

**Bharti Airtel response to TRAI Consultation Paper on
“Quality of Service requirements for delivery of basic financial services using
mobile phones”**

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

Bharti Airtel Response:

- The following communication channels would be suitable to communicate on mobile networks to enable financial transactions using mobile phones.
 - SMS (SIM Tool Kit (STK) application)
 - USSD
 - IVR
 - WAP
 - Mobile Internet (With 3G deployment)

The communication channel and the user interface is highly dependant on the handset capability of the customer. Configuration of the handset device to support various communication access channels specifically GPRS/3G/mobile internet is primarily governed by customer choice.

- However, whichever medium is used, the same should ensure that all financial transactions are secure. Each stakeholder to ensure they have taken requisite steps to ensure necessary level of security in their network, so as to authenticate financial transactions like m-pin & mobile number combination.
- It may be noted that, the role of a mobile operator is significant across the business value chain and not merely restricted to providing communication/ access and connectivity
- The comparative analysis of various communication channels is given below:

Application Interface	Bearer Channel	Security	Usability	Ubiquity/Availability	Cost of Ownership	Cost to Transact	Continuity of transaction	Vernacular
SMS	Standard SMS	Low	Medium	High	Low	Low	Medium	Low
USSD Browser	USSD	Low	Medium	High	Low	Low	Low	Low
SIM Tool Kit (STK)	Standard SMS	Low	High	High	Medium to High	Low	High	Medium
	Encrypted SMS	High	High	High	High	Medium	High	Medium
Java (J2Me)	Standard SMS	Low	High	Medium	Medium to High	Medium	High	High
	GPRS	High	High	Low to Medium	High	Medium to High	Medium	High
WAP Browser	GPRS	High	High	Low to Medium	Medium to High	Medium to High	Medium	High
IVR	Voice	Medium	Medium	High	Medium to High	Medium to High	High	High

From a user interface point of view the SIM (STK) based application enables highest level of security, since the same is protected using cryptographic algorithm and security keys.

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?

Bharti Airtel Response:

- The time frame for delivery of messages and responses would depend on the connectivity between the Mobile Network operator, Application Service provider, Bank & Merchant.
- The overall time frame that is experienced by the subscriber between sending a request to the network and receiving the response back is completely variable and averages :
 - About 25-30 seconds for SMS.
 - About 10-15 seconds for IVR/Voice.
 - About 15-20 seconds for USSD.

This is further subject to the network load / congestion.

- The response time and the performance parameters have to be strongly bound through Service level agreement (SLA) between various entities.

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.

Bharti Airtel Response:

- As on date, message prioritization is not available. This can be considered with modification in the network infrastructure; the same would be based on the customer adoption and business requirements. Also, a dedicated network is required for this purpose.
- Regarding the cost, it is suggested that the same can be worked out separately depending upon the application, anticipated volumes, geographical coverage and the business case.

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?

Bharti Airtel Response:

- The technical standard required for enabling security algorithm in various legs is stated below:
 - Handset Application (SIM) to Network (GSM 03.48)
 - Network > SMSC > m-Commerce application (SMPP,SSL, UCP, GSM 03.48)
 - M-commerce Application > Bank Application (HTTPS,SSL)
- The method for conducting financial transaction should abide by the security requirement of **Confidentiality, Integrity, Authentication and Non-repudiation.**
- **Further the Network-side security and platform side security related to USSD/SMS is as follows:**

Network side security:

- The air interface between the handset and the BTS is encrypted using GSM standard encryption. The A3/A5/A8 encryption algorithms based on keys and random numbers are used here.
- From the BTS to SMSC/ USSD Gateway, the core network is responsible for security available as per the telecom standard. A lot of this has to do with firewalls and restricting outside access to the operator's internal network. On the channel itself the encryption (if any) is defined by the operator.

Platform side security:

USSD:

- The USSD system encrypts messages and communication to the banking application. This is done at multiple levels depending on the architecture. On the very basic level, communication between the USSD Gateway and any application component is encrypted at the socket layer using Open SSL (Secure Socket Layer). This ensures that any communication to the application over IP is transparently encrypted, and as long as the other party has the encryption/decryption mechanism the content can be safely transmitted, and then interpreted on the other side.

- Open SSL itself supports any kind of encryption within the implementation. This would include simpler mechanisms like SHA or MD5 or more complex key-based encryption.

