



W3C India

Draft Consultation Paper

On

VAS in Indian languages

**Electronics Niketan,
6, CGO Complex , Lodhi Road
New Delhi - 110003
Email: w3cindiaoffice-dit@nic.in**

URL: <http://www.w3cindia.in>

Contents

1. Introduction
2. Vision and Objectives
3. Mobile Internet Usage in India
4. MVAS Ecosystem in India
5. MVAS-Mobile Value Added Services
 - 5.1. Status in India
6. M –Governance and its potential in delivery of public services
7. Technologies for delivering services through Mobile platform
 - 7.1. SMS (Short Messaging Services)
 - 7.2. USSD (Unstructured supplementary services data)
 - 7.3. WiFi/Wimax/WLan/3G/GRPS-Browser based Access and direct upload
8. Mobile Web Standards of W3C
 - 8.1. Mobile Web Best Practices
 - 8.2. Mobile Web Application Guidelines
 - 8.3. Mobile Web Social development
 - 8.4. Other related Standards
 - 8.4.1. 3GPP
 - 8.4.2. LTE
9. Indic language requirements
10. Challenges for MVAS in India
11. Indicative list of issues which could be taken for collaborative problem solving developments by TCOEs

1. Introduction

The Web has gone mobile. All of the dynamic and interactive services of the Web can now reach the mass markets of millions and millions mobile users. At first, all the different technologies and concepts related to mobile browsing may seem overwhelming.

Accessing internet through mobile is seen as the future, hence enabling Indian languages on the mobile with parallel efforts enhancing the languages content on the web coupled by the development of various standards supporting these initiatives and our participation in such a global platforms is the ultimate long term goal. Interoperability is the key issue so that the dissemination of multilingual news and information can be handled seamlessly across service providers and variety of mobile available in the market. Perceiving the cellular phone to be the agent of change for inclusive growth, the challenge lies in enhancing the variety of the mobile applications and their localization, which in turn will accelerate the growth of mobile business in the country. The Mobile Web Initiative's goal is to make browsing the Web from mobile devices a reality

2. Vision and Objectives

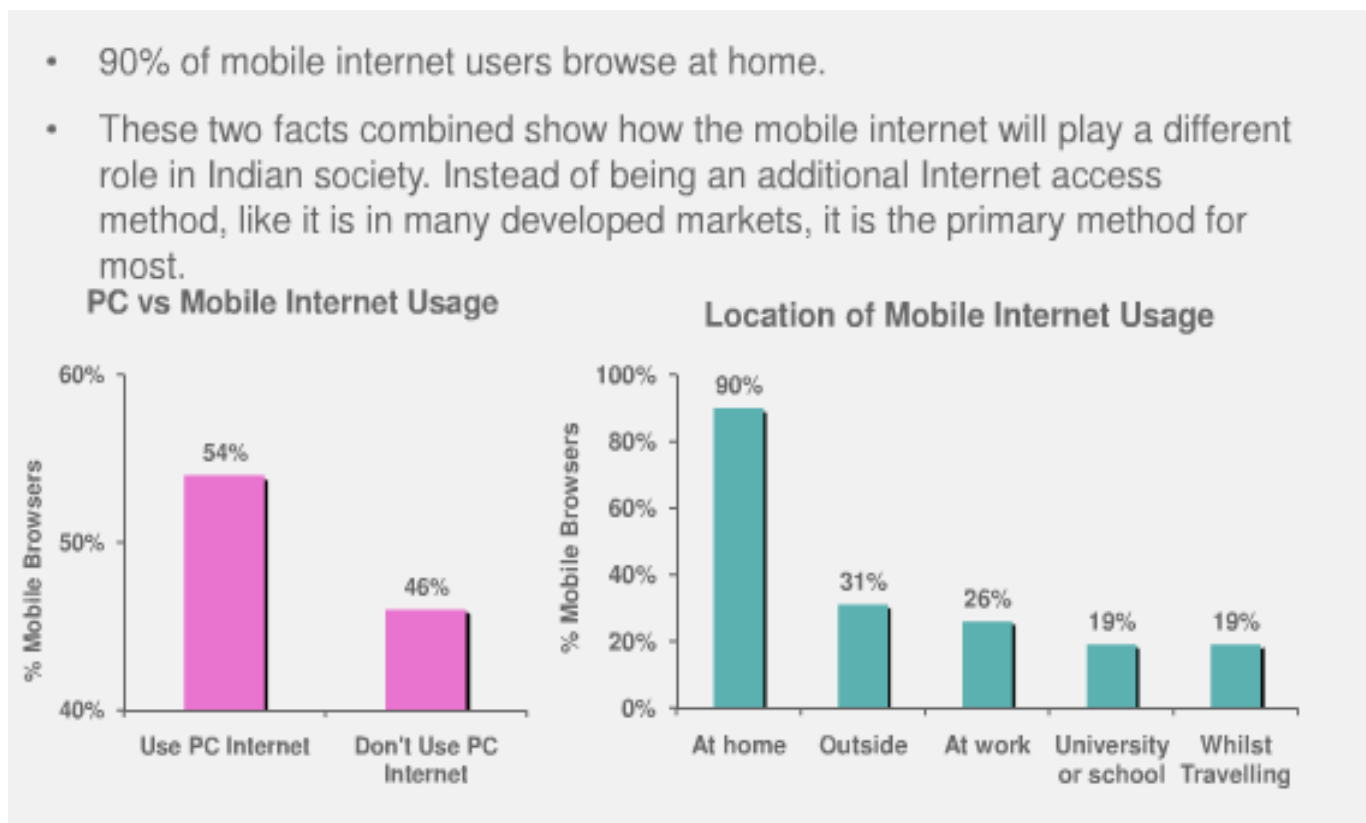
W3C's mission includes ensuring that the Web be available on as many kind of devices as possible. With the surge of powerful mobile devices in the past few years, the role of the Web as a platform for content, applications and services on these devices is increasingly important.

