

# **Takarub**

A proposal to mobile operators and service providers

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## Introduction

Takarub is a technology/content and a solution provider, was established to serve both customers and mobile operators since 2004. Takarub offers mobile consumers rich content that is distributed over SMS, MMS and IVR. Takarub serves mobile operators by providing various voice and SMS solutions such as Ring Back Tones, Video Ring Back Tones, Back Ground Music, Back Ground Videos and USSD Gateways.

We are witnessing a high rate of Mobile penetration in the region, this puts mobiles amongst the best media tools and means of accessing information and purchasing content; Takarub has made big efforts to simplify the flow of information to mobile users through creating comprehensive solutions and entertaining services.

Mobile Banking and Mobile Commerce has turned to its peak in the past few years, Takarub, as a service and solution provider, considered developing an application that would enable mobile consumers and bank clients to benefit from using their mobile to access their bank accounts and process various transactions.

When people are hard pressed for time, the need for "anytime anywhere" banking resides high in the hierarchy of importance. Bearing this in mind, banks provide a novel service which gives retail customers account information and real-time transaction capabilities from their cell phones. With Takarub's banking application banking and bank transaction can be made easier than ever.

The initial idea of Mobi-Bank transactions is to provide a convenient and cost effective way for customers to perform banking transactions. MobiBank service is a modified version of internet banking using cellular technology and the GSM network as a medium to transfer request over Short Messaging System but was improved significantly by adding the idea of the on device application that has the barcode (cashcode) solution embedded in it.

Takarub's MobiBank is a one of a kind solution which can be provided for every entity in any society.

## Solution

Takarub's Mobi-Bank offers the following:

- Get account balance details.
- Request a cheque book.
- Request last three transaction details.
- Pay at retail stores using Short Code Messages or by using Takarubs' EasyBarCode.
- Pay bills for electricity, mobile, insurance etc.
- Notifications for different types of transactions.

The Application is a fully functional mobile application which has a friendly and easy to use interface; the application can be modified to support any spoken language easily.

The application itself has more than one component, which can be described below as:

Component	Purpose	Side
Clients Mobile Application	Used for all the transaction a client might perform, along with a unique bar code image for each client	Installed and configured on the clients mobile
Mobile Bar Code Generator	Used to create distinct yet unique bar code images for each client of the bank who wishes to install the mobile application (Easy BarCode)	Installed and configured on the Banks computers
Database servers and handlers	Used to hold the database and database records, also, used for implementing a handler for SMS's and database records manipulation. It will also hold the SMS gateway and system brain.	Installed and configured behind the banks secured network, where a secured connection should be established between the operator and the bank for SMS handling using the SMS gateway
Point Of Sale application	Used to read from the mobile (bar code image) and the send the data to the banks servers under some encryption format.	Located at the merchants (sellers) side.

Takarub will deploy a server at the bank and create an SMS gateway and connect it directly to the operators' network (VPN Connection) to ensure high security and reliability.

People can benefit from Takarubs MobiBank in three different yet integrated ways:

### **1. Application**

J2ME based application that is fully developed in house, the application client sends an encrypted SMS to a pre-defined Short Code through the operator directly to the bank server where the SMS will be decrypted and processed. Afterwards, the bank sends an encrypted reply to the mobile application that will automatically be decrypted by the application and accessible by the customer.

There are two ways to send and receive SMS messages:

- Bulk Account: The bank will purchase a bulk account through the operator and offer Mobi-Bank for free for its customers.
- Billed Short Code: Pre-Defined Short Code will be used to send and receive messages between the application and the bank where customers are billed a certain amount for each request.

### **2. SMS**

Takarub developed an SMS based Mobi-Bank Solution if the customers' mobile does not support applications. Taking in consideration this issue, the customer can directly send an SMS to pre-defined Short Code to interact with their accounts.

### **3. Two Solutions in One:**

Mobi-Bank has an advantage of combining two solutions in one:

