TELECOM REGULATORY AUTHORITY OF INDIA

Recommendations

on

Application Services

14th May, 2012

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New Delhi-110002

Preface

Various application services are being provided through telecommunication network to consumers. However, the growth of application services has been limited, particularly for applications like e-governance, e-education, e-health, e-commerce etc. Considering the enhanced market potential for application services due to rollout of 3G & BWA services, deployment of 4G services in the coming years, implementation of National Broadband Plan and migration to Next Generation Networks (NGN), there is a need to develop an enabling framework for realising the potential of application services..

A well developed framework will enable flow of investments in the applications and services industry, contribute in enhancing the lifestyle and capability of consumers, promote entrepreneurship and at the same time create additional revenue stream for the service providers. To address the issues of application service industry TRAI issued a consultation paper in July 2011. The recommendations contained in this document are an outcome of the consultation process. The recommendations cover important issues such as Licensing through Authorisation for Application Service Providers, allotment of short codes through a short code council and utility applications.

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INTRODUCTION

1. Traditionally Value Added Services (VAS) have been defined as enhanced services, which add value to the standard or core tele-services offering like voice calls and fax transmission. Examples of value added services include call related services like call waiting, call forwarding, multi party conferencing, voice mail; email, SMS, MMS etc. However, currently various Application Services (AS) are also being provided through telecommunications network. While services like SMS, MMS on mobile phones, and data access and call related services both on wireline and wireless were usually considered value added services, but in recent years SMS, MMS, call related services and data access have more and more become standard services, and VAS therefore has beginning to exclude those services. Many more applications and services are being offered on telephone and these services continue to evolve with changing technologies. However, the term VAS continues to be used for all kinds of applications being offered through telecommunications network. Since most of the services offered pertain to content or application services, the term VAS needs to include all kinds of content and applications provided on telecommunications network apart from traditional value added services. In view of the fact that value added services have evolved to Application Services, the recommendations will be for Application Services.

2. In India, SMS, Ringtones and Caller Ring Back Tones (CRBT) constitute bulk of the revenue from value added services provided by mobile telecom operators presently. However, there are innumerable application services like gaming, video and audio streaming, stock quotes, news, cricket updates, tele-voting, chatting, etc. that are getting popular. Each service differs in content, cost and demand and is customised for different segment of consumers. With the introduction of 3G and

Broadband Wireless Access (BWA) services this is going to change in a big way as high bandwidth multimedia content services, mobile TV, online gaming and utility applications like e-governance, e-commerce, e-education, e-health will push the demand for application services as well as innovations in application services products offering.

3. The Mobile Value Added Service (MVAS) market in India is rapidly growing and has great revenue potential. The revenue estimated from mobile application services is around 11%[1] of the total revenue of mobile telecom service providers, which excludes revenues from SMS which is 7% of total revenue of mobile telecom service providers. The revenue from application services is expected to reach 31% (inclusive of SMS and data access) of the mobile telecom service providers' revenue by the year 2015 [2] . Growth in mobile application services is fuelled by the continuous improvement in quality of handsets and their falling costs, younger generation of mobile users and innovative content/applications and packaging. With the ongoing rollout of 3G/BWA services, it is expected that higher data transfer rates would facilitate more data intensive applications and services. This growth in applications and services is going to be a win-win situation for the mobile telecom service providers, application service providers/content aggregators, consumers, handset manufacturers, content developers/ authors/ creators and others associated in the application services value chain.

4. Apart from mobile networks, it is also possible to provide Application services on wireline networks. Service providers are already providing services like CRBT, tele-voting, voice mail, voice SMS, information related services like PNR enquiry, account balance information etc. on

[1] & [2] IAMAI- Analysys Mason report: "Evolution of Mobile VAS in India: Imperatives for Exponential Growth"-July 2011

landline network. Application services like music on demand, video on demand, e-education etc. are possible through broadband available on landline. An optical fibre open access network is being rolled out upto Gram Panchayats under the National Broadband Plan. This network can be leveraged even by small and medium enterprises to launch new and innovative content and application services. It is expected that content and application services will get a boost with increased penetration of optical fibre based broadband infrastructure. With migration to NGN, it will be possible to provide application services through a single IP core network to all kind of access devices be it wireline or wireless. Therefore, content and application services are not going to be limited to only mobile devices but will be delivered to customers through different access platforms.

5. Presently, the application services are provided either by the service providers directly or by third party content aggregators/enablers, generally known as Application Service Providers (ASPs). Number of players viz. Content/Application owners, aggregators, technology enablers and Telecom Service Providers (TSPs) play different roles in providing the application services to the end consumer. Commercial arrangements exist between TSPs and ASPs for providing these services. In many of these cases, the ASPs provide technology platform which enables a user to access content on to his phone or terminal device. In most of the cases the ASPs do not own the content but they have arrangements with the content providers/content developers or copyright owners known as content owners. The revenue generated from application services is shared among telecom service providers, ASPs and content owners. The revenue share is dependent upon a number of factors such as the nature of technology, type of content, demand from consumers etc.

6. Considering the enhanced market potential for application services due to rollout of 3G & BWA services, deployment of 4G services in the coming years, implementation of National Broadband Plan and migration to Next Generation Networks (NGN), there is a need to develop a forward looking harmonised framework for ushering growth in all the segments of the application services viz content development, content aggregation, technology platform etc. A well developed framework will enable flow of investments in the application services industry, benefit consumers, promote entrepreneurship and at the same time create additional revenue stream for the service providers.

7. Telecom service providers, being at the core of the Application services value chain, usually dominate in finalising the terms and conditions of the agreement entered with ASPs. Issues related to MIS reconciliation, revenue share, allocation of short codes etc. have been represented by application service providers, which as per them are hampering growth of application service industry. With more and more application services evolving and these services presenting a great potential, issues related to application services industry need to be taken care.

8. In order to address the issues related to value added services which primarily are application services, a consultation process was initiated through a consultation paper on "Mobile Value Added Services". Through this consultation paper TRAI sought the views of stakeholders on evolving a licensing/ regulatory framework for value added services and entities involved in providing mobile value added services, allocation of short codes, enabling open access and facilitating growth of utility MVAS. Open house discussions on this subject were held at Bengaluru on 24th November 2011. Based on the written submissions of the stakeholders, the discussions in open house and prevailing international practices relevant to our country, the issues have been examined in

depth and appropriate recommendations given. In view of the possibility of providing applications and services through multiple platforms, recommendations have been framed on Application services, instead of Mobile Value Added Services, which will include content, services and applications delivered through telecommunication network.

9. In view of the growing and likely unprecedented expansion of application services and their contribution in enhancing the life style & capability of customers as well as providing an additional revenue stream for telecom service providers, a suitable framework which will help to achieve the potential of application services is required. At the same time such a framework should not create additional significant burden on application service providers. Therefore a light touch regulation which is simple and provides necessary support to application service providers is desirable. Bringing ASPs under provisions of Section 4 of the Indian Telegraph Act, 1885 through simple licencing would enable them to seek interconnection from telecom service providers, and take recourse to dispute redressal mechanism available to a licensee.

10. The recommendations have been addressed in three chapters. Chapter I gives present status of Application Services in India, Chapter II deals with the regulatory framework for Application Services and deals with recommendations made to Government on licensing, short codes and utility applications. Chapter III gives summary of recommendations.

CHAPTER I: APPLICATION SERVICES– PRESENT STATUS

1.1 Presently, the Application Services market in India is centred on entertainment, music and sports (mainly cricket).The socio-economic structure is changing with enhanced emphasis on newer applications and networking. Apart from simple applications like e-mail, instant messaging, educational information, text chat etc., the focus is shifting to applications like video download, advertisements, gaming, video chat, e-education, e-health, e-governance, and social networking.

1.2 Many advanced applications were not possible due to lower speed offered by 2G networks. With the proliferation of 3G and BWA services, users could get abundance of application services developed by independent ASPs with plethora of business models and technical implementations. Accessing the Internet on mobile devices, downloading music, video, pictures, playing games and even sending multimedia messages will be extensively used by the customers. Service convergence such as voice with Mobile TV, device convergence at the user end and network convergence at core will also facilitate the rapid adoption of application services by the consumers. Rollout of optical fibre based open access broadband infrastructure will increase the broadband penetration and will also accelerate the growth of application services.

1.3 With increasing subscriber base total revenue of telecom service providers has also been increasing (Figure-1.1). However, over the last few years, while subscriber base has grown rapidly the revenues have not kept the same pace (Figure-1.2).

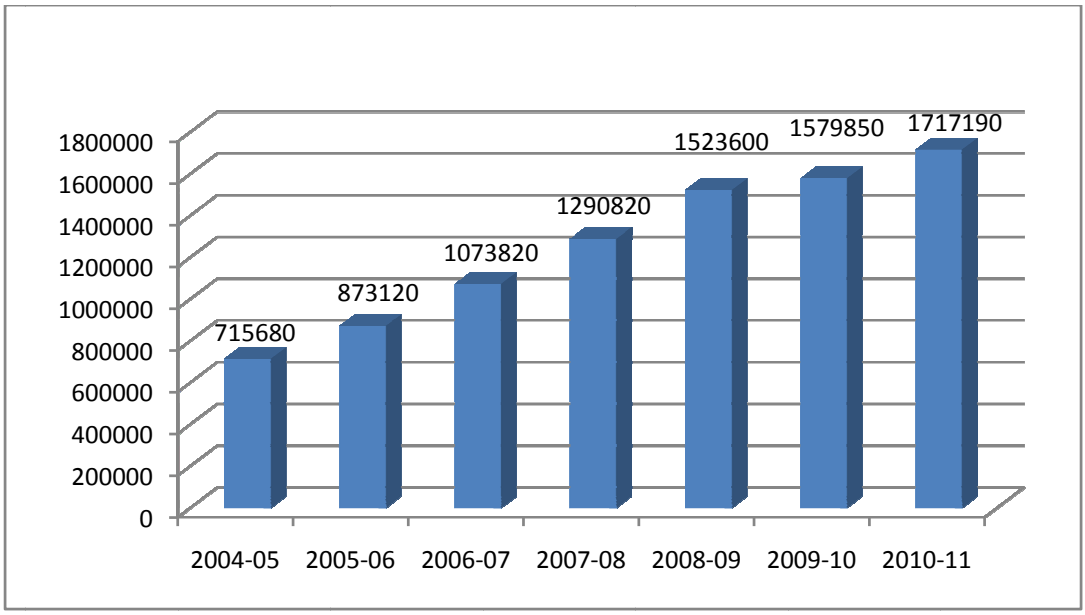


Figure 1.1: Revenue of Telecom Service Providers (Rs. millions)