W3C accompanies this growth with its ongoing work in the following areas:

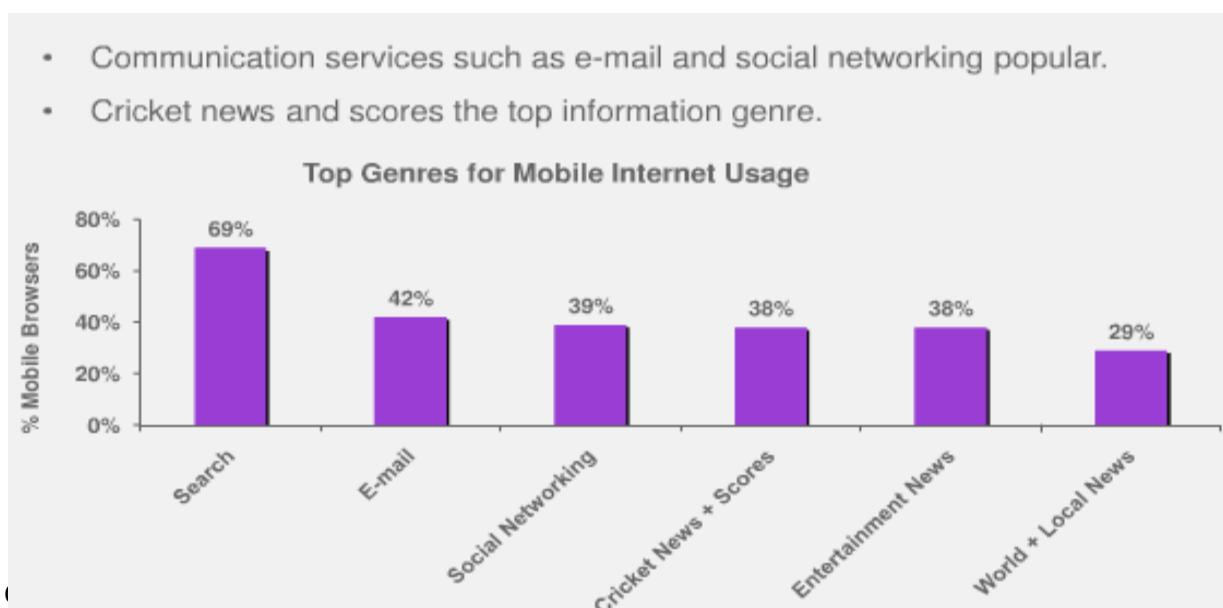
- Mobile VAS applications can leverage the Open Web Platform, including HTML5, CSS3, and numerous JavaScript APIs— in particular device APIs who allow deeper integration with the hosting device as VAS has to run on varying platforms of service providers.

