Consultation Paper No. 13 /2010

Telecom Regulatory Authority of India

**Consultation Paper
On
Quality of Service requirements for delivery of basic financial
services using mobile phones**

October 28th, 2010

Mahanagar Doorsanchar Bhavan,
Jawahar Lal Nehru Marg, (old Minto Road),
New Delhi – 110002, India

Preface

Notwithstanding the expansion of banking services in the rural areas, a significant segment of the rural population remains uncovered by formal banking arrangements. The exponential growth of telephone services as well as improved technology have opened the door for the mobile phone to be used as an instrument for banking operations. An Inter-Ministerial Group, constituted recently, made several recommendations for delivery of basic financial services using the mobile telephone, besides suggestions regarding development of Quality of service and pricing of services.

This Consultation Paper is being issued to seek the comments of the stakeholders on the quality of service parameters. Stakeholders are requested to send their comments by 23rd November 2010 and counter comments by 30th November 2010, so as to enable us to take further action expeditiously.

(Dr. J. S. Sarma)
Chairman, TRAI

Stakeholders are requested to send their comments preferably in electronic form by 23rd November, 2010 on e-mail ID advqos@trai.gov.in. Counter comments can be sent by 30th November 2010. For any clarification/information, Shri S. K. Gupta, Advisor (CN) may be contacted at Tel. No. +91-11-23217914, Fax: +91-11-23211998.

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CHAPTER – 1

INTRODUCTION TO MOBILE BANKING

1.1. A significant proportion of the country's population does not have access to basic financial services especially in rural and remote areas. The National Sample Survey data reveals that 51.4% of nearly 89.3 million farmer households do not have access to any credit either from institutional or non institutional sources. A large percentage of rural population does not have a deposit account which means that they do not have access to even basic financial services. Around 209 million rural mobile subscribers far outstrip bank account holders in rural areas. Access to basic financial service continues to be an unrealized dream for millions of our citizens. The government of India has started number of initiatives aimed at providing basic financial services for everybody. RBI directive to open 'No frill Accounts' and use of business correspondents (BC) to reach to unbanked citizens has not improved the situation significantly as large number of active accounts continue to be limited and banks find it difficult to operate large number of tiny accounts and micro transactions profitably.

1.2. Government aims to utilize fast growth of mobile telephone in rural and remote areas and mobile banking is seen as integral part of banking services. Realizing that there is huge opportunity to provide basic financial services to unbanked citizens of the country by riding on mobile infrastructure, an Inter Ministerial Group (IMG) was constituted on 19.11.2009 by the Cabinet Secretariat to workout relevant norms and modalities for introduction of a mobile based delivery model for delivery of basic financial services and to enable finalization of a framework to allow financial transactions using mobile phones. The IMG was chaired by Secretary, DIT and included, among others, representatives from Department of Financial Services, the Department of Posts, the Ministry of Rural Development, the Planning Commission, the Unique Identification Authority of India, TRAI, RBI, the Department of Telecom and the Home Ministry.

1.3. Government set up a Committee of Secretaries under the chairmanship of the Cabinet Secretary to examine the recommendations of the IMG[1]. It met on April 1 2010, and accepted

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[1] Refer URL http://www.mit.gov.in/sites/upload_files/dit/files/ReportoftheInterMinisterialGroup.pdf

the report and approved the IMG framework as the basis for delivering financial services using mobile technology. It was decided that all Government Departments and Regulatory Bodies will initiate steps to implement the approved IMG framework in time bound manner.

1.4. The IMG has prepared a framework for the delivery of basic financial services using mobile phones specifically focusing on the following broad shareable elements:

- "Know Your Customer (KYC)" norms, processes and actual data pertaining to enrolment of new customers for services under the proposed framework. The IMG also decided to consult the MHA while arriving at the shareable KYC requirements

- An ubiquitous infrastructure component (including human resources involved) for "cash-in" and "cash-out" operations at the village / local level.

- An additional infrastructure component for facilitating management of large number of small-value accounts and micro-transactions involved in the delivery of basic financial services.

1.5. The framework envisages creation of "Mobile linked No-Frills Accounts" by the Banks, which will have various transaction limits. The basic financial transactions on these accounts (cash deposit, credit customer's mobile linked no-frills account, cash withdrawal, peer to peer transfer & balance inquiry) can be executed through a mobile based PIN system using "Mobile Banking POS" or through bio-metric based "micro ATMs" of the BCs (or the sub-agents of BCs). The IMG has identified the different stakeholders in the framework and has defined the roles of each of these stakeholders. These stakeholders are Reserve Bank of India (RBI), Unique Identification Authority of India (UIDAI), National Payments Corporation of India (NPCI), Banks Mobile Service Providers (MSPs), Department of Post (DoP), Citizen, Government and TRAI.

1.6. The framework envisages sharing of the following elements:

- A simplified common template for the KYC requirements for the Mobile linked No-Frills Accounts which is acceptable to all service providers.

- Cash-in / cash-out operations at the front end involving deposits and withdrawals into Mobile linked No-Frills Accounts. BCs (or the sub-agents of BCs) undertaking these operations will perform them

on behalf of all Banks.

- An **Account Mapper** that provides linkages between UID No, mobile number and the mobile linked no-frills account details. The Account Mapper is essentially a table which has three attributes: UID Number, Bank Account Number (including the branch routing number) and the mobile phone number, (if there is one) of the account holder. Given a UID or mobile number, it can provide mobile linked no-frills account number. The only limitation is that in such cases the mapping based on mobile numbers will only link to a single bank account. Real-Time Micro Transactions (REMIT) connects to the Account Mapper to obtain details pertaining to a specific customer after he/she has been authenticated. The Account Mapper will be operated by a trusted entity that will ensure the privacy of data. It may be operated by organizations such as National Payments Corporation of India (NPCI), National Securities Depository Limited (NSDL) or by a third party under the supervision of RBI. In any case, the common infrastructure components - Account Mapper and the Switch - need to be coupled and the combined entity can even be established through outsourcing to provide required services. The concerned operations should be regulated by RBI in consultation with TRAI, DOT and DIT. Till such time the Account Mapper is developed and becomes operational, alternative mechanisms of linking the customer's UID number, mobile number and mobile linked no-frills account details may be explored by the stakeholders involved. The account mapper may thus be visualized as a service that exists as part of the delivery framework that maps the reference to a mobile number or a UID number to a mobile linked no-frills account in a particular server.