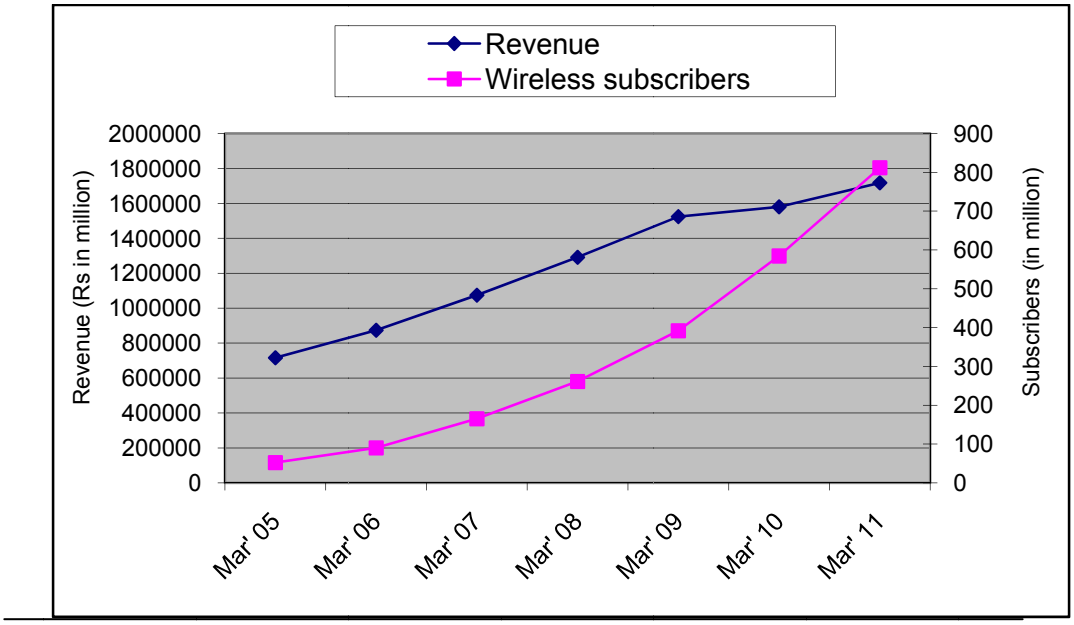


Figure 1.2: Growth of Wireless subscribers and Revenue of Telecom Service Providers

1.4 Currently, the contribution of non-voice revenue to the total mobile revenues of Indian telecom service providers is just 11%, which is significantly lower than the revenue in developed markets (Figure-1.3). In addition, revenue from SMS constitutes approximately 7% of the total mobile revenues. The potential for revenues from application services appears all the more significant at the present juncture, given that India has recently introduced 3G and BWA services, that allows service providers to offer users a wider range of advanced application services.

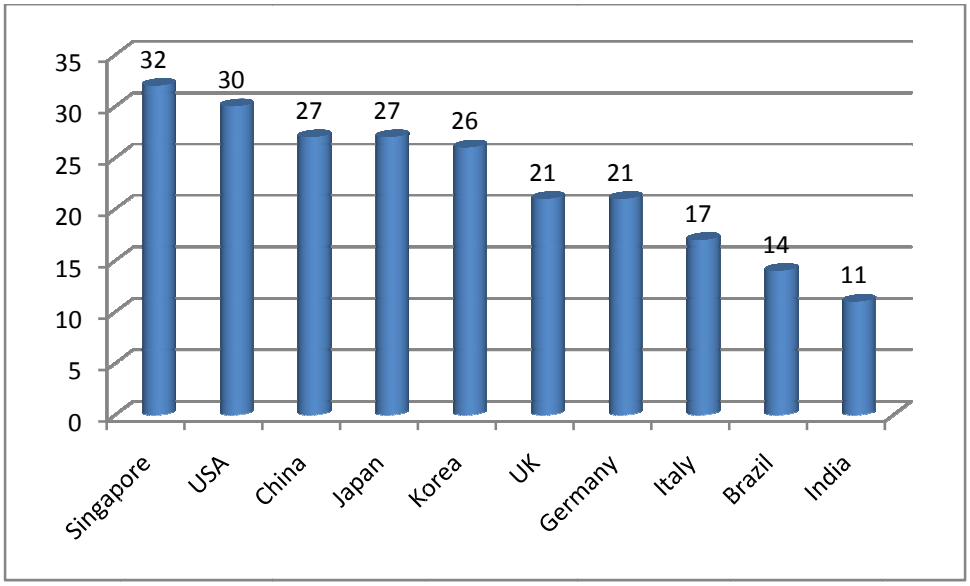


Figure 1.3: Non Voice Revenues[3] (% of overall mobile revenues)

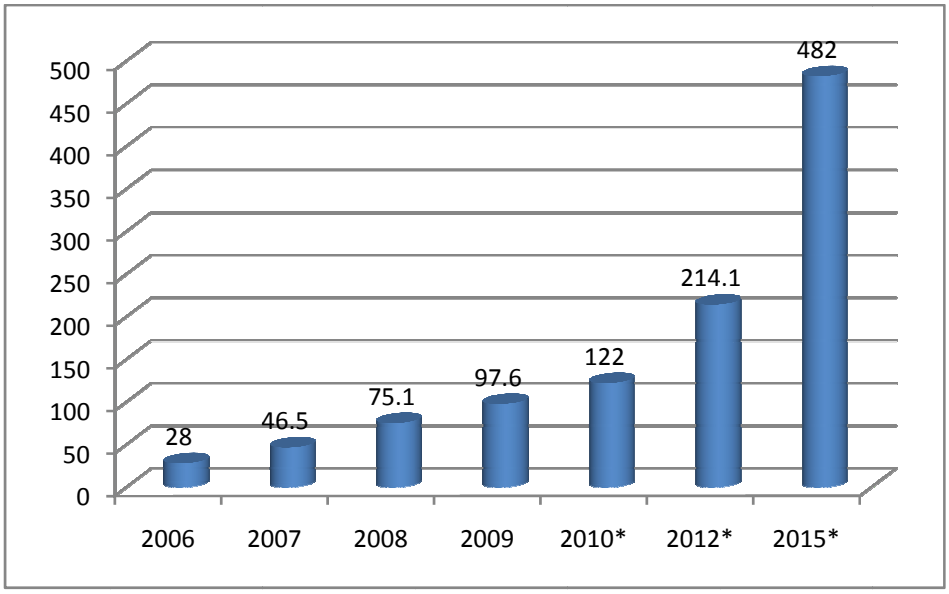
1.5 According to an ASSOCHAM study[4], market size of Mobile Value Added Service increased to Rs. 97.6 billion by the end of year 2009 from Rs. 28 billion at the end of year 2006. In another study[5] by ASSOCHAM, market of MVAS at the end of year 2010 was estimated at Rs. 122.2 billion and is forecasted to reach at Rs. 482 billion by the year 2015

[3] Based on Assocham white paper on MVAS, Acision Monitor for Mobile VAS&IAMAI report on Mobile VAS in India: 2010

[4] ASSOCHAM Financial Pulse (AFP) Study "Emerging Landscape in Mobile VAS Industry"- June 2010

[5] ASSOCHAM – Deloitte study paper: Mobile Value Added Services (MVAS) – A vehicle to usher in inclusive growth and bridge the digital divide

(Figure-1.4). Therefore, a large part of the revenue for telecom service providers will be from provision of MVAS.



* Estimated Source: ASSOCHAM- Deloitte study 2011

Figure 1.4: Market size of Mobile Value Added Services (Rs. billions)

A- Application Services

1.6 Presently many new and innovative application services are being offered on wireline and these services continue to evolve with changing technologies. There is a need to define the term application services, which was earlier termed as value added services. According to some stakeholders the definition of application services or value added services in existing licences is flexible and allows the access service provider to innovate and launch new applications and services. In this context, item 54 of Definitions and Interpretations of Licence Agreement for Basic Service Operators defines Value Added Service as

"Value Added Services are enhanced services which add value to the basic tele services and bearer services for which separate licences are

issued. At present, Government is issuing licences for following Value Added Services:-

(i) Cellular Mobile Telephone Service (Public Land Mobile Network)
(ii) Radio Paging Service
(iii) Public Mobile Trunking Service
(iv) Electronic mail
(v) Voice Mail Service.
(vi) Closed Users Group Domestic 64 kbps data network via INSAT satellite system.
(vii) Videotex Service.
(viii) Video conferencing
(ix) GMPCS
(x) Internet "

1.7 The relevant Clauses related to scope of licence for Basic Service Operators are reproduced below:-

*"*2.2(a) *The SERVICE covers collection, carriage, transmission and delivery of voice or non-voice MESSAGES over LICENSEE'S PSTN in SERVICE AREA and includes provision of all types of services except those which require a separate LICENCE.*

2.2(b)(i) The LICENSEE can also provide Voice Mail, Audiotex services as Value Added Services over its network to the subscribers falling within its SERVICE AREA on non-discriminatory basis. However, an intimation before providing any such VALUE ADDED SERVICE has to be sent to the LICENSOR."

1.8 Licence Agreement for provision of Cellular Mobile Telephone Service issued prior to year 2001 defines Value Added Service as

"Value Added Service means any Service the provision of which necessarily involves both the running of a telecommunication system and the provision by means of that system of a Service (other than a directory information service), which is additional to the conveyance (not including

switching) of Messages by means of that system and switching incidental to such conveyance."

