

**SETECS® Mobile Technologies
Mozambique**

SAFE™ System

**National Secure Mobile
Financial Infrastructure
in Mozambique**

Project Description



Part I: Introduction

1. Executive Summary

- 1.1** This document is the description of the project targeting extensions of the basic version of the SAFE™ system, which is currently installed in Mozambique. The project is based on the SAFE™ System Description document, provided earlier to the Smart Mobile Solutions (“SMS”) team and also on suggestions received by the SMS team and its potential customers/partners. The purpose of this document is to outline, agree and plan the next version of the SAFE™ system, which will provide all mobile services required by SMS and its current partners/customers.
- 1.2** The purpose of this document is the following: the initial version of the SAFE™ system, which was installed in Mozambique, supports only SMS messages and transactions based on mobile accounts. Other than basic hardware/software prerequisites it did not have any other (extensive) costs for SETECS® Mobile Africa and for the System Operator (SMS). SETECS® Mobile Africa has the basic version of the SAFE™ system available off-the-shelf, so there were no any additional customization, adjustments, extensions or deployment costs. However, all other extensions of the basic version of the SAFE™ system require SETECS®, costs, either in the form of customization and adjustment activities or even some additional hardware components that have external costs. Therefore, those extensions must be planned and agreed in advance, as described in this document.
- 1.3** Each subsystem of the extended SAFE™ system, proposed in this document, with all their capabilities, mobile services and technologies will be established in **four phases**. For subsystems that are extensions of the existing SAFE™ components and subsystems, those four phases are: (a) customization, (b) internal testing (by SETECS® Mobile Africa team), (c) Limited field test (by Smart Mobile Solutions team), and (d) limited deployment. For new subsystems those phases are: (a) specifications, (b) development, (c) limited filed test, and (d) limited deployment. The timeline for all five phases is approximately **six months**. Each phase includes deliverables and operational mobile services, thus providing SMS with all necessary resources to start commercial deployment of the SAFE™ system already after completion of the first phase.
- 1.4** Deliverables and new mobile services in each phase will be introduced as extensions of the previously completed phases and already operational services. At the end of the proposed six months activities, all subsystems of the SAFE™ system will be fully integrated, operational and in production, so the SAFE™ system will be ready for large scaling, for introduction of new mobile services, and for extensions with new customers (companies) and users (subscribers).
- 1.5** The extensions of the currently installed, basic version of the SAFE™ system will be created as eight subsystems:
- (1) **m-Banking** – Providing users and merchants with bank accounts the possibility to access and use their accounts using mobile phones;
 - (2) **m-ATM** – providing users without bank accounts (unbanked), but also those with bank accounts, to open mobile accounts and to use them for various financial transactions;
 - (3) **m-Payments** – Performing payments by subscribers to merchants, over-the-air (OTA) and over-the-counter (OTC), using mobile phones;
 - (4) **m-Subsidies** – Providing the possibility to register and administer the recipients of Government subsidies, to deposit money to their mobile accounts, and to make use of those deposits for cash-in/cash-out and various mobile payments;
 - (5) **m-Microfinance** – Providing the possibility to customers to apply for review and apply for microfinance loans, to receive and use their loans, and to pay installments for active loans;
 - (6) **m-Insurance** – Providing the possibility to customers to review insurance schemes, to apply and purchase insurance and to clam benefits based on insurance;

- (7) **m–Parking** – Paying parking in the city; and
- (8) **m–Taxes** – Paying Government taxes and fees for motor vehicles.

- 1.6 After the first two subsystems, m–Banking and m–ATM, are activated, the other six subsystems and new mobile services they provide are mutually independent of each other. So they can be introduced in any order or even in parallel.
- 1.7 Complimentary documents to this Project Description are the **Budget** for the six months project and the **Financial Plan** for system operations for the period of the next five years. The budget does not include labor resources that SMS must provide locally.
- 1.8 The direct goal of the proposed project is to establish, deploy and operate eight SAFE™ subsystems, described in this document. But, at the same time, these subsystems will be components of a larger, **national mobile financial infrastructure**. That infrastructure can integrate various financial services (banks, government, business–to–business, telecom, etc.) through an integrated, unified and secure system for mobile transactions.