- An interoperable central payments switch, called **REMIT** Switch, that will facilitate real time transaction routing across BCs, Banks (or associated FIs and outsourcing partners of Banks), UIDAI, Account Mapper and mobile service providers. REMIT will help in executing large volume of small value transactions across banks in real time and at low cost. For this purpose, REMIT will follow standard banking protocols in order to ensure security of transactions. It will use industry messaging standards such as ISO 8583 so that it is compatible with the infrastructure already in use. A similar switch India Money Line System (IML) is currently being built by NPCI which among other things will undertake switching in respect of mobile based transactions across Banks. The same switch may be enhanced / customized to enable the kind of

transactions proposed under this model. The IML switch being created by NPCI is currently in the Request for proposal (RFP) stage and is likely to be operational by March, 2011

- Interoperable repositories at the national level for hosting and managing mobile linked no-frills accounts that may be created and managed by independent third party service providers / organisations on behalf of the participating Banks. **INFAST (Interoperable Infrastructure for Accounting Small Transactions)** can be created as an additional infrastructure for creating and managing mobile linked no-frills accounts. While micro transactions can be managed without creating a centralized repository for mobile linked no-frills accounts, there is a need for a shared limited version of Core Banking Solutions (CBS) that can act as an accelerator, bring in huge efficiencies and economies of scale and provide enormous cost optimization to all the stakeholders. The creation of INFAST would significantly reduce the load on the switching infrastructure as it will have to route the transactions only to INFAST instead of switching to the Issuing and the Receiving Banks. INFAST may be created and managed by organizations such as NPCI or NSDL or by an independent third party service provider on behalf of all the participating Banks under the supervision of RBI. Present RBI guidelines on outsourcing of financial services by banks permit banks to outsource data processing and back office related activities. The sharing of IT infrastructure for account maintenance for scaling up operations as envisaged above would be in line with such permissible outsourcing arrangements and should also facilitate inter-bank settlement. However, this would be subject to the banks adhering to extant outsourcing guidelines and the RBI guidelines on customer data confidentiality. While a single INFAST repository to be shared by all Banks would be ideal, the architecture advanced under this framework does allow multiple INFAST repositories to evolve and interoperate.

1.7. The IMG framework based on mobile phones and biometric-based authentication will form the core micro-payment platform for transfer of benefits under various government schemes, micro-payment services and financial inclusion for the target groups of social sector programmes. Besides delivery of basic financial services to the poor and disadvantaged, both urban and rural, the mobile-based delivery model will cut delay and reduce the costs and hardships incurred by

the beneficiaries in availing the cash benefits under various welfare and poverty alleviation schemes.

1.8. The IMG report has explained in detail the indicative process of how the five basic transaction (account opening, cash deposit, cash withdrawal, peer to peer transfer and balance enquiry) will get executed through the shared infrastructure using Mobile Banking POS/ Micro ATM equipment.

1.9. The IMG has, inter-alia recommended that Mobile Service Providers (MSPs) must provide prioritized services with respect to these transactions. The charges levied in this regard should be regulated by TRAI and through competitive market forces to ensure that they sufficiently cover costs incurred for secure communication without resulting in inordinate profits. A committee constituted by TRAI may also draw up guidelines to ensure high availability of associated communication services. TRAI should resolve all issues arising out of the provisioning and pricing of such services by the MSPs.

1.10. This Consultation Paper has been issued by TRAI suo-moto and is intended to seek the views of stakeholders to access the options to provide priority services with respect to financial transaction on mobile phones by Cellular Mobile Service Providers using their network and also to identify QoS parameters to meet such requirements.

1.11. The consultation paper may result in formulation of new regulations or modification in the existing regulations.

1.12. Chapter II of the consultation paper on 'QoS requirement to support financial transaction on mobile' deals with various QoS requirements to communicate for financial transaction as per the framework prescribed by IMG.

1.13. Chapter III deals with issues for consultation.

CHAPTER –II

QoS REQUIREMENT TO SUPPORT FINANCIAL TRANSACTION ON MOBILE

2.1 A large number and variety of mobile phones are available today with varying capabilities. Many of the low end phones do not support Java, many supports SIM tool kit but do not support a WAP browser. Most phones however support SMS. Implementing a banking system through mobile phones is a challenging task. Banks would look for quality of service in terms of delivery and security of messages. It would perhaps be necessary that the service providers are able to offer service level agreements (SLAs) which give guarantee of delivery, good throughput, promptness of delivery, security of messages sent over the air as also encryption of the data that will be stored in device for later / off-line analysis by the customer.

2.2 In view of what has been said above, it would be necessary to investigate the quality of service requirements with various options open to the implementation agencies. The methods listed below emerged, as likely candidates for mobile banking, out of the preliminary discussions with some vendors and service providers:

- IVR (Interactive Voice Response)
- SMS (Short Messaging Service)
- WAP (Wireless Access Protocol)
- Standalone Mobile Application Clients
- USSD (unstructured Supplementary Service Data)

These methods are discussed in the following paragraphs.

IVR – Interactive Voice Response

2.3 IVR or Interactive Voice Response service operates through pre-specified numbers that banks, and other agencies, advertise to their customers. Customers making calls on the IVR number are usually greeted by a stored electronic message followed by a menu of service options. Customers can choose options by pressing various keys on their keypads. They are then given further instructions for obtaining a service like checking their account balance or transferring money.

2.4 One way to enable IVR is by deploying a PBX system that can host IVR dial plans. Mobile banking based on IVR has some major limitations that they can be used only for Enquiry based services. IVR

based operation may be comparatively more expensive than SMS and some other methods as it engages voice channels for the duration of the call. No written records can be preserved in IVR response at subscriber end.

2.5 IVR response comes from a pre-defined number, therefore, there does not seem to be any additional requirement for implementing priority routing as response is provided simultaneously. Only if all the lines to the IVR are busy then the calls may be queued and the customer has to wait. Some parameters in such a system are queue length and maximum time that a customer should have to wait. In a high congestion scenario calls may be rejected.

SMS – Short Messaging Service

2.6 SMS uses the popular text-messaging standards to enable mobile application based banking. Customer requests are sent using an SMS containing a service command to a pre-specified number. The mobile banking system responds with another SMS containing the specific information. The log of all communications can effectively be maintained and audited if such a need arises.

2.7 The main advantage of deploying mobile applications over SMS is that almost all mobile phones, including the low end mobile phones, are SMS enabled and no customization with special hardware or software is required. An SMS based service can be hosted on a SMS gateway that further connects to the Mobile service providers SMS Centre. A possible architecture for such a system is given below:
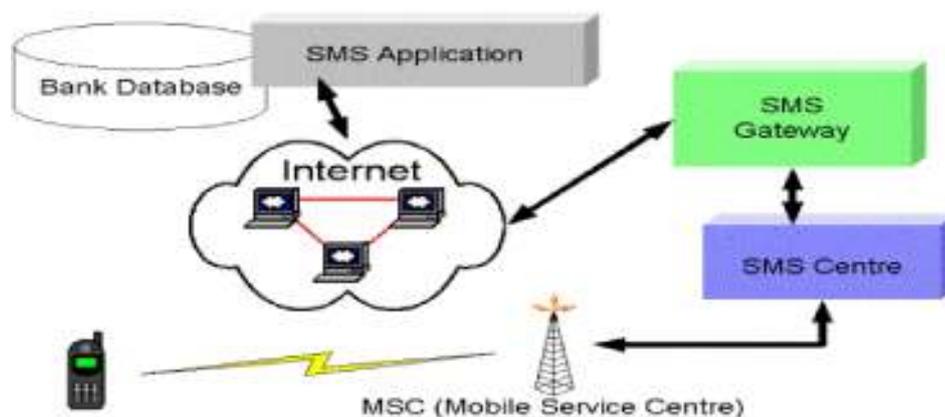
Figure 1: SMS Network Architecture

2.8   SMS uses signalling channel for it's carriage and as such have no well defined time frame for its delivery. However, it's a store and forward system in which the SMS can be stored till it is delivered or a predetermined time. In a non congested network, SMS transactions are almost realtime. But there can be substantial delays in delivery of SMS depending on the network status. The primary issue of concern is whether SMS used for financial transactions can be prioritised? If so, what should be the parameters to adequately define the SMS delivery requirements? It is also important to what additional costs, if any, would have to be incurred by the service providers to implement a prioritized SMS delivery system.