1.9 Clause *12.3 and12.4* of the Cellular Mobile Telephone Service (CMTS) Licence Agreement issued prior to year 2001, under the heading "Permitted Services" mention that-

"The Licensee shall provide unrestricted access for his subscribers to all services including Value Added Services available on PSTN."

"The Licensee shall not engage in the business of the provision of Value Added Services based on the Cellular Mobile Service without specific permission of the Authority."

1.10 In the scope of the Licence Agreement of the Cellular Mobile Telephone Service issued after the year 2001, there is no mention of any definition and clause related to provisioning of Value Added Services. Clause 24.10 of Licence Agreement states that

"The Licensee may provide additional facilities in case of any value addition/upgradation that the technology permits at later date, subject to approval of Licensor".

1.11 Item 74 of Annexure-I of Licence Agreement for provision of Unified Access Services defines Value Added Service as

"Value Added Services are enhanced services which add value to the basic tele services and bearer services for which separate licences are issued. At present, Government is issuing licences for following Value Added Services:-

(i) Radio Paging Service
(ii) Public Mobile Trunking Service
(iii) Voice Mail Service.

(iv) Closed Users Group Domestic 64 kbps data network via INSAT satellite system.
(v) Videotex Service.
(vi) GMPCS
(vii) Internet "

1.12 In addition to the above, clause 2.2(b)(i) of the UAS licence mentions that,

"Further, the LICENSEE can also provide Voice Mail, Audiotex services, Video Conferencing, Videotex, E-Mail, Closed User Group (CUG) as Value Added Services over its network to the subscribers falling within its SERVICE AREA on non-discriminatory basis. The Licensee cannot provide any service except as mentioned above, otherwise shall require a separate licence. However, an intimation before providing any other VALUE ADDED SERVICE, which is mentioned above or listed in item 74 of Annexure-I, has to be sent to the LICENSOR and TRAI."

1.13 Access service providers have been permitted to provide Internet Telephony, Internet Services and Broadband Services including triple play vide DoT's letter no, 10-21/2005-BS-I(Vol. II)/56 dated 14.12.2005.

1.14 The scope of the ISP Licence includes access to all content available without access restriction on Internet including web hosting. The value added service providers particularly providing transaction based services may use the content services such as web portal and payment gateway etc. Some of the application services like music download, games, etc. are available through the Internet provided by the ISPs.

1.15 The definition of value added services given in the various licences seems to be restricted and does not cover new application services. New and innovative content, applications, services, products, information or

various hybrids are being provided under the ambit of application services. These include ring tones, wallpapers, traffic & weather updates, gaming, railway enquiry, e-commerce, e-health, e-education, games, Location based services, Animations, Quiz, Astrology etc., which are not covered explicitly in the definition of VAS mentioned in various licences. In future also, more diverse application services may be provisioned especially with the on going rollout of 3G & BWA services and migration towards Next Generation Networks (NGN). This necessitates a broader definition of value added services as application services.

1.16 The Authority in its recommendations on "Growth of Value Added Services and Regulatory Issues" dated 13th February 2009, recommended the following definition of value added services:

"Value added services are enhanced services, in the nature of non-core services, which add value to the basic tele services and bearer services, the core services being standard voice calls, voice/non-voice messages, fax transmission and data transmission."

1.17 VAS is not a form of basic service but rather adds value to total service offering. Some of these services can stand alone from an operational perspective and not necessarily add value to basic or core services. For example, applications like e-education, e-health, e-commerce, gaming, music, video, IPTV etc. can be provided as a standalone service. However, these services if provided through the telecom network can stimulate incremental demand for core service(s) as well as add additional revenue streams for service providers. Subjectively, a value-added service today becomes a basic service when it becomes sufficiently commonplace, widely deployed and longer provides substantive differentiation. For example normal call related services like

call waiting, call forwarding, conferencing, SMS, MMS have become part of the basic or core service.

1.18 The definition above may cover value added services like SMS, CRBT, Ring Tones, call forwarding, call waiting, multi party conferencing etc., which add value to the basic tele-services and bearer services. However, innumerable new and innovative content and applications are provided to consumers over the telecom networks. These include contents like songs, jokes, wall papers, entertainment, news, television listings, movie trailers, promotional media content as well as applications like e-commerce, e-education, e-agriculture, e-health, Games, Location based services, Animations, Quiz, Astrology etc. It may be noted that these services are also available through another mode of delivery other than telecom networks and hence are not exclusive to telecom networks. These application services cannot be covered in the above mentioned definition as these do not add value to the basic tele services and bearer services, but are independent of telecom services. Moreover, more and more new application services are evolving with changing technologies. Therefore, the definition of application services should cover all the current and future applications that can be provided over telecom networks.

1.19 In view of facts in the preceding para, the Authority is of the opinion that it will be better to represent value added services as application services and provide a definition of application services such that it is able to accommodate various applications being provided currently as well as which will be provided in future through telecom networks.

1.20 **The Authority recommends following definition of application services:**

"Application services are enhanced services, in the nature of non-core services, which either add value to the basic tele services or can be provided as standalone application services through telecommunication network. The basic services are standard voice calls, voice/non-voice messages, fax transmission and data transmission."

B- Application Services – Value Chain

1.21 A typical value chain of the application services, provided through telecommunications platform, encompasses content creators/providers, mobile advertisers, aggregators, technology enablers, telecom service providers and end users or subscribers. Content, application aggregation and provision of technology platform is usually performed by a single entity. It is also to be noted here that in the value chain of application services, telecom service providers are very big entities in comparison to the content and application providers, content aggregators most of whom are essentially SMEs. Mobile handset manufacturers have also started playing an important role in the application services value chain. Advertisers are also looking for higher delivery of marketing activities through applications platform.

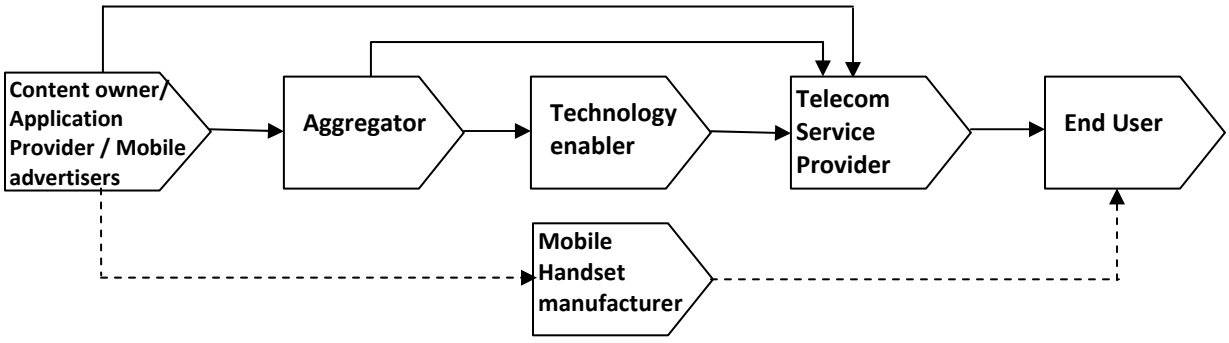


Figure 1.5: Application Services Value Chain

(i) Content owner/ Application provider

1.22 The first stakeholder in the application services value chain is the Content Authors/Producers/application providers or copyright owners known as content owners. These entities provide the core content which drives the application services – which may be owned or sourced by them. Examples include the music companies, movie production houses, media companies, TV channels etc. Their offerings include songs, entertainment news, movies, television listings, movie trailers, and promotional media content. Application providers usually develop and provide applications like e-commerce, e-education, e-agriculture, e-health, Games, Location based services, Animations, Quiz, Astrology, Vaastu, Fengshui etc. Advertisers are also producing content for promotion and delivery of marketing communication to consumers through application delivery platform.

(ii) Content/Application Aggregators

1.23 These are the companies that aggregate content/applications obtained from various content owners/application providers, convert it into the digital or any other suitable format and make it available to technology enablers (value added service providers) or telecom service providers.

(iii) Technology Enablers

1.24 These entities provide the technology layer for the telecom networks, which in most of the cases also perform the task of Content aggregator. The technology layer often includes an application platform, application development & hosting, MIS & reporting tools, operator billing, collection & payment settlement engine. Technology enabler may or may not be dependent on content developers for each application service provided. For example mobile phone back up facility does not require

any content from the developer but the solution is directly provided to the telecom operator by the technology enabler.

(iv) Telecom Service Providers

1.25 Telecom service providers own the access network & end users and also provide end-user billing & collection for the provision of application services. They have commercial agreements or arrangements with the ASPs for providing the application services.

(v) Handset manufacturers

1.26 In some cases the Mobile handset manufacturers have direct agreement with content owners or ASPs for content which are embedded in the handset or terminal device. An example of such content is games embedded with the mobile handset. They also provide features such as on-device portals which are accessible through embedded links provided in the handsets.

C- Definition of Application Service Provider

1.27 In the value chain for application services depicted in figure 1.5, technology enablers, or sometimes aggregators, and content owner/application provider/ mobile advertisers are directly connected to the network of telecom service provider (TSP) for provision of content/application services. Depending upon the application service offered and the business model the content/application provider may provide its services directly to the TSPs or through aggregators or technology enablers. From the point of view of TSP the entity connecting with it for provision of application services becomes the application service provider irrespective of source of content/application. Therefore any entity that gets connected directly to the TSP for provision of

content/application services will be defined as Application Service Provider. There are lot of applications which are being delivered in over-the-top content (OTT) model. OTT means on-line delivery of content/applications without the TSP being involved in the control or distribution of the content/application itself. OTT is delivered directly by the content/application provider to the user using an open internet connection, independently of the user's TSP without the need for carriage negotiations agreement. Application providers who are providing their services on OTT model will not be covered at present under the definition of ASP.