- The Mobile Web Best Practices and the Mobile Web Application Best Practices offer guidance to developers on how to create VAS content and applications that work well on mobile devices.

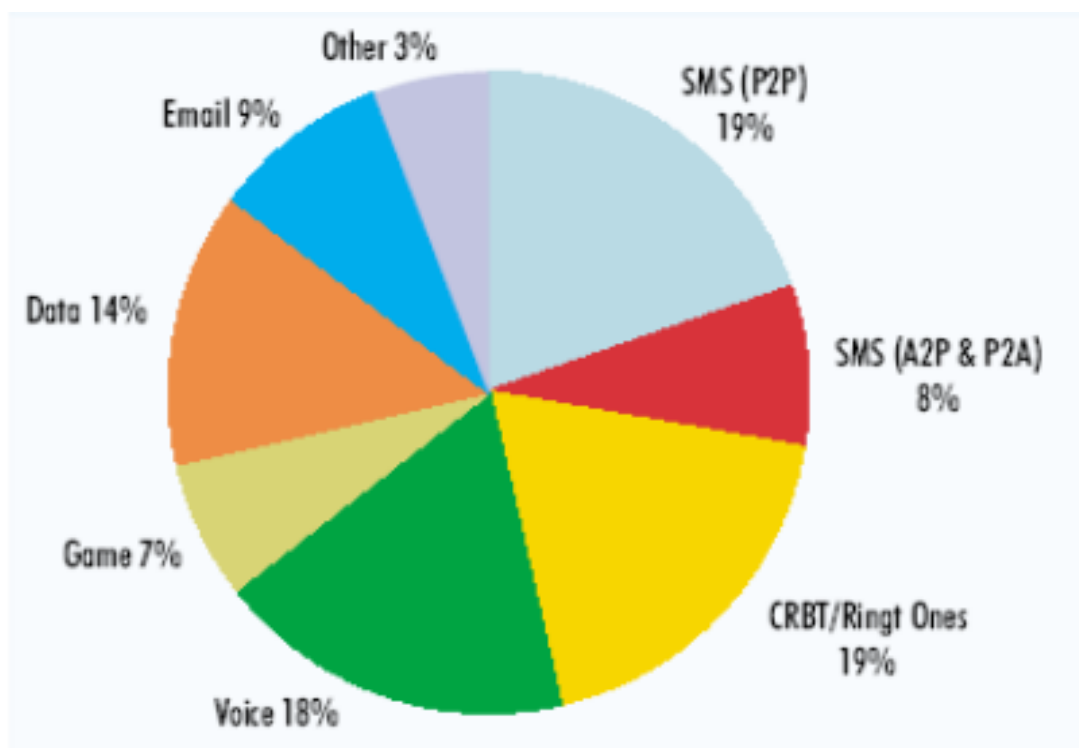
3. Mobile Internet usage in India



Top genres for mobile internet usage:



Composition of M-VAS Globally



Percentage of mobile Web users

Percentage of mobile Web users who never or infrequently use the desktop Web			
Country	Percentage mobile-only	Country	Percentage mobile-only
Egypt	70%	Indonesia	44%
India	59%	Thailand	32%
South Africa	57%	China	30%
Ghana	55%	US	25%
Kenya	54%	UK	22%

Nigeria	50%	Russia	19%
---------	-----	--------	-----

Key Global Telecom Indicators for the World Telecommunication Service Sector in 2010