2.9   There may also be security concerns in using SMS for transaction based services. However, it may be possible to address such concerns using appropriate encryption mechanism and checks and balances in the system. In such a case can encryption be supported on SMS in present form? If so, what size of data can be supported on single SMS?

STK – SIM application Tool Kit

2.10   SIM Application Toolkit (STK) is a standard of the GSM system which enables the SIM to initiate actions which can be used for various value-added services. The SIM Application Toolkit consists of a set of commands programmed into the SIM card which define how the SIM should interact directly with the outside world and initiates commands independently of the handset and the network. This enables the SIM to build up an interactive exchange between a network application and the end user and access or control access to the network. The SIM also gives commands to the handset, such as display menu and ask for user input. STK has been deployed for many applications, often where a menu-based approach is required, such as Mobile Banking.

In GSM 2G networks SIM Application Toolkit is defined in the GSM 11.14 standard in 1995. From release 4 onwards, GSM 11.14 is replaced by 3GPP 31.111 which also includes specifications of USIM Application Toolkit (USAT) for 3G networks. Some manufacturers claim that STK enables higher levels of security through identity verification and encryption, which are necessary for secure electronic commerce.

The STK solution may not be available for all phones. Also after a SIM has been delivered to the customer it can be difficult to change the STK applications and menus on the SIM. The SIM must be returned and exchanged for a new one which may be costly and inconvenient or in some cases the applications can be updated over the air.

WAP – Wireless Access Protocol

2.11   AP uses a concept similar to that used in Internet banking. Banks maintain WAP sites which customer's access using a WAP compatible browser on their mobile phones. WAP sites offer the familiar form based interface and can also implement security quite effectively. Customers can have an anytime, anywhere access to a secure reliable service that allows them to access all enquiry and transaction based services and also more complex transaction like trade in securities through their phone.

2.12   A WAP based service requires hosting a WAP gateway. Mobile Application users access the bank's site through the WAP gateway to carry out transactions, much like internet users access a web portal for accessing the banks services. The following figure demonstrates the framework for enabling mobile applications over WAP. The actual forms that go into a mobile application are stored on a WAP server, and served on demand. The WAP Gateway forms an access point to the internet from the mobile network.
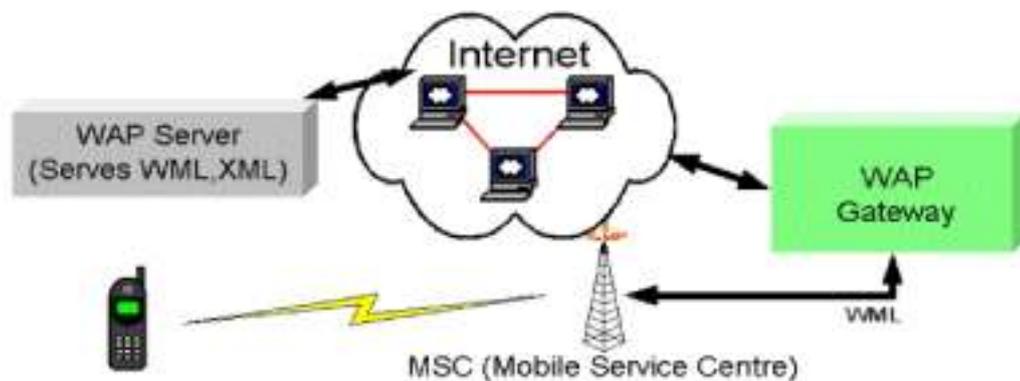
Figure 2: WAP Network Architecture for Mobile Applications

2.13   The users require additional knowledge and skill to use WAP as compared to a normal call or SMS. Moreover, all handsets do not

support WAP applications which may be hindrance in proliferation of mobile banking to enable financial transactions in rural areas.

Standalone Mobile Application Clients

2.14   Standalone mobile applications are the ones that are most suitable to implement complex banking transactions like trading in securities. They can be easily customized according to the user interface complexity supported by the mobile. In addition, mobile applications enable the implementation of a very secure and reliable channel of communication.

2.15   Such systems require individuals to download a client on their mobile before they can be used. This requires mobile handsets to support one of the many development environments like J2ME or Qualcomm's BREW. J2ME requires mobile phones that support Java. The applications need to be customized to each mobile phone on which it might finally run. As of now many low end handsets do not support Java.

Unstructured Supplementary Service Data (USSD):

2.16   Unstructured Supplementary Service Data (USSD) is a protocol used by cellular telephones to communicate with the service provider's computers. USSD can be used for WAP browsing, prepaid callback service, location-based content services, menu-based information services, and as part of configuring the phone on the network.

2.17   USSD messages are up to 182 alphanumeric characters in length. Unlike Short Message Service (SMS) messages, USSD messages create a real-time connection during a USSD session. The connection remains open, allowing a two-way exchange of a sequence of data. This makes USSD more responsive than services that use SMS.

2.18   The user composes some message—usually rather cryptic—on the phone keypad. The phone sends it to the phone company network, where it is received by a computer dedicated to USSD. The answer from this computer is sent back to the phone. The answer could be seen on the phone screen, but it is usually with a very basic presentation. The messages sent over USSD are not defined by any standardization body, so each network operator can implement whatever it finds suitable for its customers.

2.19   USSD is commonly used by a pre-paid GSM mobile phone to query the available balance. The vendor's "check balance" application hides

the details of the USSD protocol from the user. USSD Phase 1, specified in GSM 02.90, only supports mobile-initiated ("pull") operation. In the core network, the message is delivered over MAP. USSD Phase 2, specified in GSM 03.90, supports network-initiated ("push") operation as well.

2.20　Some payment methods, such as SharEpay, SWAP Mobile in South Africa, Mobipay in Spain, M-Pesa in Tanzania (but not in Kenya, where M-Pesa menus are provided by SIM application Toolkit rather than USSD), and mPay in Poland use USSD.

2.21　All GSM phones have USSD capability. CDMA systems do not have USSD capabilities.

2.22　USSD is generally associated with real-time or instant messaging services. There is no store-and-forward capability, as is typical of other short-message protocols like SMS. In other words, SMSC is not present in the processing path. Messages cannot be stored. USSD methods will also require due consideration for securing the transactions as generally USSD messages are not secure.

2.23　Issues for consultation:

- What method of communication on mobile network would be most suitable for enabling financial transactions using mobile?

- How security of such transactions can be ensured while information travels over mobile network?

- What parameters need to be defined to ensure timely delivery of information to support financial transaction using mobile?

- Can SMS used for financial transaction be sent on priority on mobile network?

- What would be measurable QoS parameters of such networks?

- Please list any other issue that you think is important and your comment thereon to finalise QoS parameters for facilitating financial transactions on mobile network?

CHAPTER III

ISSUES FOR CONSULTATION

Issues for consultation:

2.1   What method(s) of communication on mobile network (GSM and CDMA) would be suitable for enabling financial transactions using mobile phones? Please explain your answer

2.2   What in your view would be appropriate time frames for delivery of messages and responses with respect to the method(s) suggested by you? What parameters need to be defined to ensure timely delivery of information to support financial transactions using mobile?

2.3   In the method suggested by you would it be possible to prioritize the transaction messages over other messages on the network? If yes what would be the cost implications? Please also reply this with reference to SMS as means for financial transactions.

2.4   What do you think would be the security requirement using the method proposed by you for the five basic transactions ie no-frills account opening, cash in, cash out, checking balance, and money transfer?

2.5   What would be measurable QoS parameters for such networks? Please specify both network and customer centric parameters.