2. Participants, Mobile Services and Roles

The companies listed in this section, apart from technology provider and the system operator, which will play various roles in order to provide secure mobile services to its Clients/partners and these to the end-users and customers may change depending on the opportunities that market offer and may arise in due course.

At this stage the approached players that will lead to projects are:

- 2.1 **SETECS® Mobile Africa:** The primary role of SETECS® Mobile Africa will be as *technology provider*. It will customize, deliver and assist all other partners with activation of all SAFE™ system components required for the full deployment of the planned secure mobile transactions system.
- 2.2 **Smart Mobile Solutions:** Smart Mobile Solutions will be *System Operator*. It will install and operate SAFE™ system and assist its partners/customers in its deployment, extensions and scaling.
- 2.3 **UBA Bank:** UBA Bank will play two roles. As the *partner* of Smart Mobile Solutions it will host SAFE™ system escrow account used for accumulated Government subsidies, deposits of unbanked users will be kept. As the *customer* of Smart Mobile Solutions, it will use SAFE™ system components and services, provided by Smart Mobile Solutions, to provide m-Banking services to its own customers – individuals and merchants with accounts in the Bank.
- 2.4 **Bank Tchuma:** Bank Tchuma will also play two roles. As the *partner* of Smart Mobile Solutions it will host SAFE™ system escrow account for deposited by unbanked users using their own money. As the *customer* of Smart Mobile Solutions, it will also use SAFE™ system components and services, provided by Smart Mobile Solutions, to provide m-Banking services to its own customers – individuals and merchants with accounts in the Bank.
- 2.5 **Ologa / GAPI:** Ologa will be the *customer* of Smart Mobile Solutions. It will use SAFE™ system components and services, provided by Smart Mobile Solutions to provide mobile microfinance services to its customers. In later stages of system deployment Ologa / GAPI may create *Joint Venture* with SETECS® Mobile Africa and Smart Mobile Solutions in order to jointly coordinate, expand, deploy and operate SAFE™ system.
- 2.6 **Austral Seguros:** Austral Seguros will be the *customer* of Smart Mobile Solutions. It will use SAFE™ system components and services, provided by Smart Mobile Solutions, to provide mobile administration and payments of insurance services to its customers.

- 2.7 Motor Vehicles Authority (MVA)** will be the *customer* of Smart Mobile Solutions. It will use SAFE™ system for drivers and vehicle owners to perform registration of their vehicles, pay tax, pay vehicles insurance, etc. using mobile phones.
- 2.8 Municipal Parking Authorities** will be the *customer* of Smart Mobile Solutions. It will use SAFE™ system for drivers and vehicle owners to pay parking, review the status of the parking payment, extend parking, etc. using mobile phones.

Part II: Mobile Subsystems and Services

3. Subsystem 1: Mobile Financial Transactions using Bank Accounts

- 3.1 Mobile Services:** This is m-Banking subsystem and mobile banking services will be introduced for UBA and Tchuma bank customers – individuals and merchants. For cheap phones the services will use SMS messages without any additional software and for smart phones it will use software components (SAFE™ Wallet) loaded in smart phones and GPRS messages (if 3G is available in Mozambique). Mobile services provided by this subsystem will be the following:

- Registration of bank officers using mobile phones
- Opening and use of bank accounts (users with bank accounts)
- Cash-in and cash-out operations with bank accounts using agents or bank branch offices
- Account-to-account bank transfers using mobile phones
- Account status inquiries

- 3.2 Deliverables / Components:** SETECS® Mobile Africa will deliver to SMS the following software components of the SAFE™ system for this subsystem:

- SETECS® Identity Management Server
- SETECS® PKI National (Policy) Server
- SETECS® PKI Issuing Server
- SAFE™ Communication Server
- SAFE™ Payments Server
- SAFE™ Web Server
- SAFE™ Administrative Station
- SAFE™ Mobile Banking Module (ISO 8583)
- SAFE™ Wallet (mobile application for smart phones)

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for all the components of the SAFE™ system.