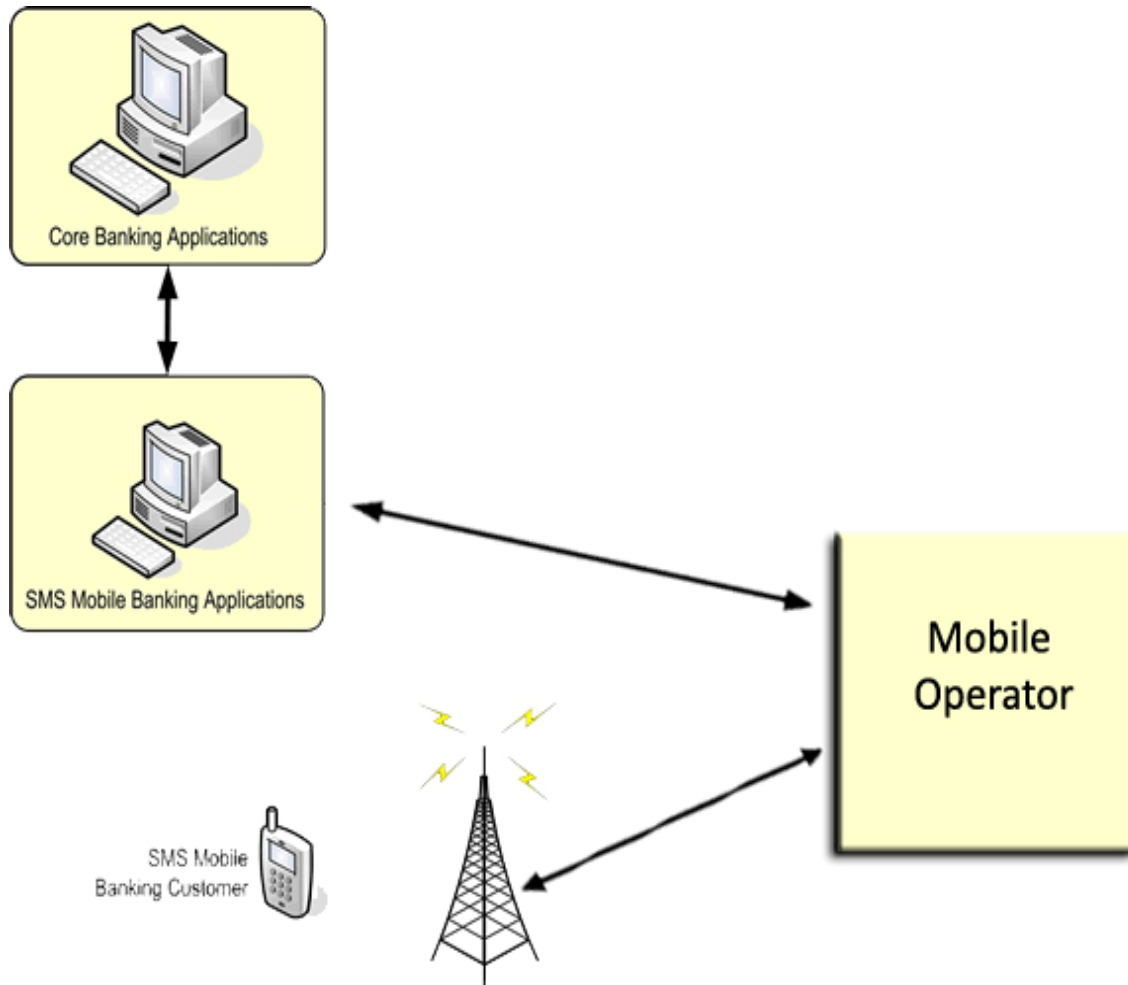
- Banking Solution
- Bar-Code Solution

Bar-Code Solution is an innovative new concept in the payment world; bank customers will be able to make purchases though the bar-code installed in their mobile.

The bar-code is a replacement to the traditional ATM Cards that is included in the Mobi-Bank application as a value added tool for the bank and customers as explained later on.

## Transaction Architecture

The solution will be installed at Bank Customer Service Employee where the employee will be able to create, edit and manage Mobi-Bank accounts.



## How it works

Takarub offers to install the solution on the banks side, where all the security measures will be provided by the bank, Takarub, will provide the security measures on the mobile application which will be installed on the clients mobile.

The application contains the customer's bank and the Bar-Code for each account to be sent directly by the Customer Service Employee to the customer via USB cable or Bluetooth.

The system will automatically generate User Name and Password for each customer, upon installing the application, SMS verification is required to save and link the application serial number and the phone number together.

When the customer make a request, the application client will automatically generate an encrypted SMS and sends it directly to the bank though the back-end of the application ( Not seen by customers ).

The SMS will be decrypted and processed by the bank where it gathers all necessary information and sends an encrypted reply message back to the application with the requested information.

If the client is using Takarubs' Bar Code Solution then, a bar-code ID is automatically generated and installed with Mobi-Bank application, if more than one account is present for one customer then the application will create a bar-code for each account.