1.28 Presently several OTT content services like Ditto TV, Netflix, Amazon, Hulu, Vudu Boxee, Red Karaoke are available, which a telecom user can independently access through the network of its telecom service provider. TSPs have no control over the distribution and billing of these contents and also do not get any revenue share from such services. On the other hand TSP get revenue share as per the mutual agreement entered with ASP for provisioning of application services. This may perhaps drive TSPs to give low priority to OTT content over the content provided by ASPs.

1.29 Net neutrality advocates no restrictions by Service Providers on content, sites, platforms, on the kinds of equipment that may be attached, and no restrictions on the modes of communication allowed. Issue of net neutrality started in early 2007 when it was revealed that Comcast, a provider of broadband Internet access over cable lines intentionally blocked the traffic of peer-to-peer (P2P) applications and gave other Internet traffic preferential treatment.

1.30 FCC in 2010 adopted Open Internet Rules[6] to provide greater clarity and certainty regarding the continued freedom and openness of the Internet. The rules limit internet providers from favouring or discriminating against traffic that travels through their networks. According to the new rules, internet service providers would not able to favour specific internet content or prevent consumers from accessing a competitor's website. The regulations allow the FCC to impose fines and bring injunctions against companies that slow down internet service for customers who are streaming movies or downloading music.

1.31 The issue of net neutrality for ASPs providing services on OTT model will be dealt as and when required.

D- Application services Categories

1.32 There are innumerable application services like e-commerce, e-education, e-health, gaming, video and audio streaming, stock quotes, news, cricket, tele-voting, chatting, astrology etc, which are provided over telecom networks. Each service differs in content, cost and demand and is customised for different segment of consumers. Primarily applications can be divided into following categories:

(i) Entertainment application services

Services like music, ringtones, videos& games are very popular and have contributed significantly to the growth of application services in India.

(ii) Information application sservices

Services like e-education, e-health, news and information on bank account, real estate, education, travel, cricket etc. fall under information applications.

[6]http://transition.fcc.gov/Daily_Releases/Daily_Business/2010/db1223/FCC-10-201A1.pdf

(iii) Transactional application services

Enable customers to conduct transactions like banking and payment through phone. These services are in a very nascent phase now in India.

1.33 Range of application services currently available in India is shown in table 1.1.

DeliveryPlatforms	Entertainment	Information	Transactional
SMS	• Ringtones CBRT • Customised Wallpaper • Animations • Quiz • Jokes	• Cricket / Match alerts • News • Astrology, Vaastu, Fengshui, Personality Test • Banking Info Alerts • Travel alerts details like Train, Flight Details etc. • Location Search	• Mobile Banking • Ticketing • Travel and Holiday Bookings • Payment confirmations • Due date reminder
IVRS	• Religious Chants • Music on Demand	• Astrology • Vaastu • Fengshui • Personality Test	• Mobile Banking • Ticketing
WAP Portals	• Video Clip • Mobiles Games • Mobile Themes • Mobile Radio	• Movies Related Info • Stock Portfolio Managers • News Tickers/ Alerts • Location based Informations	• Mobile Banking • Ticketing • Travel and holiday bookings

Table 1.1: Range of application services

1.34 In India, SMS, Ringtones and Caller Ring Back Tones (CRBT) constitute bulk of the revenue from value added services provided by mobile telecom service providers presently. The break-up of revenue from different categories is provided in Table 1.2. As can be seen CRBT accounts for the maximum revenue. Video applications, e-commerce, e-education, e-agriculture, e-health and various other innovative services have immense potential and yet to be realised.

Category of application services	Components	Revenue(Rs. in Crore)	Individual Share	Total share
Information	One time request	2081	18%	39%
	Monthly subscription	1156	10%	
	Voice/IVR	648	5%	
	Others	740	6%	
Entertainment	Ringtones, CRBT, Reverse CRBT	3515	30%	57%
	Music and songs, Wallpapers	1690	14%	
	Contests, Voting	1014	9%	
	Games	541	5%	
Transactional	Mobile ticketing	472	4%	4%
	Mobile coupons			
	Others			

Source: IAMAI report on Mobile VAS in India: 2010

Table 1.2: Contribution in revenue by application services

E- Technical Arrangement/ Application Platforms accessed by customers

1.35 Different technical arrangements or platforms are presently being used by telecom service providers for delivering different application services based on the type of content/application. For example SMSs are used for downloading monophonic ringtones, whereas WAP/GPRS platform is used for downloading polyphonic and true-type ringtones. Some of the application service delivery platforms are following:

(i) Short Message Services (SMS) – To process and deliver SMS based application services SMSC Platform is used by the telecom service providers. SMS can be person to person (P 2 P) and person to application (P 2 A & A 2 P). The subscriber sends an SMS to the server, which then sends back an SMS to the subscriber with the service requested e.g. downloading ringtones, seeking information like news, cricket scores, subscribing to jokes and accessing other such application services.

(ii) **Interactive Voice Response (IVR)** – This platform integrates computer and telephony to detect voice and touch tones (DTMF) using a normal phone call. The subscribers interact with an IVR system with or without embedded voice recognition technology for accessing applications such as news, live talk to astrologer, movie information, jokes, listening to live commentary etc.

(iii) **Wireless Application Protocol (WAP) and General Packet Radio Service (GPRS)** – It is a service which enable users the access to Internet on the mobile. These include basically data based application services such as Internet browsing, MMS, entertainment, Games, Mobile TV and music/video/wall papers downloads etc.

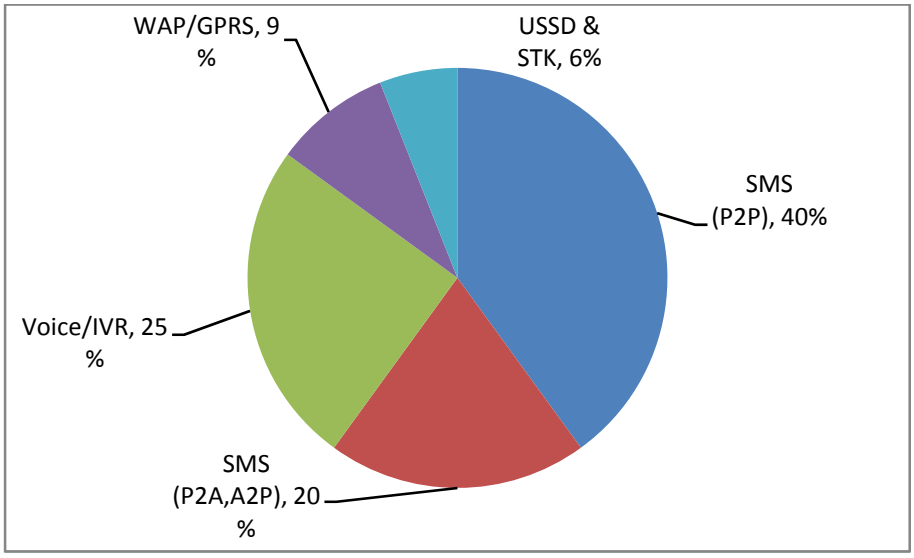
(iv) **Unstructured Supplementary Services Data (USSD)** - This is a method of transmitting information/instructions over cellular mobile network. It is a session oriented service where user gets a flash message in real time. Services like content download, cricket updates, jokes, news alerts etc. can be acquired by subscribers using USSD.

(v) **Call Management Services (CMS)** – Services like missed call alerts, call forwarding, voice mail, incoming call block etc. are provided using this platform.

(vi) **SIM Application Tool Kit (STK)** –The SIM Application Toolkit allows application service program to reside in SIM. For example the service provider or a bank can house the consumer's mobile banking menu within the SIM card. STK is a secure method for mobile banking. It allows the bank to load its own encryption keys onto the SIM card with the bank's own developed application. Thus the consumer's data can be stored on the SIM Card and the consumer can be authenticated on

the handset prior to having to carry any data across the mobile network.

1.36 The revenue break-up for MVAS using different modes is shown in figure 1.6. As can be seen revenue through applications using SMS as access mechanism is highest. With only a small percentage of our population understanding English, the potential of application services through SMS can increase many-fold if necessary platforms for Indian languages are developed.



Source: IMAI report on mobile VAS in India:2010

Figure 1.6:Revenue Breakup as per the access mechanism

1.37 A key barrier to SMS in Indian languages is the lack of handsets supporting Indian languages. As compared to English, which has only 26 alphabets, Indian languages have higher number of characters and alphabets. Therefore higher number of characters in the alphabet is required to be mapped on phone keys. The other issue is lack of standards for encoding SMS in Indian languages. Several developments are taking place in this direction. 3GPP has amended its SMS specifications for supporting Indian languages in 7-bit encoding scheme.

These developments are likely to enhance adoption of SMS and other application services in Indian languages.

F- Application Services Business Model

1.38 The application services market is basically a three-player market comprising of content/application owners, content aggregators/ technology enablers and telecom service providers. There are two business models through which the content/application is delivered to end consumer.

(i) On deck model

1.39 In this model, TSP undertakes the branding, marketing and selling of content/application. The billing is also done by TSP and it collects the revenue from subscriber. As a result, it retains the largest portion of revenue (typically 70%) and the rest is shared among content aggregators and content developers. Presently, in the Indian market on deck application services, service platform including gateway/middleware is provided either directly by the telecom service providers or by the Application Service Providers (ASPs). In the first case ASP only aggregates the content and makes it suitable for telecom network. In the second scenario ASPs provide technology platform along with content/application. Commercial arrangements exist between telecom service providers and ASPs for providing these services. In most of the cases the ASPs do not own the content/application but they have arrangements with the content providers/application developers or copyright owners known as content owners. In the commercial agreements, compliance to copyrights, digital rights management including sourcing of the content is the responsibility of ASPs.

(ii) Off deck model

1.40 In this model, the ASP sells content directly to subscribers. The content can be provided either through the TSP's portal or through short code allotted to ASP. The economics in this model are opposite to that of on deck model. In this model, content developers and aggregators typically retain 60-65% of revenue whereas 30-35% is being passed on to the telecom service providers.

