

Mobile TV



Introducing Real TV. Now on your phone.

Live TV - that goes wherever you go.

- Channel surf with no buffering
- Easy-to-use Program Guide
- Get text reminders for your favorite shows sent straight to your phone
- Take calls without interrupting your program

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Mobile TV

Introduction

Mobile TV is simply the ability to receive television-like content through a mobile device, whether it is news bulletins, market updates, your favorite soap or the latest sports news. In the near future, it would even be possible to watch TV broadcasts on the move via your mobile phone. In other words *“Mobile TV is a name used to deliver TV services to subscribers on their mobile phones via mobile telecommunications networks”*. For the last few years, interest in Mobile TV has grown rapidly. Many studies have predicted that mobile TV will become a mass market service in few years. Meanwhile many companies around the world are spending considerable amount of money on trials and commercial launches of Mobile TV.

Basic Working Principle

Mobile TV involves combining the services of a mobile phone with television and represents logical step ahead for consumers, operators and content providers. The basic idea of the TV phone is pretty simple, it is a cell phone that acts as a TV receiver. In the case of TV phones, they have the ability to receive radio signals in the TV-allocated frequency bands in addition to the bands allocated for cell-phone voice data. For instance, a TV phone in the United States might tune in to the 2110-2170 MHz band for conversation and 54-60 MHz band for TV channel 2.

Mobile TV over cellular networks allows viewers to enjoy personalized, interactive TV with content specifically adapted to the mobile medium. The services and viewing experience of mobile TV over cellular networks differs in a variety of ways from traditional TV viewing. In addition to mobility, mobile TV delivers a variety of services including Video-on-Demand(VoD) and live TV programs. Another exciting opportunity for users is Mobile TV pod casts, where content is delivered to a user's

In the near future, morning commuters will be able to pass the time on the train or car by selecting their favourite TV programs or market news channel on their Mobile phone TV and by watching the latest news in real time before reaching the office. In the extra minutes before arriving at the station and walking to the office, consumers can switch over to the music channel and enjoy their favourite tunes and videos.

mobile on demand or by subscriptions. Stored locally on the handset, this content can then be viewed even when there is no network connection. And a service provider can schedule the delivery to “off-peak” hours, for example during the night.

Mobile TV Standards

Mobile TV market is at its early stage. Since a common standard has not yet been decided, there is a fierce competition between the available mobile TV technologies namely:

