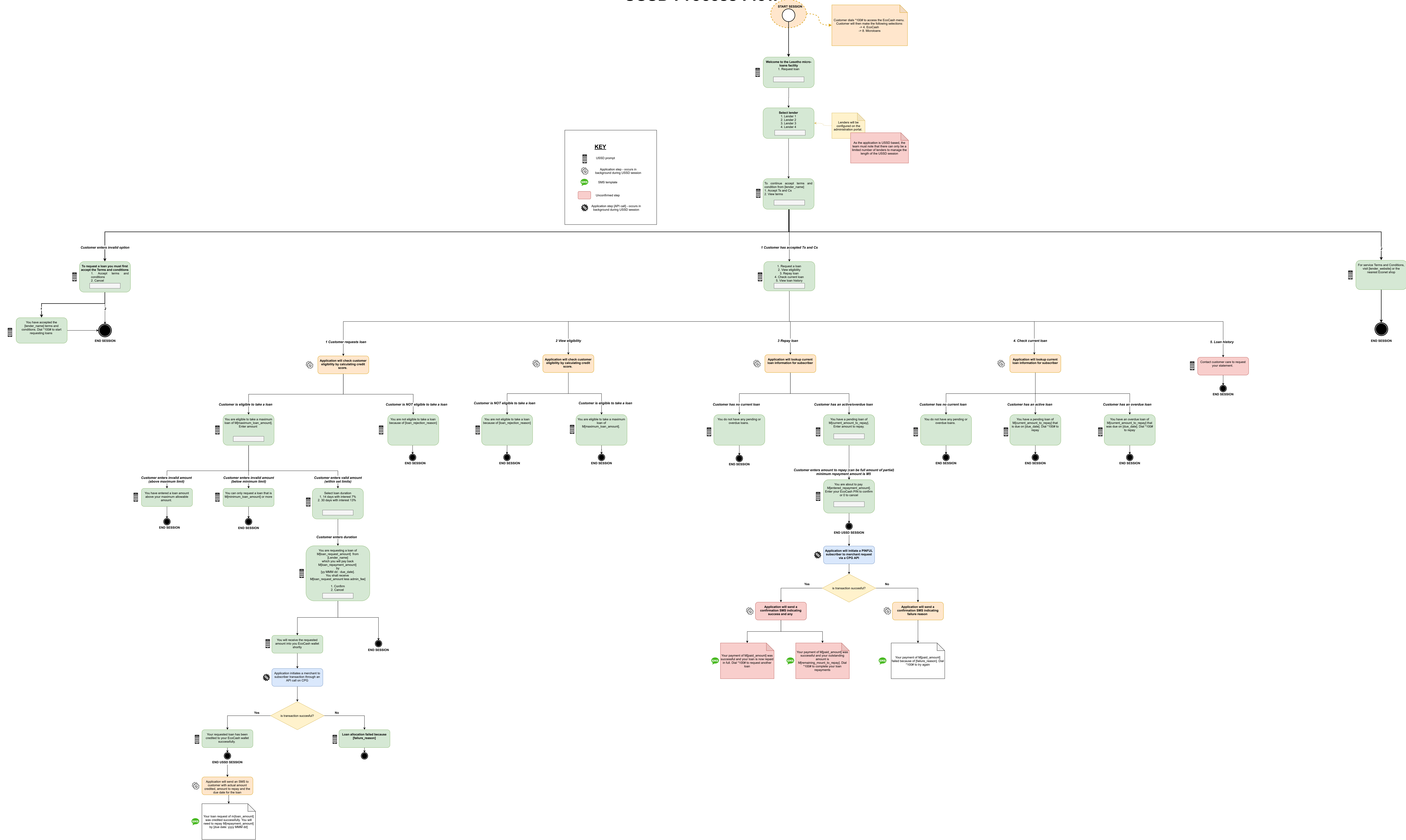
### **Administration portal**

This is a web-based application through which Lesotho micro-loans administrators and customer care agents can access the customers loan data.

The illustration below shows the solution architecture.