1.41 Off-deck ASP needs to integrate and sign agreements with multiple operators to provide services to subscribers across carriers. It has to approach each telecom service provider for allotment of short code. In addition short codes allotted by telecom service providers may not be uniform due to lack of any coordination mechanism for allotment of short codes. This can increase the cost and time of integration. In addition, the operator has an influence on deciding the end user price as well as the potential revenue share expected by the ASP.

CHAPTER II: REGULATORY FRAMEWORK FOR APPLICATION SERVICES

A- Licensing for Application Service Providers

2.1 Presently there is no regulatory framework for Application Services except the consumer protection issues addressed by TRAI through directions on provision of Application Services provided by licensed telecom service providers. Application Service Providers are not regulated or licensed and mainly they act as service partners of telecom service providers (TSPs). TSPs and ASPs enter into commercial agreements for provisioning of application services. There is no standard format for agreement and, telecom service providers, being the core of the application services value chain, usually dominate in finalising the terms and conditions of the agreement. In view of the growth potential of application services, ensuring entry of serious players, protection of consumers' interests and compliance on security and content regulations, it may be appropriate to consider whether the licensing system is to be resorted for application service providers.

2.2 In the consultation paper, stakeholders were asked to provide comments on the following questions:

i. Is there a need to bring the Value Added Service Providers (VASPs) providing Mobile Value Added Services under the licensing regime?

ii. If yes, do you agree that it should be in the category of the Unified Licence as recommended by this Authority in May 2010? In case of disagreement, please indicate the type of licence along with the rationale thereof.

2.3 Most of the stakeholders including telecom service providers, VAS providers and their associations are not in favour of bringing of VAS provider under licence regime. Some of the stakeholders mentioned that the telecom licences are granted under Section 4 of the Indian Telegraph Act 1885, which allow the licensee to provide, establish maintain and work telegraph services. They mentioned that since VAS providers neither provide nor establish/maintain/work telegraph, therefore a licence under Section 4 of Indian Telegraph Act is not legally tenable.

2.4 Some of the stakeholders opposing the licensing regime for VASPs mentioned that licensing of VASPs will have an impact on the cost of providing the VAS due to the contractual obligations of the relevant provisions of licensing, establishment of an independent marketing department, advertising and other related costs. They also mentioned that Telecom service providers should ensure that the VAS providers meet the regulations of the relevant industries/ regulators.

2.5 Some of the stakeholders mentioned that there is no need to bring the VASPs under licensing regime as it would be very difficult to issue and monitor thousands of licenses. However, they also mentioned that VASPs need to be registered under the appropriate Government body to ensure entry of serious players only and to safeguard the right & privileges of the end subscribers, besides compliance on security and nature of content/services.

2.6 Some of the stakeholders who are not in favour of licensing regime for VAS mentioned that there can be a centralised authority which can register any ASP at a nominal fee. They also mentioned that the centralised authority can work on the monitoring of content being provided by the providers and regulate them if need be.

2.7 Some of the stakeholders, mostly individuals, agree with the need of bringing VASPs under licensing regime and mentioned that as it will make VASPs more responsible towards QoS, content provisioning and customers. They are of the opinion that it will also help in dependent VASPs to demand desired QOS from telecom service providers and in case of any dispute VASPs can seek the compensation.

2.8 Some of the stakeholders mentioned that VASPs may be given licenses under Other Service Provider (OSP) category as being issued to application service providers presently with low entry barriers and less restrictions. It is also mentioned that the licence fee initially may be kept at a reasonable level so as not to hamper the growth of VAS and put financial burden on the customers. However, existing telecom operators may continue to provide value added services by default under their existing telecom licenses for which no further entry fee should be charged.

2.9 Some of the stakeholders suggested that only VASPs registered under OSP category should be permitted to provide services through operators and a regulatory framework need to be created including consumer protection guidelines for content providers, ensuring accountability for content and QoS, legal framework for protecting the legitimate concern of stakeholders, provision of short-code by DoT directly, setting up a dispute resolution body for VASPs, and role definition for each of the value chain player.

2.10 As mentioned earlier, some of the stakeholders have opined that VAS do not fall under Indian Telegraph Act, 1885. The laws governing the licensing of telecommunications in India are governed by the Indian Telegraph Act, 1885 amended from time to time. Section 4 of the Indian Telegraph Act, 1885 empowers the Central Government to

grant licence to establish, maintain or work a telegraph. Section 4 is reproduced below:

*"**4. Exclusive privilege in respect of telegraphs, and power to grant licenses**.— (1) Within India, the Central Government shall have exclusive privilege of establishing, maintaining and working telegraphs: Provided that the Central Government may grant a license, on such conditions and in consideration of such payments as it thinks fit, to any person to establish, maintain or work a telegraph within any part of India:*

Provided further that the Central Government may, by rules made under this Act and published in the Official Gazette, permit, subject to such restrictions and conditions as it thinks fit, the establishment, maintenance and working—

(a) of wireless telegraphs on ships within Indian territorial waters and on aircraft within or above India, or Indian territorial waters, and

(b) of telegraphs other than wireless telegraphs within any part of India."

2.11 Further the Indian Telegraph Act, 1885 defines the telegraph as:

"'telegraph' means any appliance, instrument, material or apparatus used or capable of use for transmission or reception of signs, signals, writing, images and sounds or intelligence of any nature by wire, visual or other electro-magnetic emissions, radio waves or Hertzian waves, galvanic, electric or magnetic means."

2.12 Contents of application services can be sign, writing, image, sound or intelligence. If we look at the value chain of application services, content/application owner simply generate & own the content and

aggregators aggregate content obtained from various content owners/application providers, convert it into the digital or any other suitable format. Technology enablers provide the technology layer for making the content/application suitable to be carried over telecom networks. Technology layer includes applications and services platform, application development & hosting, MIS & reporting tools, billing, collection & payment settlement engine. The equipment of ASPs therefore, may be covered under the definition of telegraph as defined in the Indian Telegraph Act, 1885.

2.13 Presently, DoT issues licences for the following value added services under provisions of Section 4 of the Indian Telegraph Act, 1885:-

(i) Public Mobile Radio Trunking Service
(ii) Voice mail service
(iii) Audiotex
(iv) Unified Messaging Service
(v) INSAT Mobile Satellite System Reporting Service
(vi) GMPCS
(vii) Internet

2.14 According to the terms and conditions for Other Service Providers category notified by Department of Telecommunications on 5th August, 2008, 'Other Service Provider (OSP)' means a company providing Application Services. Application Services have been defined to mean services like tele-banking, tele-medicine, tele-education, tele-trading, e-commerce, call centre, network operation centre and other IT Enabled Services, by using telecom resources provided by authorised telecom service providers. Since some of the value added services may also come under various application services as defined in terms and conditions for OSP, the applications service providers could also be covered under the Other Service Provider Category and

could be registered with DoT. But this registration process may not entitle them of benefits available under licensing through Section 4 of the Indian Telegraph Act, 1885.

2.15 Another issue for consideration in the case of licensing of application services is that new applications and services are coming up through various innovations in the market. This trend will increase substantially with the on going rollout of 3G/BWA services and migration to NGN. NGN facilitate clear distinction and separation of the network from content and services. This separation allows the unbundling of services and physical facilities (network elements). In this regard, NGN will foster and facilitate competition and innovation among service providers, and enable the market entry for innovative service entrepreneurs as application service providers, which will ride on a telecom service provider's network to serve customers. This may result in entry of large number of application service providers providing service to customers.

2.16 Licensing provisions for application services are available in Singapore, South Africa, Malaysia, Bahrain and some African countries. In Singapore[7], value added network services are permitted under class license. In Malaysia[8], there is a provision of both individual license and class license for Application Service Provider and Content Application Service Provider. Application Service Providers provide particular functions such as voice services, data services, content-based services, electronic commerce and other transmission services. Content Application Service Providers are special subset of application service providers including traditional broadcast services and newer services such as online publishing and

[7]www.ida.gov.sg
[8]www.skmm.gov.my

information services.In Bahrain, there is a provision of class license for Value Added Services[9]. VAS license applicants are required to register with the Telecommunications Regulatory Authority (TRA).

2.17 On the other hand in some countries there is no need to obtain a licence to provide application services and a simple intimation is sufficient. For example in Australia, all suppliers of Mobile Premium Services are required to just submit company details to the Mobile Premium Services Industry Register managed by Communications Alliance[10].

2.18 In the provisioning of application services, there is a need to ensure entry of serious players, smother process for allocation & opening of short codes, protection of consumers' interests and compliance of content regulations. This could be achieved if ASPs are brought under licensing. Most of the stakeholders are not in favour of licensing for ASPs. Licensing of Application Service Providers will facilitate growth of application services industry, promote entrepreneurship and enable flow of investments in the sector. It is also reported that TSPs dominate over the ASPs in finalising the agreements. Once ASPs are brought under licensing framework, they could approach TRAI for issues related to MIS reconciliation, revenue share and for tariff related issues and to TDSAT for dispute resolution. However, at the same time to facilitate entry of innovative & small entrepreneurs, licensing process needs to be kept simple without any entry barriers. The Authority is conscious of the fact that bringing ASPs under

[9] www.tra.org.bh

[10] www.commsalliance.com.au

Communications Allianceis the primary telecommunications industry body in Australia having members from a wide cross-section of the communications industry, including service providers, vendors, consultants and suppliers. Communications Alliance was established to provide a unified voice for its members and to lead the industry into the next generation of converging networks, technologies and services.

licensing should not put burden on them and restrict the growth of small and medium players. Therefore, licensing regime for ASPs need to be such that they could avail benefits of licensing and at the same time do not get burdened with the financial requirements of a typical license.