	Global	Developed nations	Developing nations	Africa	Arab States	Asia & Pacific	CIS	Europe	The Americas
Mobile cellular subscriptions (millions)	5,282	1,436	3,846	333	282	2,649	364	741	880
Per 100 people	76.2%	116.1%	67.6%	41.4%	79.4%	67.8%	131.5%	120.0%	94.1%
Fixed telephone lines (millions)	1,197	506	691	13	33	549	74	249	262
Per 100 people	17.3%	40.9%	12.1%	1.6%	9.4%	14.0%	26.6%	40.3%	28.1%
Mobile broadband subscriptions (millions)	940	631	309	29	34	278	72	286	226
Per 100 people	13.6%	51.1%	5.4%	3.6%	9.7%	7.1%	25.9%	46.3%	24.2%
Fixed broadband subscriptions (millions)	555	304	251	1	8	223	24	148	145
per 100 people	8.0%	24.6%	4.4%	0.2%	2.3%	5.7%	8.7%	23.9%	15.5%

4. MVAS Ecosystem in India

The mobile services ecosystem in India is at an advanced stage with multiple telecom operators, leading ICT companies and mobile application developers. The focus of various actors though has been limited to the entertainment and business applications rather than on developing applications for public services. This can be attributed to some of the issues which are sought to be addressed by the mobile governance policy framework. The challenges are:

- First, the lack of a common service delivery infrastructure and services may lead each ministry or department to develop its own stand-alone systems. This will lead to considerable duplication of infrastructure and services while fragmenting demand.

- Second, even though there are thousands of applications offered by various mobile network operators (MNOs) and value added service (VAS) providers in the domain of business and entertainment, very few applications have been developed for public services. This has resulted in limited availability of such applications within the country.

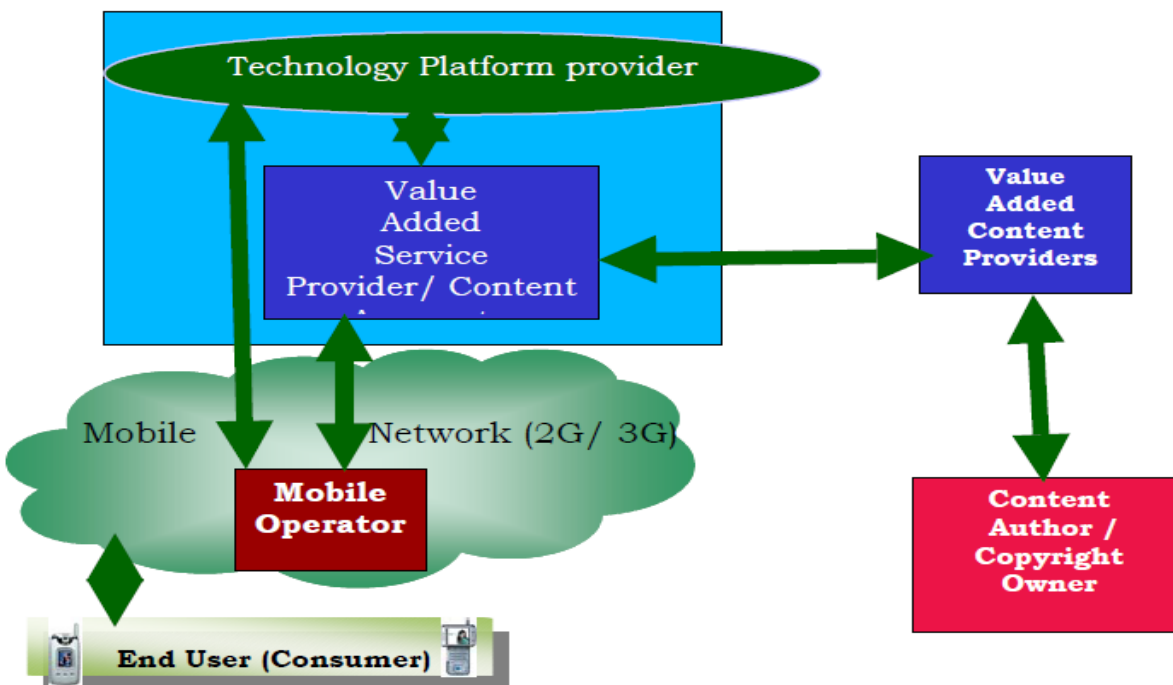
The various stakeholders which are expected to play an important role in enabling the delivery of mobile based public services in India include Mobile Network Operators (MNOs), Value Added Service (VAS) and Application Service Providers (ASPs), Unique Identification Authority of India (UIDAI), Telecom Regulatory Authority of India (TRAI), National Payments Corporation of India (NPCI), Government ministries and departments, equipment manufacturers, and residents or users.