- 3.3 Services:** SMS's team will provide local technical assistance services: installation of the *SAFE™ Communication Server, SAFE™ Payments Server, SAFE™ Web Server, SAFE™ Administrative Station, and SAFE™ Mobile Banking Module*. SAFE™ Web Server will be *customized* by Web designer/developer to reflect SMS's operations and to provide download of the SAFE™ Wallet for smart phones. SETECS® Mobile Africa will customize its SAFE™ Mobile Banking Module to exchange financial messages with the IT Accounting Servers of the UBA and Tchuma banks. SETECS® Mobile Africa will link SAFE™ system to the local telecom *providers (Vodacom, mCell and Mobitel)* for use of SMS messages and GPRS services.

- 3.4 Prerequisites:** SMS will be responsible for technical, organizational and financial prerequisites. Technical prerequisites are Win 2008 Server and open Internet connection. In addition, SMS will

provide hosting environment: uninterrupted power supply, network protection components (like firewall and VPN), and technical assistance for installing, customizing, activating and operating SAFE™ system. Organizational prerequisites are all activities necessary to register and activate the planned number of agents, including their education, organization, and financial arrangements. Financial prerequisites are the budget for this phase, comprising the cost for hosting hardware platform, Internet connection and outgoing SMS messages. Active cooperation and support of the UBA's and Tchuma's IT teams, system agents/promoters and telecom operators is needed. UBA bank and Bank Tchuma will provide assistance with testing of connections between SAFE™ Mobile Banking Module and their Web or IT Accounting systems.

- 3.5 Schedule:** Customization (months 1–2), internal testing (month 3), limited field testing (months 4–5), limited deployment (month 6)

4. Subsystem 2: Mobile Financial Transactions using Mobile Accounts

- 4.1 Mobile Services:** This is mobile financial transactions subsystem using SAFE™ pre-paid mobile accounts (m-ATM). This subsystem will be used primarily by unbanked users, but users with accounts in UBA and Tchuma banks can also use mobile accounts and pre-paid account. With this subsystem the following mobile services will be operational, all based on use of SAFE™ mobile pre-paid accounts, SMS messages for cheap phones and SAFE™ Wallet (SMS and GPRS messages) for smart phones:

- Registration of system officers, system agents, users and merchants using mobile phones
- Opening and use of pre-paid mobile accounts (unbanked users or users with bank accounts, but using only mobile pre-paid accounts)
- Cash-in and cash-out operations with mobile accounts using agents (“Mobile ATM”)
- Person-to-person transfers using mobile accounts and mobile phones
- Transfers between bank accounts and mobile accounts
- Mobile account status inquiries

- 4.2 Deliverables / Components:** In addition to components from the previous phase, in this phase the following component will be delivered:

- SAFE™ Agent (mobile application for smart phones)

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for the SAFE™ system. Technical documentation includes Administration and User Manual. Marketing documentation includes User Leaflet. Educational documentation includes Technical White Paper, Business White Paper, and Operational PPT.

- 4.3 Services:** SMS will regulate the use of telecommunication services for the SAFE™ system. Subscribers of all telecom operators in Mozambique will be able to access and use SAFE™ system. SETECS® Mobile Africa will enable SMS to provide local *education* and *training* to agents and the institutional customers. In this phase, SETECS® Mobile Africa will also provide *system administration* services to SMS.
- 4.4 Prerequisites:** Active cooperation and support of the SMS's promoters, system agents/promoters and telecom operators is needed. It may include Post Offices, small financial shops, local merchants, etc.
- 4.5 Schedule:** Customization (months 1–2), internal testing (month 3), limited field testing (months 4–5), limited deployment (month 6)

5. Subsystem 3: Mobile Payment Services using Standard Phones, SAFE™ Wallet for Smart Phones and SAFE™ Smart Cards

5.1 Mobile Services: Mobile Services: With this subsystem the same financial services as with the previous two subsystems will be available, but extended with payments to merchants by customers using different mobile technologies. Payments will be performed using indirect phone-to-phone communications via SAFE™ Payment Server (over-the-air) and direct phone-to-phone communications using Bluetooth protocol (over-the-counter). Eventually, in some later stage, NFC enabled mobile phones and SAFE™ smart cards may also be tested. Users may use for payments either their mobile accounts or their regular bank accounts.

The following financial services will be available:

- Cash-in and cash-out operations using mobile phones with merchants
- Payments to merchants over-the-air (OTA) using mobile phones
- Account status inquiries using mobile phones
- Web payments using bank or SAFE™ mobile accounts

5.2 Deliverables / Components: SETECS® Mobile Africa will deliver to SMS the following software components of the SAFE™ system for this phase:

- SAFE™ Merchant (mobile application for smart phones)
- SAFE™ Web Payment Module for Web merchants using mobile and bank accounts

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for the new components of the SAFE™ system.