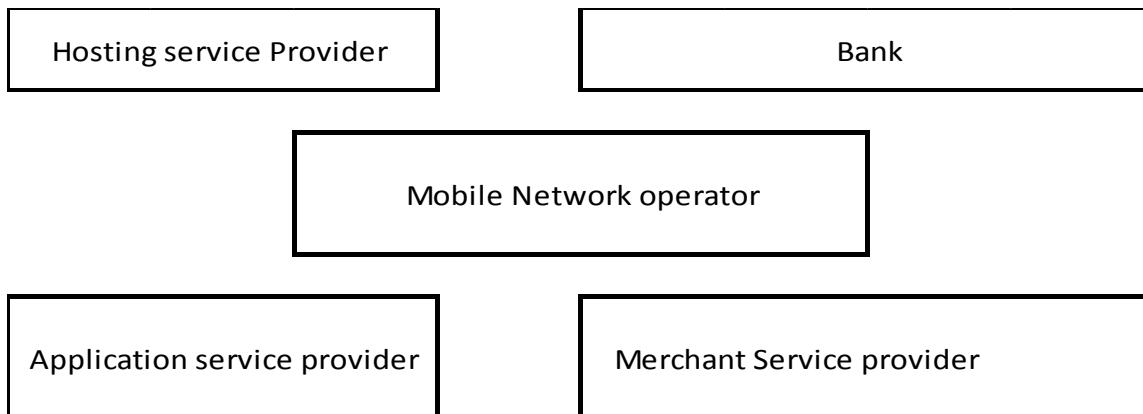
SMS:

- The regular SMS infrastructure cannot handle the security requirements of banking applications. This is primarily because the SMS infrastructure (SMSC, SMS Broker) itself do not have any encryption or security mechanisms, and the GSM standard does not mandate any security mechanism for regular SMS.
- One of the ways of using SMS for banking applications is to have encryption of the SMS through capabilities on the SIM Tool Kit (STK), but this may require customer to replace the SIM, and may also impose problems of manageability and cost into the approach.

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

Bharti Airtel Response:

- At present there has been no mobile based financial service deployment in the country to benchmark QoS parameters. The ecosystem needs to deploy pilots and demonstrate end to end transaction capability prior to defining delivery criteria for QoS.
- Further, the QoS for delivery of Mobile Banking Services will depend on various stakeholders as given below:



- The **Service Uptime** between the Mobile Network operators, Application Service provider, Bank & Merchant would be the key parameter that determines the QoS.

- The key element of **service up time** to be considered would be:

I. Availability

Availability of the USSD/SMS system can be ensured using system redundancy at multiple levels. Access to the banking application can be ensured with high availability from the USSD/SMS system, provided external dependencies like network availability and link-connectivity is ensured by the operator's infrastructure.

II. Reliability

The overall reliability of USSD/SMS system is divided into two parts:

✓ **Transaction reliability:-**

USSD being a request-response mechanism ensures that any request from the user will have a response – whether positive or negative. However, the same is subject to response from third party application.

Transaction reliability is difficult to assure in SMS as this is a store-and-forward mechanism with no single entity in the process responsible for a large part of the SMS delivery process. Once the SMS is forwarded to the next entity in the chain, the responsibility of the message also passes on to the third party.

✓ **System errors and reliability:-**

System errors are logged and reliability around these is ensured with 95% accuracy.

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?

Bharti Airtel Response:

- Security at M banking applications (logs viewing rights control)
- Logs management and respective stakeholder ownership of maintenance of logs.
- Transaction reconciliations
- Traceability of transactions.
- Complaint management process.
- Customer Care center.

While, delivery of basic financial service on mobile aims to address the issue of inclusive growth, it should be noted that standard guidelines/regulations on QoS cannot be guaranteed across all regions and may vary depending on the network infrastructure across urban & rural regions, handset capability, banking infrastructure, quality of application developers, processes and business rules.

It requires significant investments to build robust infrastructure with high availability and redundancy at the operator's end to ensure that mobile financial services are delivered across the rapidly growing mobile customer base.

Mobile industry due to their large franchise & huge scale has equal or higher reputational risk, hence requisite disclosures should be made by mobile financial service ecosystem to safeguard customer interest.

Therefore, it is imperative that the stakeholders work together to formulate processes and guidelines that shall ensure adequate quality of service. Thereby also create an environment which is conducive to the parties who need to make significant investments to address vulnerability in this emerging but critically needed space.