2.6   Please list any other issue that you think is important and your comment thereon to finalise QoS parameters for facilitating financial transactions on mobile network?

Indicative Transaction Processes using m-Pin

(The following transaction flows are subject to change based on emerging requirements and technology imperatives to meet the overall objectives)

a. Account Opening

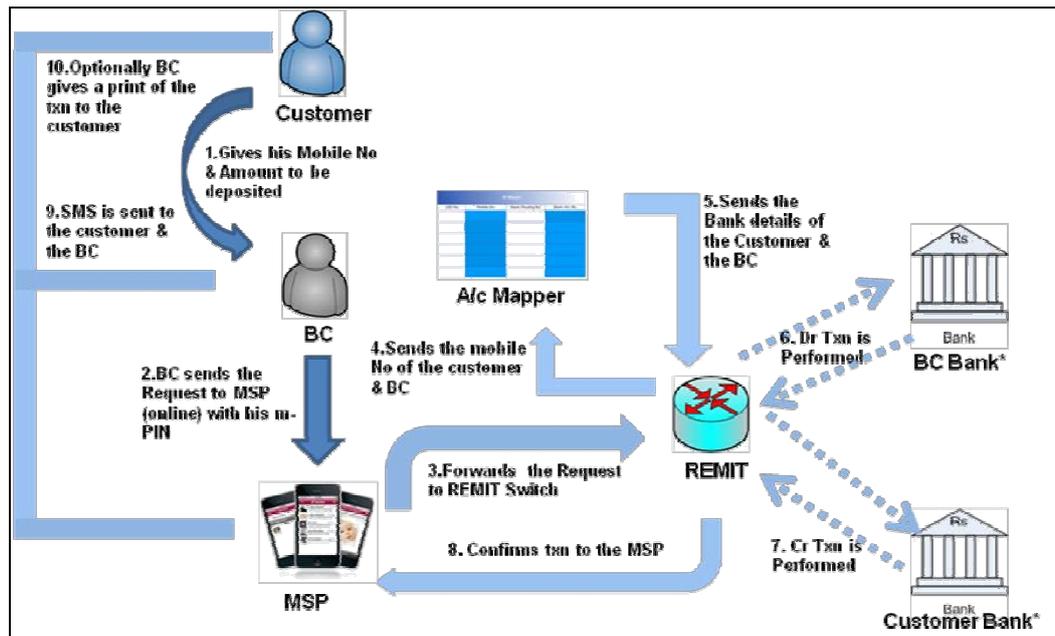The process for opening a Mobile linked No-Frills Account is as follows:

Pre-UID Stage[1]

I. Customer gives his mobile number and KYC details (as per the shared KYC norms finalized for mobile linked no-frills accounts) to the BC

II. BC sends the customer data to the Bank

III. Band creates the mobile linked no-frills account after being satisfied with the KYC of the customer

IV. Bank then sends a confirmation message to both the customer as well as the BC on their mobiles

V. Bank further sends a m-pin to the customer on his mobile for making further transactions with his/her mobile linked no-frills account

VI. Bank also sends the bank account details and customer's mobile number to the Account Mapper for record purposes
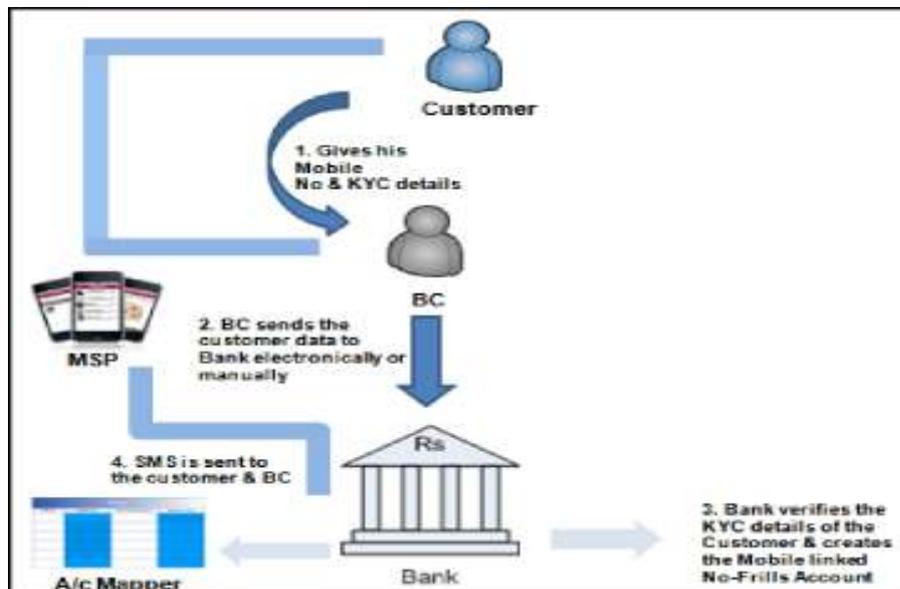
Post-UID Stage[2]

I. Customer gives his UID number (if already allotted), biometrics (for UID authentication in case UID is already allotted), mobile number and other KYC details (as per the shared KYC norms finalized for mobile linked no-frills accounts) to the BC

II. BC sends the customer data to the Bank

III. In case the customer has provided the UID then the bank verifies the UID as well as the biometrics of the customer with the UIDAI server

IV. In case the customer has not yet obtained his/her UID number from UIDAI, the bank forwards the KYC and biometric details of the customer to the UIDAI Server which internally generates the UID number of the customer and communicates the same to the customer and the bank

V. The mobile linked no-frills account is created in the bank and both the customer as well as the BC are intimated via a message on their mobiles

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VI. Bank sends a m-pin to the customer on his mobile for making further transactions with his/her mobile linked no-frills account

VII. Bank also sends the bank account details and customer's mobile number and UID number to the Account Mapper for record purposes

b. Cash Deposit

The process for depositing cash into a mobile linked no-frills account is as follows:

I. Customer gives his mobile number and the cash to be deposited to the BC

II. BC sends the customer details along with his own m-pin to REMIT switch via his mobile

III. REMIT switch sends the mobile number of the customer as well as of the BC to Account Mapper

IV. Account Mapper sends back the bank account details of the customer and the BC to REMIT switch

V. REMIT switch sends the debit instruction for the requested amount to the BC's bank

VI. BC's bank verifies the BC's m-pin

VII. Upon successful verification, BC's bank debits the BC's account with the specified amount and confirms the transaction to REMIT switch

VIII. Upon receipt of confirmation from BC's bank, REMIT switch sends the credit instruction to the customerQs bank

IX. Customer's bank credits the customer's mobile linked no-frills account with the specified amount and confirms the transaction back to REMIT switch

X. REMIT switch sends back a confirmation message to the BC as well as the customer via mobile service provider

## c. Cash Withdrawal

The process for cash withdrawal is as follows:

I. Customer approaches a BC and asks for his mobile number

II. Customer sends the withdrawal request by specifying the amount, his own m-pin and the BC's mobile number to the REMIT switch using his mobile

III. REMIT switch sends the mobile number of the customer as well as mobile number of the BC to Account Mapper

IV. Account Mapper sends back the bank account details of the customer and the BC to REMIT switch

V. REMIT switch sends the debit instruction for the requested amount to the customer's bank

VI. Customer's bank verifies the customer's m-pin

VII. Upon successful verification, customer's bank debits the customerQs account with the specified amount and confirms the transaction to REMIT switch