5.3 Services: In this phase SMS team will install and activate SAFE™ Smart Cards Server that will receive request and issue SAFE™ Smart Cards. It will also install two SAFE™ Smart Cards Stations with two smart card readers and a camera for enrollment of users. In this project, SMS will also be in charge of all SAFE™ smart card management operations. One thousand cards and one thousand NFC microSD cards are planned to be issued in this project, loaded with the SAFE™ Wallet. SETECS® Mobile Africa will assist SMS team to distribute, connect and activate SAFE™ PoS devices with participating merchants. Ten merchants are planned to participate in this pilot. In this phase 10 Web merchants will be enabled to accept mobile payments from their Web Servers.

5.4 Prerequisites: Three PCs as hardware components for SAFE™ Smart Card system, 1000 smart cards and 1000 microSD cards.

5.5 Schedule: Customization (months 1–2), internal testing (month 3), limited field testing (months 4–5), limited deployment (month 6)

6. Subsystem 4: Mobile Government Subsidies

6.1 Mobile Services: With this subsystem the following new mobile services will be introduced for recipients of Government subsidies:

- Registration of individuals eligible to receive subsidies
- Administration of individuals (suspension, termination, changing the level of subsidies, adjustment of payment terms, etc.)
- Receiving payments from Government
- Reviewing the status of mobile accounts

6.2 Deliverables / Components: SETECS® Mobile Africa will deliver to SMS the following software components of the SAFE™ system for this phase:

- SAFE™ Mobile Subsidies Server
- SAFE™ Mobile Subsidies Administration Station
- SAFE™ SMS messages for mobile subsidies transactions for cheap phones
- SAFE™ Wallet extensions for mobile subsidies transactions for smart phones

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for the new components of the SAFE™ system.

6.3 Services: In this phase SMS team will install and activate SAFE™ Mobile Subsidies Server, which will provide on–line connection between the SAFE™ system and Web or IT Accounting Server of the UBA Bank. SETECS® Mobile Africa

- will link SAFE™ Mobile Subsidies Server with the SAFE™ Payment Server, so that subsidies will be deposited and paid using mobile accounts, and
- it will also link SAFE™ Mobile Subsidies Server with Web or IT Accounting Server of the UBA Bank to access directly its database containing recipients of subsidies.

6.4 Prerequisites: Active cooperation of the UBA Bank’s technical team is needed

6.5 Schedule: Specifications (month 1), customization (months 2–3), internal testing (month 4), limited field testing (month 5), limited deployment (month 6)

7. Subsystem 5: Mobile Microfinance Transactions

7.1 Mobile Services: With this subsystem the following new mobile services will be introduced for individuals and merchants:

- Inquiry about microfinance loans
- Applications for microfinance loans
- Receiving approved loans and loading them into bank or mobile accounts
- Using loans for payments
- Re–payments of loans using bank or mobile accounts
- Various listings and summary reports about microloans

7.2 Deliverables / Components: SETECS® Mobile Africa will deliver to SMS the following software components of the SAFE™ system for this phase:

- SAFE™ Mobile Microfinance Server
- SAFE™ Mobile Microfinance Administration Station
- SAFE™ SMS messages for mobile microfinance transactions for cheap phones
- SAFE™ Wallet extensions for mobile microfinance transactions for smart phones

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for the new components of the SAFE™ system.

7.3 Services: In this phase SMS team will install and activate SAFE™ Mobile Microfinance Server, which will provide on–line connection between the SAFE™ system and IT Accounting Server of Ologa / GAPI. SETECS® Mobile Africa

- will link SAFE™ Mobile Microfinance Server with the SAFE™ Payment Server, so that microloans will be deposited and paid using bank or mobile accounts, and
- it will also link SAFE™ Mobile Microfinance Server with IT Accounting Server of Ologa / GAPI to access directly its database of registered users of microfinance services.