2.19 Licensing of ASPs under provisions of Section 4 of the Indian Telegraph Act, 1885 would enable them to seek interconnection from telecom service providers, take recourse to dispute redressal mechanism, avail better bargaining power for revenue share etc. However, under regular licensing like a unified licence, they will be required to pay related entry & licence fee and meet other reporting requirements. This will put financial burden on ASPs and may impact the innovations of smaller entities. There are many small ASPs who are operating in the market with their innovative applications and may find it difficult or not have enough scale to deal with the financial and regulatory requirements under a typical licence.

2.20 The Authority in its recommendations on Unified Licensing dated 5th January 2005 recommended Licensing through Authorisation to cover the services for provision of passive infrastructure and bandwidth services to service provider(s), Radio Paging, PMRTS, Voice Mail, Audiotex, Video Conferencing, Videotex, E-mail service, Unified Messaging Services, Tele-banking, Tele-medicine, Tele-education, Tele-trading, E-commerce and Internet Services including existing restricted Internet Telephony PC (Personal Computer) to PC; within or outside India, PC in India to Telephone outside India, IP based H.323/SIP Terminals connected directly to ISP nodes to similar Terminals; within or outside India), but not Internet Telephony in general. No entry fee, licence fee, bank guarantee and roll out obligation were recommended for Licensing through Authorisation.

2.21 The Authority in its recommendations on Spectrum Management and Licensing Framework dated 11th May 2010 recommended the introduction of licensing through authorization in respect of the PMRTS, radio paging services and other services viz. Voice Mail/Audio Tex/Unified Messaging Service. While the holder of a unified license can offer any telecom service, the reverse will not be permitted and the license holders will be required to offer only those services for which they have been licensed.

2.22 TRAI in its recommendations on 'Guidelines for Unified Licence/Class Licence and Migration of Existing Licences' released on 16th April 2012, also recommended guidelines for Licensing through Authorisation, wherein it is recommended that such licensee shall be permitted to offer Voice Mail Service, Audiotex, Videotex, Unified Messaging Service and other value added services within its licence area using the network of Unified Licensee on mutually agreed terms and conditions. The entry conditions for licensing through Authorisations are very liberal. The applicant must be an Indian company, registered under the Indian Companies Act 1956 and is required to pay a non refundable processing fee of Rs. 15,000 for obtaining a licence. There is no entry fee and annual Licence fee is Rs. 10,000 only.

2.23 Apart from facilitating the ASPs by bringing them under simple licensing scheme, it will be desirable that only serious players enter the industry and also meet the requirement of security monitoring by government agencies. Licensing of ASPs will also enable access to their equipments /network for the purpose of technical scrutiny and security monitoring in the interest of the security of the State or for the proper conduct of the Telegraph.

2.24 'Guidelines for Unified Licence/Class Licence and Migration of Existing Licences' recommended by TRAI on 16th April 2012 has, inter-alia, following provisions in the terms and conditions of Licensing through Authorisation:

"8. *The Licensee shall make available, on demand, to the person authorised by the TRAI/DoT, full access to their equipments/network for technical scrutiny and for inspection, which can be visual inspection or an operational inspection.*

9. *As and when required, the Licensee shall provide access of their systems to the security agencies for monitoring purpose. The Licensee shall be required to maintain call data records of all the specified calls handled by the system and system log at specified periodicity. TRAI reserves the right to call for these system logs on demand and also inspect them at site.*

10. *TRAI reserves the right to revoke/terminate/suspend the Licence in whole or in part, at any time, if, in the opinion of the TRAI, it is necessary or expedient to do so in public interest or in the interest of the security of the State or for the proper conduct of the Telegraph.*

12. *The Licence shall be governed by the provision of Indian Telegraph Act, 1885, Indian Wireless Telegraphy Act, 1933 and Telecom Regulatory Authority of India Act, 1997 as modified or replaced from time to time."*

2.25 Bringing ASPs under Licensing through Authorisation will meet the requirement of simplicity as well as meeting the necessary requirements in terms of security and proper conduct of telegraph. Keeping in view the above, the Authority is of the view that ASPs may be covered under Licensing through Authorisation.

2.26 **The Authority recommends that Application Service Providers should be covered under Licensing through Authorisation.**

2.27 Once the recommendations for bringing ASPs under licensing regime are accepted, the Authority will consider the issues related to Interconnection between TSPs and ASPs. The Authority may consider related to Revenue share, MIS reconciliation and Open access for application services at an appropriate time.

B- Provisions in existing Licences for provision of application services

2.28 Different licences like Basic Service, Cellular Mobile Telephone Service, Unified Access Service etc., have been issued at different points of time. Accordingly licensing conditions have undergone changes with market and technology evolution. There is no uniformity in the licensing conditions with regard to provision of value added or application services. Some of the licences do mention the type of value added services that can be provided, but these are very limited and for providing any other value added service, intimation has to be sent to the licensor and TRAI. There is a need to bring more clarity in the licences specifically mentioning the kind of services a service provider can provide as VAS or application services.

2.29 In the consultation paper, stakeholders were asked to provide comments on the following question:

i. Whether the current provisions under various licences (UASL, CMTS, Basic and ISP) are adequate to grow the MVAS market to the desired level? If not, what are the additional provisions that need to be addressed under the current licensing framework?

2.30 In response, some of the stakeholders mentioned that the current provisions under UAS and CMTS licence are adequate and gives flexibility to the access service providers to innovate and launch new types of VAS services. Some of the stakeholders are also of the opinion that the existing definition of Value Added Services given in the UASL is sufficiently broad and adequate to cover the VAS provided/ to be provided in 2G, 3G, IP multi-media system (IMS) and Next Generation Networks (NGN).

2.31 Some of the stakeholders mentioned that the different licences have different provisions for value added services and suggested that there is a need to keep the uniform provisions under various access service licenses.

2.32 Some stakeholders mentioned that none of the licenses mentioned have any provisions for Mobile Value Added Services. They also mentioned that telecom operators and VAS providers offer Value Added Services under mutual commercial agreements, which are outside the purview of the current licensing regime.

2.33 Some of the stakeholders do not acknowledge the adequacy of current provisions for the growth of VAS industry and are of the view that all the service providers should also get the permission to provide VAS services with their current licence and for that purpose they need not to have the approval from the licensor.

2.34 Some of the stakeholders suggested that there is a need to bring more transparency in the licensing scheme and the licence should be such that either it specifically states the kind of services a service provider can launch in the market or it should not put any barrier for the service provider to launch new services in the market.

2.35 At present there is no uniformity in the licensing conditions of various telecom service providers with regard to provision of Application Services. There is a need for clearly specifying the scope of Application Services which can be applied uniformly across various licences.

2.36 The Authority in its recommendations on "Growth of Value Added Services and Regulatory Issues" dated 13th February 2009, recommended that the licence provisions for value added services be made applicable uniformly across all the access service licences by amending all the access service licences inserting the following conditions:-

(i) The licencee may provide value added services and or additional facilities in case of any value addition or upgradation that the technology permits subject to intimation about provision of any value added service or additional facility along with details of provision made for lawful interception and monitoring of these services or facilities at least 15 days in advance before the introduction of these services or additional facilities;

(ii) Licensee may provide Value added services such as voice mail, audiotex services, video conferencing, videotex, e-mail, Closed User Group (CUG) facilities over its network to the subscribers falling within its Service Area.

(iii) Licensee may provide Internet Telephony, Internet Services; Broadband Services including triple play i.e. voice, video & data and IPTV.

(iv) Licensee cannot provide Public mobile trunking service (PMRTS), closed users group domestic 64 kbps data network via INSAT satellites system and GMPCS which require a separate licence.

(v) All revenue earned by Licensee through these services mentioned in para (i), (ii) and (iii) above shall be counted towards the revenue for the purpose of paying licence fee.

2.37 In order to bring uniformity with respect to scope of application services in all the existing licences and proposed unified licence uniform provisions will be required. The proposed unified licence regime will cover all the services and in that scenario terms & conditions for provision of application services under unified licence assumes importance.

2.38 **The Authority recommends that following provisions for application services should be included in the terms and conditions of existing licences as well as in the proposed licences under unified licensing regime:**

(i) The licensee may provide application services and additional facilities in case of any value addition or upgradation that the technology permits subject to intimation to the licensor and TRAI about provision of any application services or additional facility along with details of provision made for lawful interception and monitoring of these services or facilities at least 15 days in advance before the introduction of these services or additional facilities;

(ii) The Licensee cannot provide any other application service which otherwise requires a separate licence.

C- Short Codes

2.39 For provisioning of Application Services, the Short Codes are allotted by the telecom service providers to the ASPs as stipulated by within the framework of the National Numbering Plan (NNP) (Annexure I &II). ASPs/Content providers need to individually reach out to telecom

service providers for allotment of short code. It is up to the individual telecom operator to accept the request and allocate the chosen short code to the ASP. According to industry information, a varying amount of fee is required to be paid to each of the telecom service providers for allotment of short code, whereas no such payment is made to the allocator of numbering resources DoT. The short codes accepted by one operator may not be accepted by others and also there is no timeline defined within which the service providers are bound to approve/reject requests for short codes by ASPs.

2.40 In the consultation paper, stakeholders were asked to provide comments on the following question:

i. Does existing framework for allocation of short codes for accessing MVAS require any modifications? Should short codes be allocated to telecom service providers and VAS providers independently? Will it be desirable to allot the short code centrally which is uniform across operators? If yes, suggest the changes required along with justification.

ii. Should there be a fee to be paid for allotment of short code?

2.41 In response, some of the stakeholders mentioned that existing regime for allocation of short codes is working well and should be allowed to continue as it facilitates best use of available short codes. They also suggested that though government can retain some short-codes for common utility services and e-governance, other codes should be left to service provider who will allocate these on demand of VAS provider.

2.42 Some of the stakeholders mentioned that commercials related to allocation of short code should be left to market forces, which are

mutually agreed upon by VASP and operators. It was also mentioned that short codes are limited in number; accordingly the mobile operators would be entitled to charge for the same.

2.43 Some of the stakeholders mentioned that a VASP may approach DoT for allocation of short code in case VASP is going to provide Value Added Services to the subscribers of all telecom operators. In case, the service is to be provided to the subscribers of a particular operator, VASP may approach that operator for allocation of short code.