VIII. Upon receipt of confirmation from customerQs bank, REMIT switch sends the credit instruction to the BC's bank

IX. BC's bank credits the BC's account with the specified amount and confirms the transaction back to REMIT switch

X REMIT switch sends back a confirmation message to the BC as well as the customer via mobile service provider

XI BC hands over the equivalent cash to the customer
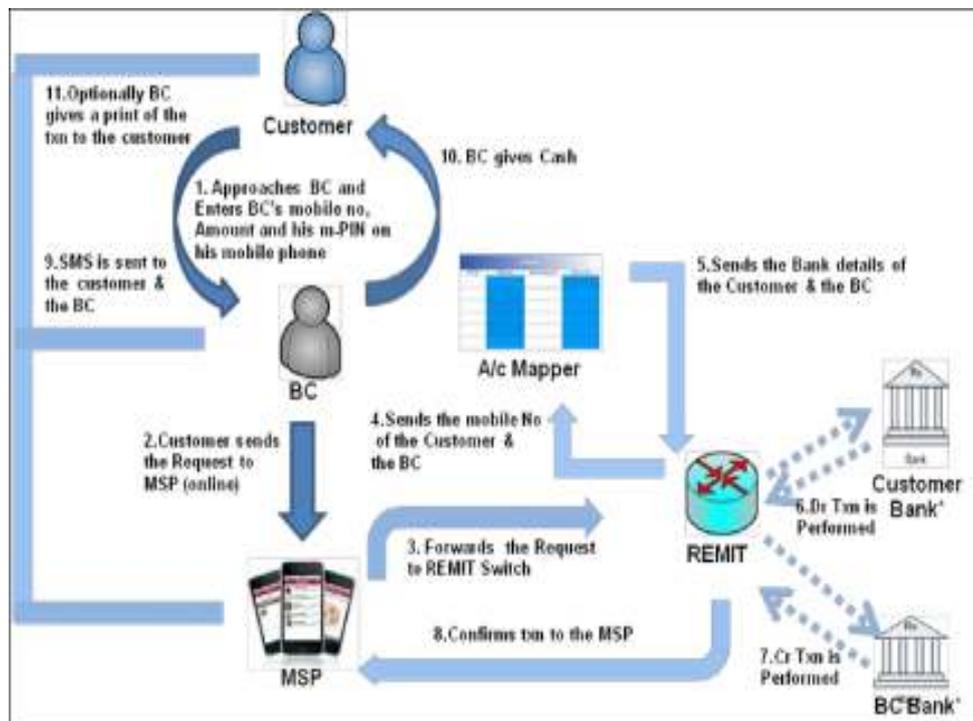
d. Transfer Money to another mobile linked no-frills account

I.   Customer sends the beneficiary's mobile number, the amount to be credited and his own m-pin to REMIT switch via his mobile

II. REMIT switch sends the customer's as well as beneficiary's mobile number to the Account Mapper

III. Account Mapper sends back the accounts details of both the customer as well as beneficiary to the REMIT switch

IV. REMIT switch sends the debit instruction for the requested amount to the customerQs bank

V.   Customer's bank verifies the customer's m-pin

VI. Upon successful verification, customer's bank debits the customer's account with the specified amount and confirms the transaction to REMIT switch

VII. Upon receipt of confirmation from customer's bank, REMIT switch sends the credit instruction to the beneficiary's bank

VIII. Beneficiary's bank credits the beneficiary's account with the specified amount and confirms the transaction back to REMIT switch

IX. REMIT switch sends back a confirmation message to the customer as well as the beneficiary via mobile service provider
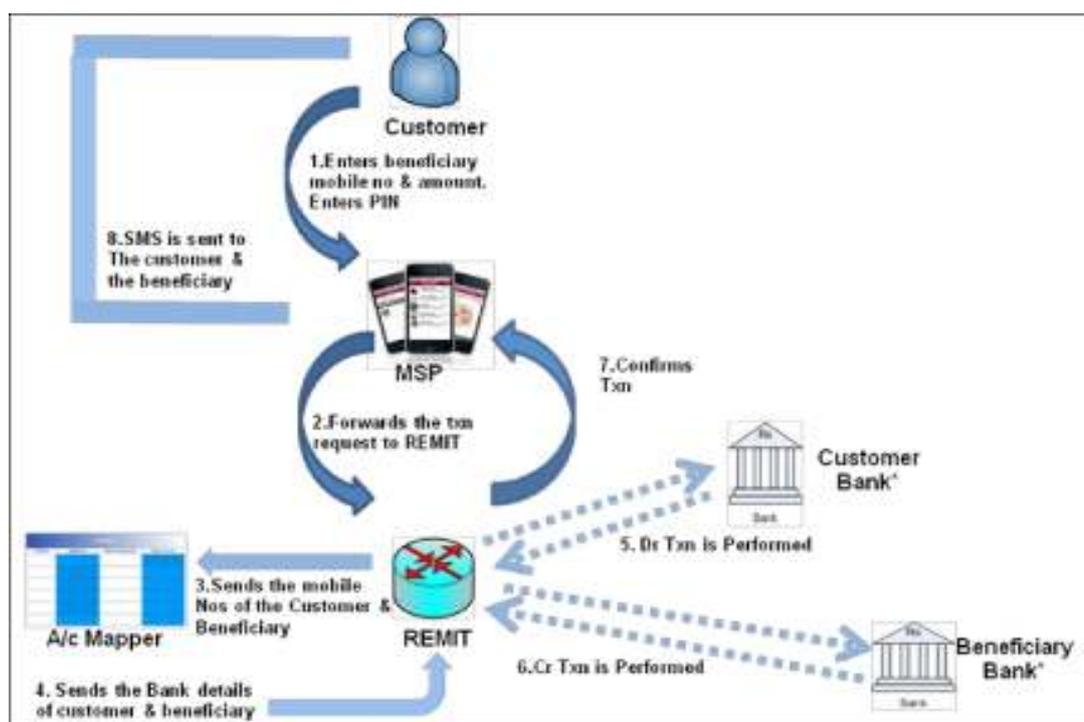
e. Balance Enquiry