# USSD Process Flow



## Work breakdown

### Implementation Phases

The table below shows the anticipated implementation phases this product.

| Phase 1   |   |
|---|---|
| Number of lenders                                 | 1   |
| Tenor for the single lender                       | 14 days with interest rate set to 7%  |
|   | 30 days with interest rate set to 13%   |
| Administration fee structure for the single tenor | M5 for loan amount less than M200   |
|   | 4% for loan amount greater than or equal to M200  |
| Applicable penalty on defaulting                  | 5% of repayment amount  |
| Minimum loan amount                               | M10   |
| Minimum recovery amount                           | M5  |
| Recovery options                                  | Customer can repay via the USSD application   |
|   | Automatic recovery when loan lapses   |
|   | -Microloans system polls customer wallet balance and automatically retrieves any recoverable amount till loan is paid back in full. |
| Credit score rules                                | Refer to page 6   |
| Loan amounts requestable                          | Refer to page 6   |
|   |   |
| Phase 2   |   |
| Number of lenders                                 | More than 1 (configurable)  |
| Tenor for lender loans                            | 14 days with a different interest rate configured for each lender   |
|   | 30 days with a different interest rate configured for each lender   |
| Administration fee structure for the single tenor | Can be fixed deposit or percentage  |
|   | Rules for administration fee amounts to be configured per lender  |
| Applicable penalty on defaulting                  | Configured per lender   |
| Minimum loan amount                               | M10   |
| Minimum recovery amount                           | M5  |
| Recovery options                                  | Customer can repay via the USSD application   |



|  |  |
|--|--|
|  | Automatic recovery when loan lapses<br>-Microloans system polls customer wallet balance and automatically retrieves any recoverable amount till loan is paid back in full.   |
| Credit score rules                           | Refer to page 6  |
| Loan amounts requestable                     | Configurable per lender (Refer to page 6)  |
| Automations / innovations on phase 1 product | Improved automatic recovery process <ol style="list-style-type: none"> <li>1. Once the customer defaults, the microloans system will send a notification to the EcoCash system to deactivate outgoing financial transaction types on the customers wallet. An SMS advising the customer of the freeze will also be sent.</li> <li>2. The EcoCash system will notify the Micro-loans system when the customers' balance changes (due to a deposit transaction type occurring). This will trigger a recovery transaction on the microloans system to pull funds.</li> <li>3. Once the full repayment amount has been recovered, the microloans system will send a notification to the EcoCash system again, this time to reactivate outgoing financial transaction types.</li> </ol> |

## Work Break down Structure

The table below shows the anticipated work breakdown for implementation of this product. Note these tasks will be further broken down by the implementation teams.

| Task ID | Task description  | Team                                   |
|---------|---|--|
| 1       | Integrate to data feed APIs from the Lesotho EcoCash instance for credit score calculations | Cassava development                    |
| 2       | Integrate to EcoCash APIs for funds recovery and merchant to merchant transfers             | Cassava development                    |
| 3       | Setup VPN connections and other networking requirements (developer access to servers, etc)  | Cassava + Lesotho infrastructure teams |

|   |  |                                  |
|---|--|----------------------------------|
| 4 | Setup test and production servers for the microloans application to run on   | Lesotho infrastructure team      |
| 5 | Develop the microloans application   | Cassava development team         |
| 6 | Invoicing  | Cassava business team            |
| 7 | Commercial agreements and contracting  | Cassava + Lesotho business teams |
| 8 | Develop & share required data-feed APIs  | Lesotho development team         |
| 9 | Setup required merchant accounts<br>1. Administration fee account<br>2. Lender account (must be prefunded regularly) | Lesotho EcoCash + business teams |

### Project dependencies

The following table lists the required resources for implementation that the appropriate teams will need to provide.

| API(s)  | Current status                | Phase |
|---|-------------------------------|-------|
| Credit score data feeds i.e.<br>1. Length of time on EcoCash<br>2. Length of time on Econet network<br>3. KYC data<br>4. Airtime credit history<br>5. Average airtime recharge for previous 3 months<br>6. Average EcoCash deposit amount for past 3 months | To be shared by Lesotho team  | 1,2   |
| Ecocash APIs<br>1. Subscriber to merchant (PINLESS)<br>2. Merchant to Subscriber<br>3. Balance enquiry (must not charge)  | To be shared by Lesotho team  | 1,2   |
| Phase 2 additional requirements<br>1. API to deactivate transaction types for customer on EcoCash (must be able to specify which transaction types)<br>2. API to reactivate transaction types for customer on EcoCash                                       | Feasibility check in progress | 2     |

|   |  |  |
|---|--|--|
| 3. Ping/notification setup between EcoCash and the Mirco-loans application to notify of balance updates |  |  |
|   |  |  |