2.44 Some of the stakeholders suggested the formation of a central short-code agency as a licensed agency, which can enter into agreements with other licensed entities (Telecom Service Providers). They mentioned that this nodal agency can be the one stop shop for short code registration & allocation and a single number assigned to every content provider should work across all mobile telephone service providers. They also mentioned that a framework having well defined procedures and parameters (like fee, timeframe) for allotment of code may be desirable for speedy rollout of the value added services.

2.45 Some of the stakeholders mentioned that short code services need to be made independent of telecom operators, and allocated by an independent body on a first come first serve basis, at an affordable price. They also mentioned that a Common Short Code Registry should be created for this purpose, which must have a simple, affordable online or mobile payment mechanism.

2.46 Some of the stakeholders mentioned that central short code agency (CSC) could issue short codes to the VAS providers at a predetermined price and a “Rate Card” for the services provided by operators can be

mandated by TRAI under the interconnection regime, in consultation with operators, on a cost plus model.

2.47 Some of the stakeholders mentioned that there should be no fee to be paid for allotment for short codes. They also mentioned that in order to optimally utilise the short codes available and to eliminate non serious players, there could be initial agreement for some monetary consideration.

2.48 Presently in India short codes are allotted by the TSPs subject to guidelines of DoT, which mandate provision of short code starting with level 5 and of minimum 5 digits. For any Application Service provider or content provider to have a common short code across networks of different telecom service providers, it has to approach each telecom service provider with a set of short codes and the short code convenient to all the telecom service providers is operationalised. There is no guarantee that a common short code will be available across telecom service providers. The problem with this approach is that considerable time is needed for activating a common short code across the different networks. Also the ASP is not able to brand his product/ content if the same short code is not available with all the access service providers. Further there is no consolidated information available regarding total number of short codes allocated so far by the telecom service providers, to whom they are allocated and which code is allocated for which service. It is also reported that service providers levy a varying fee from application service providers/content providers for allotment of short code, whereas the short code allotment from DoT to telecom service providers is without any charge. One possible option to address these problems could be to allocate short codes centrally by a central agency through an online system. Such agency could allocate codes to all eligible applicants in a non-discriminatory

manner and will also be able to maintain directory of all the short codes. A nominal fee also could be charged by the agency for allotment of codes.

2.49 In some of the countries like US, Australia and Canada; short codes are allocated centrally and responsibility for allocation of short codes is vested with industry organisations. In US, Common Short Codes (CSCs) are assigned through online registration by an industry body Common Short Code Administration (CSCA)[11]. All Common Short Codes (CSCs) are 5 or 6 digits in length. The cost of registering and leasing a CSC selected by the applicant is $1,000 per month and $500 per month for each random CSC. The allottee has to approach all the wireless carriers for activation of CSC. A CSC may be leased for three, six, or twelve month terms.

2.50 In Canada, Canadian Wireless Telecommunications Association (CWTA) has created a Short Code Council, comprised of at least one representative from each Wireless Service Provider (WSP) to oversee the administration of CSCs[12]. Applications for short codes are submitted via email. The Short Code Council reviews all applications for Common Short Codes. CSC codes are 5 or 6 digit number, though long codes of 8 digits are also issued. Content developers, application service providers and marketers are able to obtain CSCs from the CWTA that will be activated across participating WSPs' networks. The CWTA leases Short Codes for a monthly fee of $500 for the first 3 months of assignment. From the fourth month, monthly fee is reduced to $250.

[11] www.usshortcodes.com
[12] Canadian Common Short Code Application Guidelines Version 2.1, November 4, 2011

2.51 In order to allocate short codes equitably to both ASPs and TSPs, it will be desirable that short codes are allocated by an independent agency. The agency could also manage the administration of these codes for smoother functioning, keeping details of services provided and for the purpose of content regulation.

2.52 **The Authority recommends that**

(i) For allocation of Short codes to telecom service providers/licensees and licenced application service providers/content providers, a Short Code Council (SCC) will be set up by TRAI.

(ii) Short codes will be allotted centrally through a online web based system in accordance with the National Numbering Plan. Short codes will be allotted to both ASPs and TSPs independently.

(iii) Short Code Council will also centrally manage the details of short codes allotted, type of service provided under short code, tariff for the service and hosting details for application services, which can be used by customers for discovering the services interactively.

(iv) Application service provider can launch the service only after online approval by the SCC. If the ASP/TSP/content provider wishes at a later date to run a new, modified or additional application/content on the same short code, TSP/ASP/ content provider shall update the same online for obtaining revised approval.

(v) Appropriate fee, one time and recurring charges, should be charged for allocation of common short code by Short code Council so that only the genuine and serious content provider/ application service provider/entity should seek the same.

(vi) The service through allocated short code should be made operational within three months of allocation and intimated online about the date of operationalisation of the common short code by the concerned Application Service Provider/ entity/telecom service provider. If no such information is updated online within three months by TSP/ASP/content provider for declaring the service operational, it shall be presumed that the common short code has not been made operational and non-utilization of short code for a period of more than three months will be subject to cancellation of short code and reallocation to other applicants.

(vii) Telecom service providers should open the common short code within a fortnight after the code is approved by the Short Code Council and update this information online with Short Code Council. The orders/ directions/ regulations of DoT or TRAI, from time to time, as the case may be, shall be applicable in this regard.

D- Utility application services

2.53 Mobile phones can be used to deliver content and services that can help foster inclusive growth in India by digitally empowering citizens across all cross—sections of society, both urban and rural. In India, mobile applications are limited to entertainment, information, sports and advertising. The government is keen on capitalizing on emerging technologies to deliver citizen centric services to common masses efficiently and effectively. There is a wide range of government services, which can be delivered via mobile phone, including services relating to health, education, employment, agriculture, police, tax payments, legal services etc.

2.54 The initiatives to provide various services using mobile applications have already started in India, but these are very limited. The potential for utility application services can be leveraged to boost social and economic activities, governance, and enhance government citizen interaction. There is plenty of scope to develop and deploy Utility application services in the country. However, there are certain key challenges and impediments to the growth of Utility application services.

2.55 In the consultation paper, stakeholders were asked to provide comments on the following question

i. What measures are required to boost the growth of utility MVAS like m-commerce, m-health, m-education & m-governance etc. in India? Should the tariff for utility services provided by government agencies through MVAS platform be regulated?

2.56 Some of the stakeholders mentioned that the Government should take lead to provide more VAS services in the field of commerce, education, health, governance etc. and take initiatives for active integration of relevant Government bodies to dwell upon such opportunities to provide maximum online assistance to the public, which will ensure success of the utility VAS segment. They further mentioned that information regarding Government departments should be made available to citizens via text on their mobile phones. They also suggested that services may be made available either on-demand, wherein the citizen sends the query via text and receives answer or through subscribed services.

2.57 Some of the stakeholders mentioned that the key drivers for the growth of utility VAS like m-commerce, m-health, m-education & m-

governance are low cost of access devices, availability of content in vernacular languages, mobile equipment interoperability to support local language, ease of use of the service, feature driven handsets and awareness among masses about these services.

2.58 Some of the stakeholders mentioned that relevance, affordability, consumer awareness and interoperability can boost the growth of utility VAS. They also mentioned that for this purpose collaboration with other countries, NGOs and international organisations who have successfully implemented such applications will be very helpful.

2.59 Some of the stakeholders suggested that there is a need to set up a Government Advisory Committee that understands and identifies key needs of the public which can be addressed through mobile technology. They also suggested some other measures like setting up of smart phone booths, spreading awareness through campaigns and trainings on their usage, deployment of innovative payment solutions and simple authentication mechanisms to enable transactions, including leveraging UIDAI.

2.60 Some of the stakeholders mentioned that the relevant stakeholders viz. Hospitals/doctors, teachers/students, Govt. entities/citizens or integrators/mediators who have to provide/facilitate these services should be encouraged for providing such services through mobile by giving suitable incentives in taxes or through USOF.

2.61 Some of the stakeholders are of view that major drivers for boost of m-governance are alternate payment collection methodologies for services provided, access to consumer data in well-formed schemas as inputs to VAS services and access to and acceptance by the

Government agencies for development of appropriate applications by 3rd parties.

2.62 Some of the stakeholders suggested that adequate network coverage with wider distribution of handset in non-urban areas is also required.

2.63 Some of the stakeholders mentioned that there is a need for government initiative, micropayment infrastructure, regulatory framework for privacy, dispute resolution mechanism, and assurance of relevant service. They also suggested that guidelines for security of information, consumer awareness and motivating schemes for new content developers will help in growth of MVAS utility services.

2.64 Some of the stakeholders mentioned that there is no need to regulate the tariffs for utility MVAS, instead, it should be left to the operators to price it at an optimum level to ensure take-up. They also opined that the regulator should intervene only in case there is an evidence of higher charges by service providers.

2.65 Some of the stakeholders mentioned that regulation of tariffs at the initial stages is not beneficial to the overall market structure and once the market is stable and competition has settled, the regulator can consider regulating tariffs for access to utility services provided by government agencies.

2.66 Some of the stakeholders mentioned that the VAS targeting towards social welfare should be kept in separate category and should get support from the Govt. in form of lower taxes etc. to keep the cost to end customer at minimum. It is also mentioned that different services

depending on customer segment should have different tariff and different rebates to ensure enough revenue to the provider.

2.67 In the last few years, we have seen a phenomenal increase in initiatives and efforts toward reinventing government with the help of Information Technology (IT). This trend has been fuelled by the changing expectations of citizens and desire of the Government to capitalise on the emerging technologies to make government processes more efficient and effective.

2.68 Government has initiated the National e-Governance Plan, wherein many of the government services will be available to citizens online. Under National e-Governance Plan (NeGP), a massive countrywide infrastructure is evolving and large-scale digitisation of records is taking place to enable easy, reliable access to the citizens. The Government is in the process of implementation of NeGP, comprising of 27 Mission Mode Projects (MMPs) [13] encompassing 10 Central MMPs, 10 State MMPs and 7 Integrated MMPs covering various services from state and central departments. State data centres at various states have either been commissioned or are in various stages of commissioning. These data centres will play a vital role in delivering various citizen services from various departments.