I. Customer sends the request for balance enquiry along with his/her m-pin to REMIT switch using his mobile

II. REMIT sends the customer's mobile number to the Account Mapper

III. Account Mapper sends back the customer's bank account details to the REMIT switch

IV. REMIT switch sends the balance enquiry request to the customer's bank

V. Customer's bank verifies the customer's m-pin

VI. Upon successful verification, customer's bank sends back the balance details to the REMIT switch

VII. REMIT switch sends the balance details to the customer via mobile service provider
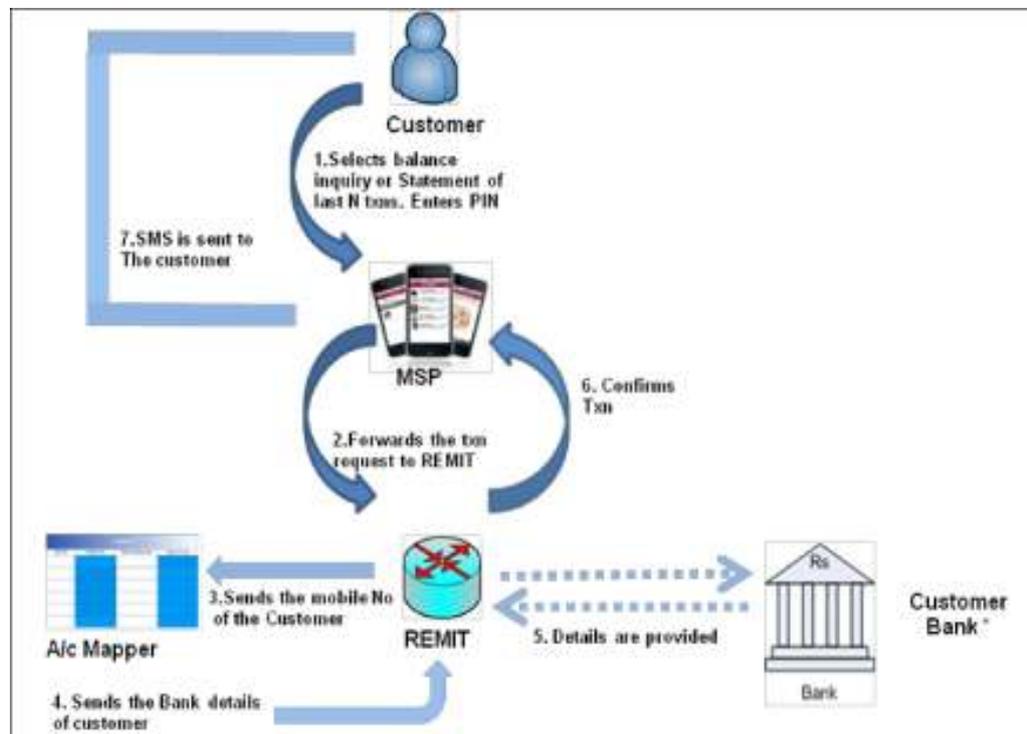
Indicative Transaction Processes using Biometrics (fingerprint)

(The following transaction flows are subject to change based on emerging requirements and technology imperatives to meet the overall objectives)

a. Account Opening

The process for opening a Mobile linked No-Frills Account is as follows:

I.   Customer gives his UID number (if already allotted), biometrics and other KYC details to the BC

II. BC sends the customer data to the Bank either manually or through Micro ATM

III. In case the customer has provided his UID number, the bank verifies the UID as well as the biometrics of the customer with the UIDAI server

IV. In case the customer has not yet obtained his/her UID number from UIDAI, the bank forwards the KYC and biometric details of the customer to the UIDAI Server which internally generates the UID number of the customer and communicates the same to the Bank and the customer

V.   The mobile linked no-frills account is created in the bank and the BC is intimated via a message on the micro ATM

VI. Bank also sends the bank account details and customer's UID number to the Account Mapper for record purposes
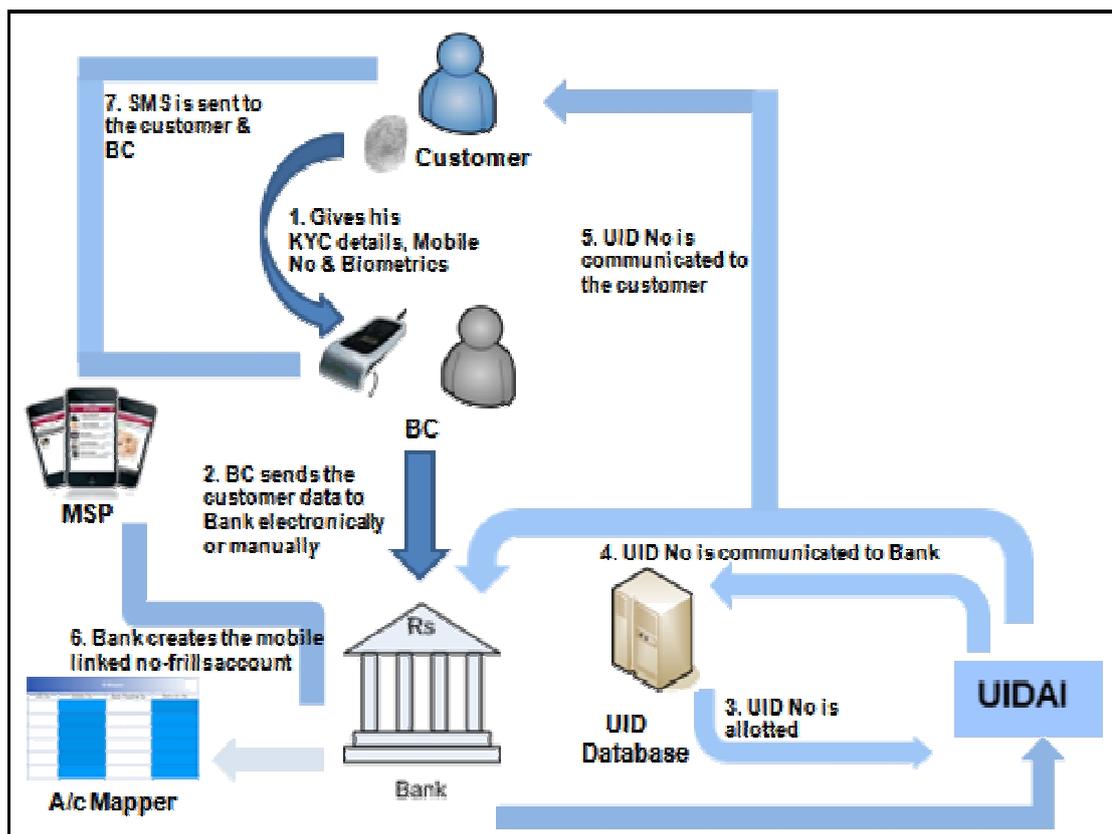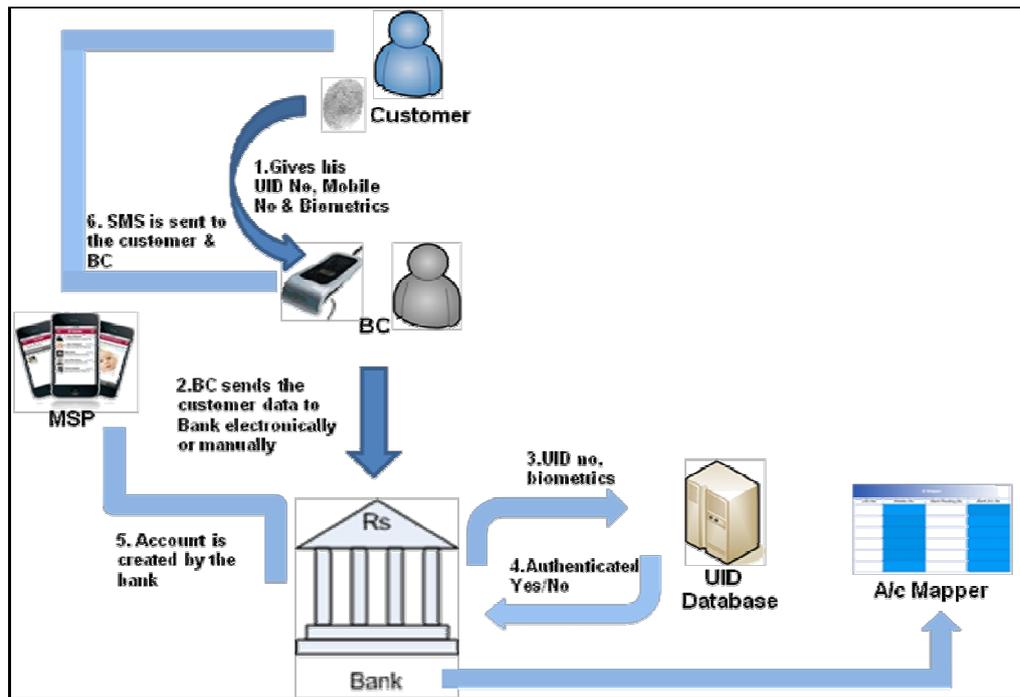
b. Cash Deposit