5. MVAS-Mobile Value Added Services

5.1. State of the art in India

Presently, in the Indian market value added services are provided either directly by the telecom operators or by third party content aggregators/enablers generally known as Value Added Service Providers (VASPs). Examples of value added services provided directly by the telecom operators are SMS, GPRS. The commercial arrangements between telecom operators and Value Added Service Providers(VASPs) do exist. In many of these cases, the VASPs provide technology platform which enables a user to access content on to his mobile or terminal device. Examples of value added services provided through VASPs are astrology, ring back tunes. In most of the cases the VASPs do not own the contents but they have arrangements with the content providers/content developers or copyright owners known as content owners. For some of the value added services, say SMS or Messaging, the value added services platform including gateway/middleware is provided by the telecom operator and VASP only provides the content. It is noticed that VASPs do have arrangements with various telecom operators for their products and these value added service products are provided under a unique short code across different networks. In such cases the VASPs also advertise/market the value added

services collectively targeting the customers of different telecom operators with whom they have commercial agreements.



6. M –Governance and its potential in delivery of public services

Mobile governance (m-Governance) can be defined as the delivery of all types of public services including making payment for such services through mobile based technologies, such as SMS, USSD, browser based or direct access through GPRS/3G/WiFi/WLan, Bluetooth, etc. In the proposed policy framework, the front end delivery channel or user access devices are defined as regular cell-phones, smart phones and personal digital assistants (PDAs). Desktop and laptop computers are not included in this category.

Mobile governance holds tremendous potential for improving the access to and delivery of public services in India. The huge potential of m-Governance in the country arises from a number of factors:

(a) **Huge and Growing Base of Mobile Phone Subscribers:** India has over 771 million mobile phone subscribers as on 31.01.2011. The penetration of mobiles in rural areas is also substantial with over 258 million subscribers. This huge subscriber base presents a tremendous opportunity for delivery of public services to all residents, especially to those in rural areas.

(b) **Availability of Low Cost Handsets:** Though most of the handsets currently available in the country are low end ones with only text and SMS capability, handset vendors in India are increasingly producing low cost handsets with GPRS and, in some cases, even 3G featured in them. This has helped in expanding the reach of modern mobile technologies such as GPRS and 3G to a large number of people opting for these handsets. This has also made it possible to deliver public services using these technologies in addition to the SMS based services.

(b) **Low Penetration of Internet and Broadband:** Internet and broadband penetration is still relatively very low in India. This has restricted the access to e-governance services through the traditional medium of computers and internet. The extremely high individual ownership of mobile phones makes it possible to expand the access to public services dramatically, especially to those in the rural areas. Moreover, mobile handsets are available at a far lower cost than that of computers and low tariffs make them a very attractive medium for delivery of public services.

7. Technologies for delivering services through Mobile platform

7.1. SMS(Short Messaging Services)

SMS service in mobile telephony evolved as a value added service (VAS) enabling users to carry out text-based communication using spare capacity in the signaling channels. Even though its initial intended use was for sending private (or peer-to-peer) text messages, the SMS service has rapidly evolved over the last decade as a platform for delivering a wide range of important commercial services too, making it a very important modern communication platform. SMS is a major revenue source for mobile operators.