2.69 The initiatives to provide various services using mobile applications have already started in India, but they are very limited. The potential for utility application services can be leveraged to boost social and economic activities, governance, and enhance government citizen interaction.

[13]http://www.mit.gov.in/content/mission-mode-projects

2.70 Part of the current excitement of this trend is the emergence of the wireless platform as a means for delivery of services to masses. As urban market is getting saturated, service providers are expanding their services in rural and remote areas and it will likely to improve the coverage of mobile services in the rural & remote areas providing a boost to the utility application services.National e-Governance Division (NeGD) under Department of Information Technology, Government of India, is already working on setting up a Mobile Services Delivery Gateway (MSDG) for providing various government services seamlessly to citizens.

D 1. Awareness

2.71 Some of the stakeholders mentioned that there is a need to spread the awareness among masses by Government through TV, Newspapers and ensure relevance of services by leveraging the available consumer data.

2.72 Future adoption of any new service is closely associated with the current awareness levels of consumers. There is a need to ensure that the consumers are educated about the value of the services in the utility application services market. This would ensure more acceptability and usage of services among the users. This could be done by mass awareness campaign to sensitise the people about utility application services and its benefits – through mass media as well as through other means of communication including physical demonstration through road shows.

2.73 Spreading of education and awareness about Utility application services initiatives through TV, grampanchayat networks etc. will also reduce marketing cost of the operators. Success of the Pulse Polio

Campaign is evidence of the results it could achieve. Government may identify suitable agencies for this purpose and allocate fund for awareness campaign across the country.

2.74 Department of Information Technology has drawn up an awareness campaign for NeGP which include:

- Communication Need Assessment Exercise
- NeGP awareness stalls at key events and conferences across the country
- Advertisements in TV, Radio and Press
- CSC awareness through personal contact and van based activities
- Publicity films on subjects like e-District, MCA21, CSCs etc
- Support to Conferences and Workshops

This program could perhaps include awareness regarding utility application services offered on mobile platform.

2.75 **The Authority recommends that for spreading awareness regarding utility application services in rural and remote areas, awareness campaign for NeGP initiated by Department of Information Technology (DIT) should be utilised.**

D 2. Applications supporting Indian regional languages

2.76 Some of the stakeholders mentioned that the key drivers for the growth of utility application services like e-commerce, e-health, e-education &e-governance are low cost of access devices and availability of content in regional languages.

2.77 Subscribers in the smaller cities and rural areas, who are likely to be major consumers of utility application services, are different from the English-savvy subscribers in metros and big cities. Subscribers in smaller cities and rural areas may not have adequate knowledge of

English and hence are more comfortable in communicating in their mother tongue. Further the rural tele density is just 38.53% as compared to urban tele density of 169.37%. This clearly indicates that in near future, majority of new subscribers are expected to come from rural areas. Provision of relevant application services through phone could accelerate the uptake of phones in rural areas. With the spread of mobile telephony utility application services can be utilised as a vital tool for providing agricultural and other relevant information to rural masses. However, English literacy is only 7 % in rural India. This highlights the importance and need for development of application services in Indian regional languages.

2.78 Growth of application services market in India may be hampered by lack of content in Indian vernacular languages. Lack of local content restrains the growth of application services market in regional areas, which has a great potential. This requires investment from the content providers to develop content in local languages. There is a need to encourage development of application services in Indian regional languages by providing financial incentives.

2.79 Presently, India has 22 official languages and each language has its own unique script and alphabet. A key barrier to development of application services including SMS in Indian languages is the lack of handsets embedded regional languages. As compared to English, which has only 26 alphabets, regional Indian languages have higher number of characters and alphabets, hence longer words on average. Therefore higher number of characters in the alphabet required to be mapped on phone keys.

2.80 Some proprietary solutions have been developed for SMS in several Indian vernacular languages and are currently supported by several

operators. There is need to ensure inter-operability of these solutions across operators. Similarly mobile handsets with Indian language keypads are readily available, but there are variations in keypad layouts across vendors/devices. There is a need to encourage development of standardised keypad layouts for Indian languages. Ease of use of application services as well as providing multilingual content of choice is the key to increasing adoption of utility VAS.

2.81 **The Authority recommends that development of application services in Indian regional languages should be encouraged through suitable incentives.**

CHAPTER III: SUMMARY OF RECOMMENDATIONS

3.1 **The Authority recommends following definition of application services:**

"Application services are enhanced services, in the nature of non-core services, which either add value to the basic tele services or can be provided as standalone application services through telecommunication network, the basic services being standard voice calls, voice/non-voice messages, fax transmission and data transmission." (para 1.20)

3.2 **The Authority recommends that the Application Service Providers should be covered under Licensing through Authorisation. (para 2.26)**

3.3 **The Authority recommends that following provisions for application services should be included in the terms and conditions of existing licences as well as in the proposed licences under unified licencing regime:**

(i) The licencee may provide application services and additional facilities in case of any value addition or upgradation that the technology permits subject to intimation to the licensor and TRAI about provision of any application services or additional facility along with details of provision made for lawful interception and monitoring of these services or facilities at least 15 days in advance before the introduction of these services or additional facilities;

(ii) The Licensee cannot provide any other application service which otherwise requires a separate licence. (para 2.38)

3.4 **The Authority recommends that**

(i) For allocation of Short codes to telecom service providers/licensees and licenced application service providers/content providers, a Short Code Council (SCC) will be set up by TRAI.

(ii) Short codes will be allotted centrally through a online web based system in accordance with the National Numbering Plan. Short codes will be allotted to both ASPs and TSPs independently.

(iii) Short Code Council will also centrally manage the details of short codes allotted, type of service provided under short code, tariff for the service and hosting details for application services, which can be used by customers for discovering the services interactively.

(iv) Application service provider can launch the service only after online approval by the SCC. If the ASP/TSP/content provider wishes at a later date to run a new, modified or additional application/content on the same short code, TSP/ASP/ content provider shall update the same online for obtaining revised approval.

(v) Appropriate fee, one time and recurring charges, should be charged for allocation of common short code by Short code Council so that only the genuine and serious content provider/ application service provider/entity should seek the same.

(vi) The service through allocated short code should be made operational within three months of allocation and

intimated online about the date of operationalisation of the common short code by the concerned Application Service Provider/ entity/telecom access service provider. If no such information is updated online within three months by TSP/ASP/content provider for declaring the service operational, it shall be presumed that the common short code has not been made operational and non-utilisation of short code for a period of more than three months will be subject to cancellation of short code and reallocation to other applicants.

(vii) Telecom service providers should open the common short code within a fortnight after the code is approved by the Short Code Council and update this information online with Short Code Council. The orders/ directions/ regulations of DoT or TRAI, from time to time, as the case may be, shall be applicable in this regard. (para 2.52)

3.5 **The Authority recommends that for spreading awareness regarding utility application services in rural and remote areas, awareness campaign for NeGP initiated by Department of Information Technology (DIT) should be utilised. (para 2.75)**

3.6 **The Authority recommends that development of application services in Indian regional languages should be encouraged through suitable incentives. (para 2.81)**

Annexure-I

GOVERNMENT OF INDIA
MINISTRY OF COMMUNICATIONS & INFORMATION TECHNOLOGY
DEPARTMENT OF TELECOMMUNICATIONS
714, SANCHAR BHAVAN, 20, ASHOK ROAD, NEW DELHI-110001

No. 16-3/2003-BSII/Vol.VI Dated: 30th November, 2006

OFFICE MEMORANDUM

SUBJECT: ADDENDUM TO THE NATIONAL NUMBERING PLAN, 2003 (NNP-2003) – ALLOCATION OF SHORT CODES TO THE CONTENT PROVIDERS INCLUDING SMS BASED SERVICES.

In supersession of this office O.M. of even No. dated 29th November, 2004 on the subject mentioned above, the undersigned is directed to state that for the proper conduct of telegraph, the Competent Authority has decided that all the Unified Access / Basic / Cellular Mobile Service providers must use the level '5' for allocation of short codes to the Content Providers including SMS based services within their network.

All other terms and conditions will be as per the guidelines issued in this regard.

30-11-2006
(Raj.K.Kataria)
Under secretary to the Govt. of India

Copy to:

1. Secretary, Telecom regulatory authority of India.
2. Sr.DDG(TEC), Khurshid Lal Bhavan, Janpath, New Delhi.
3. DDG(DS) / (AS) / (CS)
4. All Unified Access / Basic / Cellular Mobile service Operators.

Annexure-II

Government of India
Ministry of Communications & Information Technology
Department of Telecommunications
LICENSING CELL (ACCESS SERVICES GROUP)
714, Sanchar Bhawan, 20, Ashok Road, New Delhi-110 001.

No.16-3/2003-BS.II/Vol.VI/441 — **07th May, 2007**

To

All the Access Service Providers.

SUBJECT : ALLOCATION OF SHORT CODE TO THE CONTENT PROVIDERS INCLUDING SMS BASED SERVICES – CLARIFICATIONS REGARDING.

In reference to this office O.M. of even No. dated 01st December, 2006 on the subject mentioned above, the undersigned is directed to issue the following:

1. The short codes should start with level 5 and will be minimum of 5 digits.
2. Use of suffixes to the short codes is permitted.
3. Allotment of new short codes should be minimum of 5 digits and they should be in level 5 only.
4. The parallel working of old short codes with the new codes is allowed upto 31st August, 2007.

All other terms and condition remain unchanged.

(Raj K. Kataria)
Under Secretary to the Govt. of India
Tel No. 23036536

Copy to:
1. Secretary, Telecom Regulatory Authority of India.
2. Sr. DDG (TEC), Khurshid Lal Bhawan, Janpath, New Delhi.
3. DDG(DS) / (AS) / (CS).