The process for depositing cash into a mobile linked no-frills account is as follows:

I.   Customer gives his UID number and the cash to be deposited to the BC

II.   BC sends the customer details, amount to be deposited, his own UID number and biometric information to REMIT switch via micro ATM

III.   REMIT switch sends the UID number and the biometric information of the BC to the UIDAI server for authentication

IV.   UIDAI server sends the authentication yes/no back to REMIT switch

V.   Upon successful verification, REMIT switch sends the UID number of the customer and the UID number of the BC to Account Mapper

VI.   Account Mapper sends back the bank account details of the customer and the BC to REMIT switch

VII.   REMIT switch sends the debit instruction for the requested amount to the BC's bank

VIII.   BC's bank debits the BC's account with the specified amount and confirm the transaction to REMIT switch

IX.   Upon receipt of confirmation from BC's bank, REMIT switch sends the credit instruction to the customer's bank

X.   Customer's bank credits the customer's mobile linked no-frills account with the specified amount and confirms the transaction back to REMIT switch

XI.   REMIT switch sends back a confirmation message to the BC on the micro ATM

XII.   BC further gives a print of the transaction to the customer
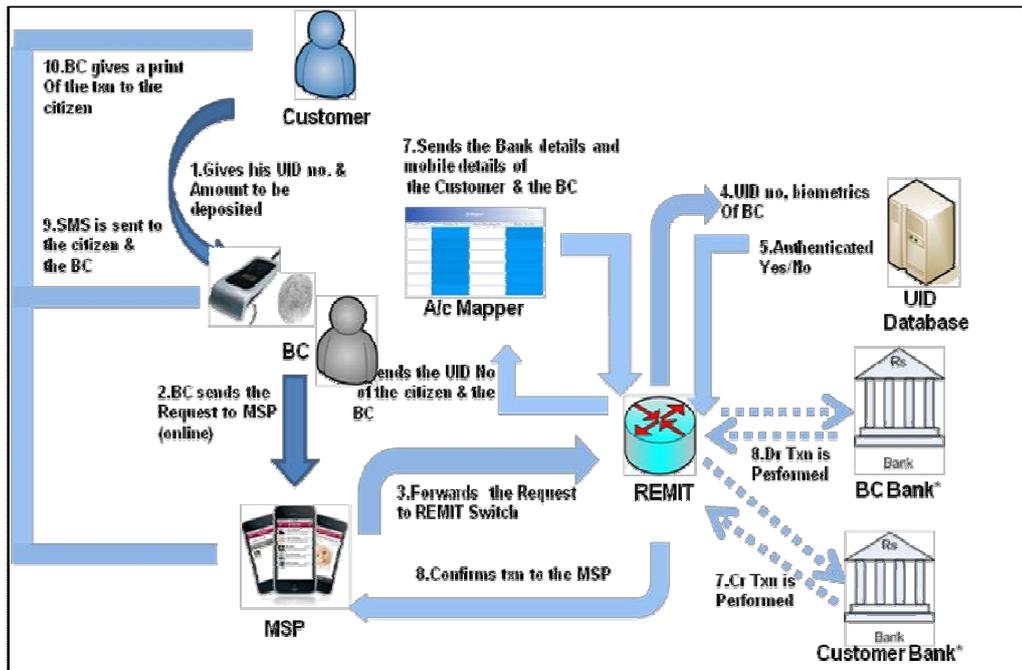
c. Cash Withdrawal

The process for cash withdrawal is as follows:

I.   Customer approaches a BC and gives his UID number, biometric information and the cash to be deposited to the BC

II. BC sends the customer information, amount to be withdrawn and his own UID number to REMIT switch

III. REMIT switch sends the UID number and the biometric information of the customer to UIDAI server for authentication

IV. UIDAI server sends back the authentication yes/no to Account Mapper

V.   Upon successful verification, REMIT switch sends the UID number of the customer as well as UID Number of the BC to Account Mapper

VI. Account Mapper sends back the bank account details of the customer and the BC to REMIT switch

VII. REMIT switch sends the debit instruction for the requested amount to the customer's bank

VIII. Customer's bank debits the customer's account with the specified

amount and confirms the transaction to REMIT switch

IX. Upon receipt of confirmation from customer's bank, REMIT switch sends the credit instruction to the BC's bank

X   BC's bank credits the BC's account with the specified amount and confirms the transaction back to REMIT switch

XI. REMIT switch sends back a confirmation message to the BC on micro ATM
XII. BC hands over the equivalent cash to the customer

XIII. BC further gives a print of the transaction to the customer if requested
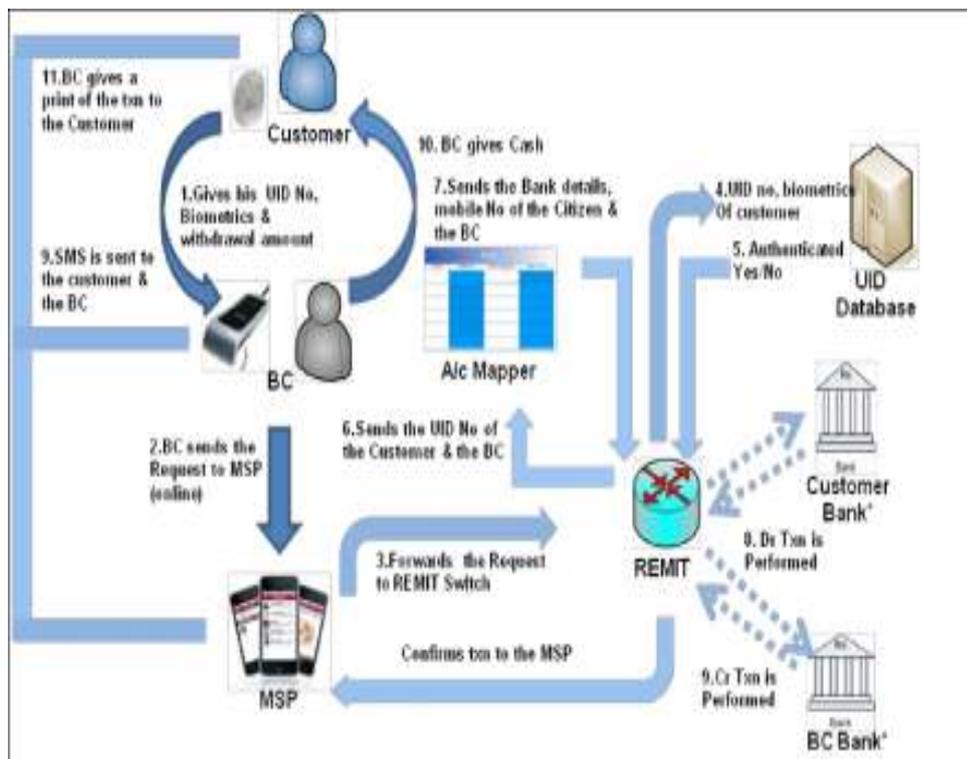
d.   Transfer Money to another mobile linked no-frills account

I.   Customer visits a BC and provides his UID, biometric information, cash to be transferred and the beneficiaryQs UID number to the BC