VAS providers in India have primarily used English language as the medium of communication. However, as the reach of mobile networks grows to every nook and corner of the country, the role of Indic languages becomes very important, especially so when we see that more than 80% of Indian population cannot handle the English language. Widespread use of Indian languages in SMS-based VAS will, no doubt, increase the reach of these services. Considering the fact that India today has more than 60 crore mobile phones and the numbers are increasing at a rate approximately 1 crore per month, the potential reach for the SMS-based services is simply staggering. The industry has to address three key issues if Indic SMS is to really take off:

1. User-friendly input methods
2. Memory-efficient and scalable display solutions
3. Service inter-operability

The contribution of SMS in Indian languages is further miniscule when compared to the use of SMS in English. A number of reasons have been put forward to explain this. Among these, the ones related to text entry are the lack of:

- Standardized keypad mappings of alphabets from Indian Languages to the 12 keys of the device;
- good support for display of fonts;
- uniform guidelines for composing and editing of Indian Languages which are
- highly non-linear in their structure;
- dictionary support;
- support for prediction, transliteration and other services

Mobile marketing, advertising and messaging

1) SMS is still king of mobile messaging with more than 6.1 trillion messages sent in 2010.

- Despite the popularity of mobile email, IM and MMS, SMS is predicted to exceed 10 trillion in

2013.

2) Estimates for expenditure on mobile advertising and marketing worldwide ranged from US\$1.4 billion to \$7.5 billion in 2009, all analysts forecast rapid growth.

- Expect analysts to raise mobile ad expenditure forecasts as US\$1.14 billion in Japan (2009) alone; Google now makes US\$1 billion in annual mobile ad revenues, and US mobile ad revenues are expected to hit US\$1 billion in 2011.

3) To what types of mobile marketing do people respond best? In the UK and France opt-in SMS gets the best results, in Germany mobile Web ads get the best results.

7.2. USSD (Unstructured supplementary services data)

USSD is used as a service to request for independent services that do not require SMS usage. Such requests could be used as a callback service (e.g. cheaper phone charges while roaming) or interactive data service (e.g. stock quotes, sports results).

7.3. WiFi/Wimax/WLan/3G/GRPS-Browser based Access and direct upload

A mobile phone can be used to connect to the internet using WiFi, WiMAX , WLan, 3G, GRPS connections for browser based access to applications. They can also be used for direct upload using these technologies.

8. Mobile Web Standards of W3C

8.1. Mobile Web Best Practices

This document sets out a series of recommendations designed to improve the user experience of the Web on mobile devices. This Standard provides Sixty Guidelines to specifies best practices for delivering Web content to mobile devices. Visit <http://www.w3.org/TR/2008/REC-mobile-bp-20080729/> for more details

8.2. Mobile Web Application Guidelines

This standard sets out a series of recommendations designed to facilitate development and delivery of Web applications on mobile devices. The recommendations are offered to creators, maintainers and operators of mobile Web sites. Visit <http://www.w3.org/TR/mwabp/> for more details.

8.3. Mobile Web Social development Roadmap

This document provides a roadmap identifying the current usage and potential of mobile technologies in Development and the current challenges and barriers and the potential directions to explore in the future. The focus of this work is on content, applications and services. this roadmap explores how to use existing infrastructure to provide services that would contribute to social and economic development of rural and underprivileged populations. Visit <http://www.w3.org/TR/2009/NOTE-mw4d-roadmap-20091208/> for more details.

8.4. Other related Standards

8.4.1. 3GPP(3rd Generation Partnership Project)

The 3G technology for mobile communication started its inception in the year 1998. The 3rd Generation Partnership Project (3GPP) is collaboration between groups of telecommunications associations, to make a globally applicable third generation (3G) mobile phone system specification within the scope of the International Mobile Telecommunications-2000 project of the International Telecommunication Union (ITU). 3GPP specifications are based on evolved Global System for Mobile Communications (GSM) specifications.

The original scope of 3GPP was to produce Technical Specifications and Technical Reports for a 3G Mobile System based on evolved GSM core networks and the radio access technologies that they support (i.e., Universal Terrestrial Radio Access (UTRA) both Frequency Division Duplex (FDD) and Time Division Duplex (TDD) modes). No technology meets these requirements yet; none is even close. It will require new technologies such as LTE-Advanced (with work already underway) and IEEE 802.16m.

8.4.2. LTE(Long Term Evolution)

3GPP has completed the specification for Long Term Evolution as part of Release 8. LTE will allow operators to achieve even higher peak throughputs in higher spectrum bandwidth. Work on LTE began in 2004 with an official work item started in 2006.