7.4 Prerequisites: Active cooperation of Ologa's / GAPI's technical team is needed

7.5 Schedule: Specifications (month 2), customization (months 3–4), field testing (month 5), limited deployment (months 6)

8. Subsystem 6: Mobile Insurance

8.1 Mobile Services: With this subsystem the following new mobile services will be introduced for individuals and merchants:

- Inquiry about insurance plans
- Applications for insurance
- Receiving approvals for insurance
- Paying for insurance
- Various listings and summary reports about insurance plans and payments

8.2 Deliverables / Components: SETECS® Mobile Africa will deliver to SMS the following software components of the SAFE™ system for this phase:

- SAFE™ Mobile Insurance Server
- SAFE™ Mobile Insurance Administration Station
- SAFE™ SMS messages for mobile insurance transactions for cheap phones
- SAFE™ Wallet extensions for mobile insurance transactions for smart phones

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for the new components of the SAFE™ system.

8.3 Services: In this phase SMS team will install and activate SAFE™ Mobile Insurance Server, which will provide on–line connection between the SAFE™ system and IT Accounting Server of Austral Seguros. SETECS® Mobile Africa

- will link SAFE™ Mobile Insurance Server with the SAFE™ Payment Server, so that insurances will be paid using bank or mobile accounts,
- it will also link SAFE™ Mobile Insurance Server with IT Authorization Server of Austral Seguros to access directly its database of users of insurance services

8.4 Prerequisites: Active cooperation of Austral Seguros technical team is needed

8.5 Schedule: Specifications (month 2), customization (months 3–4), field testing (month 5), limited deployment (months 6)

9. Subsystem 7: Mobile Vehicles Services

9.1 Mobile Services: With this subsystem the following new mobile services will be introduced for owners of motor vehicles:

- Payment of vehicle registration fees and taxes
- Reviewing the status and validity of vehicles registration

9.2 Deliverables / Components: SETECS® Mobile Africa will deliver to SMS the following software components of the SAFE™ system for this phase:

- SAFE™ Mobile Vehicles Server
- SAFE™ Mobile Vehicles Administration Station
- SAFE™ SMS messages for mobile vehicles transactions for cheap phones
- SAFE™ Wallet extensions for mobile vehicles transactions for smart phones

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for the new components of the SAFE™ system.

9.3 Services: In this phase SMS team will install and activate SAFE™ Mobile Vehicles Server, which will provide on–line connection between the SAFE™ system and IT Registration Server of Motor Vehicles Administration. SETECS® Mobile Africa

- will link SAFE™ Mobile Vehicles Server with the SAFE™ Payment Server, so that vehicle taxes will be paid using bank or mobile accounts,
- it will also link SAFE™ Mobile Vehicles Server with IT Registration Server of the Motor Vehicles Authority to access directly its database of vehicles registration data.

9.4 Prerequisites: Active cooperation of Motor Vehicles Authority technical team is needed

9.5 Schedule: Specifications (month 3), customization (months 4–5), field testing (month 6)

10. Subsystem 8: Mobile Parking Payments

10.1 Mobile Services: With this subsystem the following new mobile services will be introduced for owners of motor vehicles:

- Payment of parking fees
- Reviewing of expiration of parking fees
- Extensions of parking fees

10.2 Deliverables / Components: SETECS® Mobile Africa will deliver to SMS the following software components of the SAFE™ system for this phase:

- SAFE™ Mobile Parking Server
- SAFE™ Mobile Parking Administration Station
- SAFE™ SMS messages for mobile parking transactions for cheap phones
- SAFE™ Wallet extensions for mobile parking transactions for smart phones

SETECS® Mobile Africa will also deliver technical, marketing, end educational documentation for the new components of the SAFE™ system.

10.3 Services: In this phase SMS team will install and activate SAFE™ Mobile Parking Server, which will provide on–line connection between the SAFE™ system and IT Parking Server of the Municipal Parking Authority. SETECS® Mobile Africa

- will link SAFE™ Mobile Parking Server with the SAFE™ Payment Server, so that parking fees will be paid using bank or mobile accounts,
- it will also link SAFE™ Mobile Parking Server with IT Parking Server of the Municipal Parking Authority to access directly its database of registered vehicles, parking locations, and paid fees.

10.4 Prerequisites: Active cooperation of Municipal Parking Authority technical team is needed

10.5 Schedule: Specifications (month 3), customization (months 4–5), field testing (month 6)