II. BC sends the customer details along with beneficiary information to REMIT switch through micro ATM

III. REMIT switch sends the customer's UID number and biometric information to UIDAI server for authentication

IV. UIDAI server sends the authentication yes/no back to REMIT switch

V. Upon successful verification, REMIT switch sends the UID number of the customer and the UID number of the beneficiary to Account Mapper

VI. Account Mapper sends back the accounts details of both the customer as well as beneficiary to the REMIT switch

VII. REMIT switch sends the debit instruction for the requested amount to the customer's bank

VIII. Customer's bank debits the customer's account with the specified amount and confirms the transaction to REMIT switch

IX. Upon receipt of confirmation from customer's bank, REMIT switch sends the credit instruction to the beneficiary's bank

X. Beneficiary's bank credits the beneficiary's account with the specified amount and confirms the transaction back to REMIT switch

XI. REMIT switch sends back a confirmation message to the BC on his micro ATM

XII. BC gives a print out of the transaction to the customer if requested
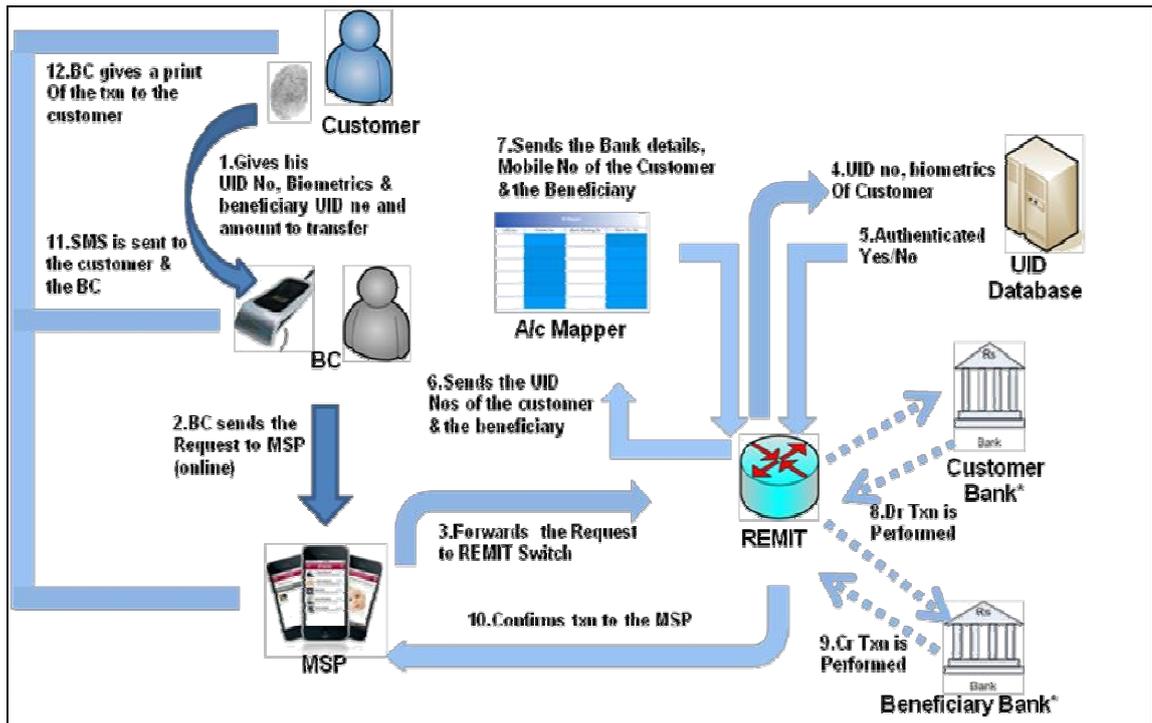
f. Balance Enquiry

I.   Customer visits a BC and provides his UID number, biometric information and requests for balance enquiry

II. BC sends the customer information to REMIT switch through his micro ATM

III. REMIT switch sends the customer's UID number and biometric information to UIDAI server for authentication

IV. UIDAI server sends the authentication yes/no back to REMIT switch

V.   Upon successful verification, REMIT switch sends the customer's UID number to the Account Mapper

VI. Account Mapper sends back the customer's bank account details to the REMIT switch

VII. REMIT switch sends the balance enquiry request to the customer's bank

VIII   Customer's bank sends back the balance details to the REMIT switch

IX.   REMIT switch sends the balance details to the customer to the BC's micro ATM

X.   BC gives a print out of the balance statement to the customer
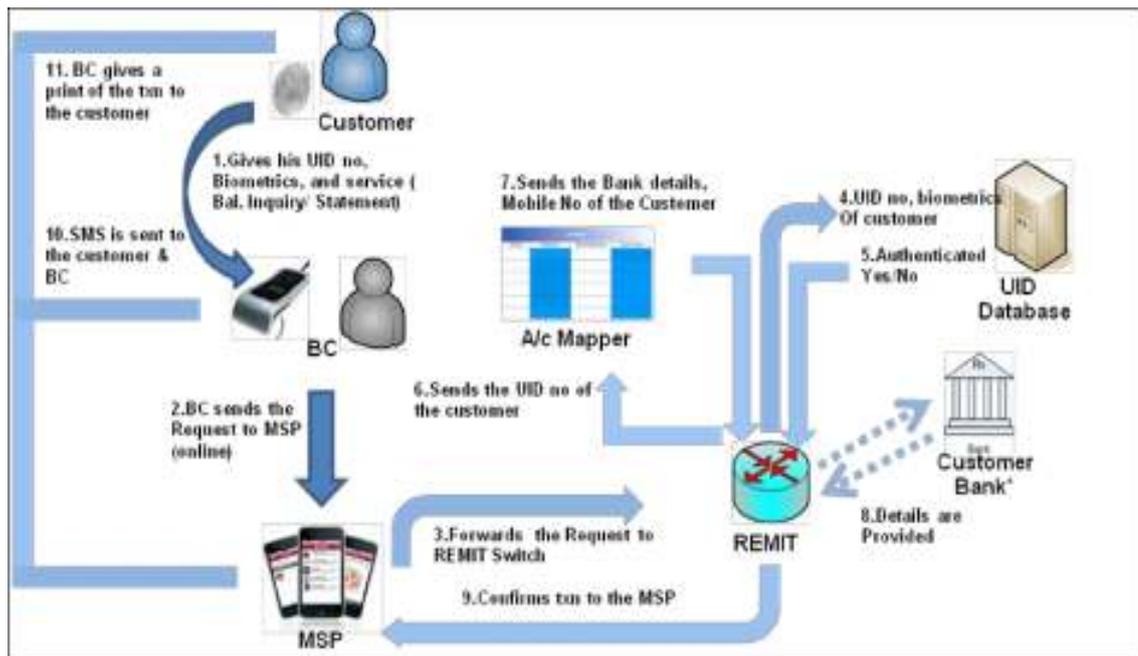
List of Acronyms

Sl No	Acronyms	Full Text
1.	RBI	Reserve Bank of India
2.	BC	Business Correspondents
3.	IMG	Inter Ministerial Group
4.	DIT	Department of Information Technology
5.	TRAI	Telecom Regulatory Authority of India
6.	KYC	Know Your Customer
7.	MHA	
8.	UIDAI	Unique Identification Authority of India
9.	NPCI	National Payments Corporation of India
10.	DOP	Department of Post
11.	MSPs	Mobile Service Providers
12.		