Goals of LTE-Advanced

- Flexible and Faster Network Deployment - Heterogeneous Networks
- Better Coverage and Improved Spectral efficiency (Cell Edge and Average) - Robust Interference Management
- Greater Flexibility with Wideband Deployments - Wider Bandwidth by Carrier Aggregation Across Bands
- Ubiquitous & Cost Effective Broadband - Higher Peak User Rate by Higher Order DL and UL MIMO

Technical Features LTE Advanced

- **Support of wider bandwidth:**

Carrier aggregation, where two or more component carriers, each with a bandwidth up to 20 MHz, are aggregated, is considered for LTE-Advanced in order to support downlink transmission bandwidths larger than 20 MHz, e.g. 100 MHz.

- **Spatial multiplexing**

Extension of LTE downlink spatial multiplexing to up to eight layers is considered. For the uplink spatial multiplying to up to four layers is considered.

- **Coordinated multiple point transmission and reception**

This feature is considered as a tool to improve the coverage of high data rates, the cell-edge throughput and/or to increase system throughput.

- **Relaying functionality:**

Relaying is considered for LTE-Advanced as a tool to improve e.g. the coverage of high data rates, group mobility, temporary network deployment, the cell-edge throughput and/or to provide coverage in new areas.

9. Indic language requirements

9.1. Accessibility

Accessibility covers the challenges of accessing and using devices, content and services on the Web for people with disabilities. when designing and implementing an application, it is critical to use the right techniques that would allow people using assistive technologies to access and interact with the service.

9.2. Localization/Internationalization

The availability of content and services in these local languages is critical to lowering the barriers to access ICT. Unfortunately, few of these lesser-known languages currently exist in the Information Society.

9.3. Increasing the number of languages supported

For a specific language to be supported by a specific technology, there are two aspects to consider: the infrastructure (that allows a document to be localized in any language and dialect of the world) and the components required for a specific language to be supported by all the elements of the content production and consumption chain (authoring tools, client-side applications, input and output mechanisms, etc).

With regards to SMS, there have been some initiatives to support non-Latin scripts, but in terms of infrastructure many network operators still do not support Unicode that allows almost all languages to be represented in SMS. The lack of support for this standard by some network operators prevents all initiatives at the handset level to offer a technology that supports more languages. It is therefore essential to promote the use of Unicode by all network operators for SMS.

10. Challenges for MVAS in India

DEVICE AND TECHNOLOGY (OS COMPATIBILITY ISSUES)

Entry of low cost handsets and Chinese models has posed a new challenge. Many of these handsets have their own operating systems and technology unlike that used by branded players like Nokia. It becomes difficult to create suitable VAS that will run on the wide variety of handsets.

CONTENT

Providing relevant content will be major challenge for success of VAS. This will be even more important factor in rural VAS where large number of new users is getting added. These users will need content which would be:

- Relevant to their needs (local information, weather forecast, regional entertainment)
- Available in language they understand (regional or vernacular language)

PRICING

While new services could fillip MVAS usage and eventually lead to higher revenues and ARPU, it will be necessary to price the offerings at a reasonable level. Setting appropriate pricing will be the most challenging for 3G services that the providers plan to introduce.

12. Indicative list of issues which could be taken for collaborative problem solving developments by TCOEs

- Scope of regional languages in development of mobile VAS in the Indian market.
- Need for supporting Indian Languages on Mobile applications includes for sending SMS, IMS and MMS (SMIL) ,Business Cards, addresses, writing and editing SMS, entries into Address Book, etc.
- Current standards used for SMS w.r.t Indian languages vis-a-vis new standards to be evolved on enabling web services in mobile environment for Indian languages
- Unicode for transmission and reception of SMS and other related services & merger of current telecom standards i.e. GSM, CDMA onto SMIL.
- To study the adaptation of W3C standards
- Mobile protocols for language negotiation.
- Compile the stakeholders who could be engaged for addressing the identified issues.
- Suggested approach /Methodology to resolve a particular issue.