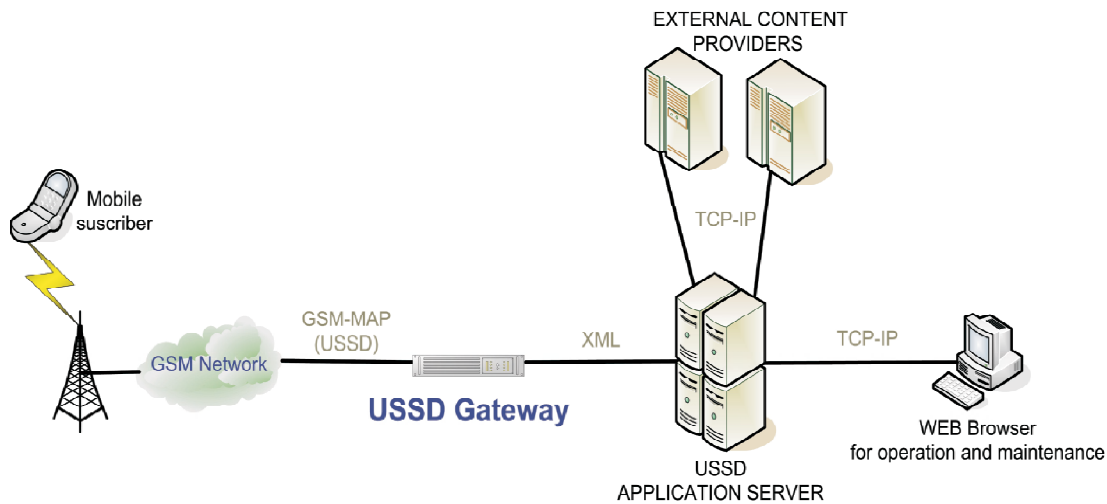
Customers can make purchases using the Bar-Code like an ATM Card. A terminal with build in Bar Reader should be installed at the point of sale. The terminal is connected through phone line with the servers at the bank and upon scanning the bar-code the terminal will request to deduct a certain amount of money from the servers and upon completion a paper print will be given to the customer.

## USSD and SS7

Takarub offers Mobi-Bank over USSD, USSD stands for Unstructured Supplementary Services Data. It is a way of sending short commands from the mobile phone to the GSM network. It uses, like SMS, the signaling channel of the GSM connection, and like SMS, USSD uses a gateway for sending and receiving commands to/from mobile users. Unlike SMS, it does not use a store and forward architecture, but a session oriented connection.

USSD text messages can be up to 182 bytes in length. Messages received on the mobile phone are not stored.

Takarub's USSD Gateway offers USSD support to operators, however, the number of supported concurrent session varies depending on the business rule agreed between the two parties, for the list of pricing, please refer to the pricing section.



Takarub's USSD Gateway is the perfect turnkey solution for operators, and service providers for providing Value Added Services and customer self-care. It is based on our SS7 signaling Gateway which provides more flexibility.

Takarub's USSD Gateway and SS7 Signaling Gateway are developed in-house, they are purely designed to deliver the best results and gateway can afford.

## Features

- 1- Reliable, PGP encrypted and signed in order to ensure confidentiality and integrity of data.
- 2- Fast, using the best development and operating tools.
- 3- Can be modified and customized easily.
- 4- Comes with a web interface for:
  - a. Controlling the system and modifying its basic procedures.
  - b. Controlling the content, data base manipulation and handling.
  - c. Server control and monitor.
  - d. Client creation and customization.
  - e. A page for clients to view, control and manipulate their personal accounts.
- 5- Takarub offers 24/7 support for all of our products and solutions.

## Capabilities

Mobile banking can offer services such as the following:

1. Account Information
  - Mini-statements and checking of account history
  - Alerts on account activity or passing of set thresholds
  - Recent transactions
2. Payments, Deposits, Withdrawals, and Transfers
  - Money Transfer between accounts
  - View current balance
  - Bill payment processing

## Security

- User Name and Password Each time to Log In.
- Verification message upon installing the application.
- Block the application if phone is reported stolen or SIM card changed without verification.

## Hardware and Software

The hardware architecture and software implementation of any project is a crucial issue, so Takarub offers the most reliable architecture and implementation to all our services.

### **Software:**

Mobi-Bank is designed and implemented using Java Programming Language based on Oracle as a database engine and distributed over a stable Linux (RedHat) platform. The SMS gateway is designed to endure load and pressure, it can serve up to 70 k messages per hour, depending on the operator connection speed. The SS7 signaling is very stable and can hold 30 concurrent channels per E1 connection.

The mobile application does not cause a lot of load and can be integrated over SMS and USSD communication.

### **Hardware:**

The hardware Takarub offers is dedicated to mobiles and mobile applications. We offer reliable E1 cards, our servers are based on Linux OS, and we use **Dell Power Edge 2950 Server**.

The hardware architecture will be deigned based on the images located in page #7.