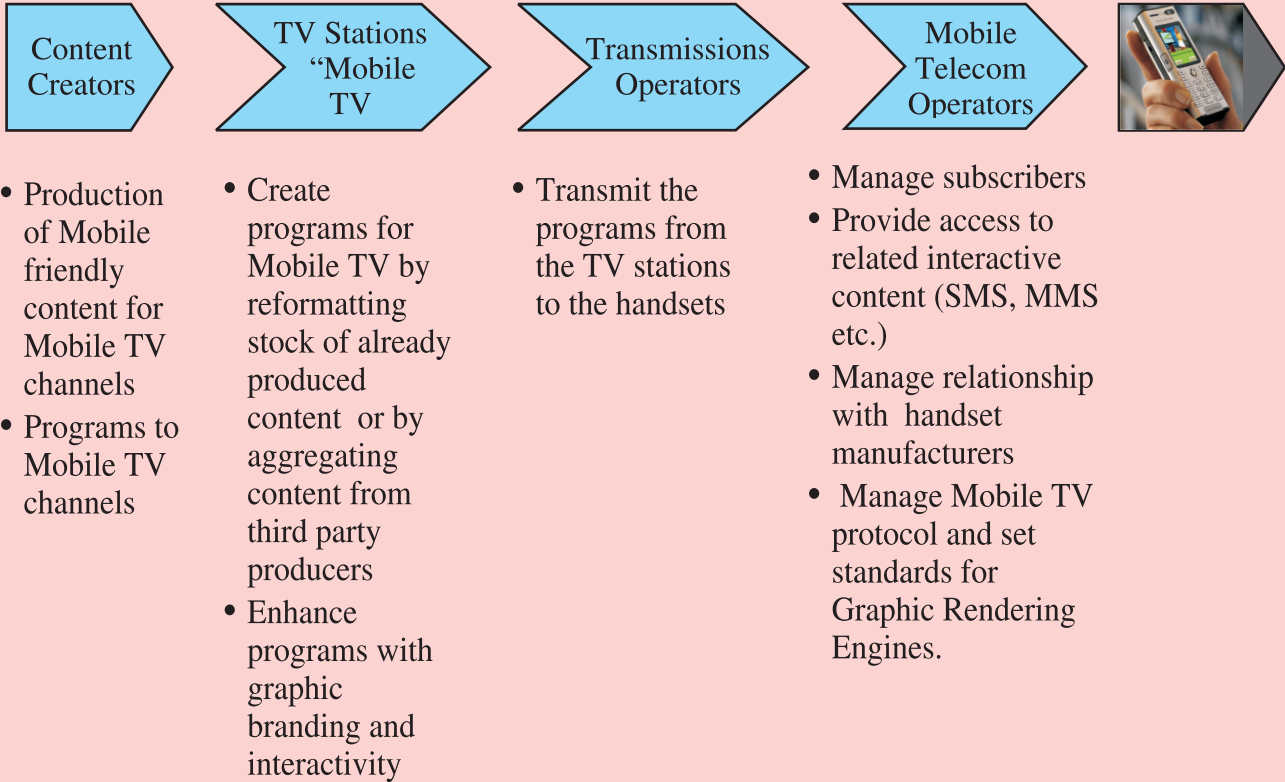
- i. DVB-H (Digital Video Broadcasting-Handheld)
- ii. T-DMB (Terrestrial Digital Multimedia Broadcasting)
- iii. MediaFLO (Media Forward Link Only)
- iv. MBMS (Multimedia Broadcast / Multicast Service)
- v. ISDB-T (Integrated Services Digital Broadcasting –Terrestrial)

DVB-H: It is intended to provide digital transmission of multimedia for the fast moving handheld devices by allowing the reception of digital content through mobile phones, PDAs, etc. To reduce the amount of power required to receive the content, DVB-H uses time slicing, which allows the handheld device to be switched on only at particular intervals. In addition the error correction and mobility are improved. DVB-H can easily be implemented in DVB-T (Terrestrial) networks.

DVB-H broadcast services have been launched in Finland, Italy, Albania, India, Philippines Vietnam and Nigeria. Tests have been conducted in other regions worldwide and more

(contd... on page 4)

The Mobile TV production chain



Mobile TV Leading Technologies at a Glance

Name of Technology	Country	Frequency	Source Coding Video/ Audio
DVB-H Digital Video Broadcasting for Handhelds	Europe/ USA/Australia, Everywhere where DVB-T is installed	470 to 862 MHz, L-Band: 1452 to 1492 MHz	MPEG-4/ H.264
ISDB-T Integrated Services Digital Broadcasting -Terrestrial	Japan	470 to 862 MHz	MPEG-2/MPEG- 4/H.264
Media FLO Media Forward Link Only	USA	450 MHz to 3 GHz targeted: 716 to 722 MHz or 698 to 746 MHz	MPEG-4/H.264
T-DMB Terrestrial -Digital Multimedia Broadcasting	South Korea	VHF L-Band: 1,452 to 1,492 MHz	MPEG-4, H.264
MBMS Multimedia Broadcast/Multicast Services	where WCDMA exist	1.920 to 1.980 MHz 2.110 to 2.170 MHz	MPEG-4/H.264

service launches are expected in 2008. However, in most of the European countries the UHF frequency band required for DVB-H broadcasting has not been freed yet, therefore the operators may have problems with commercialization, and other regulatory issues may delay the introduction of DVB-H by 2-3 years. Nokia is playing an active role in testing and commercializing the technology. To launch DVB-H based mobile broadcast services in China, Nokia has built a test network in Beijing and Fujian.

T-DMB: T-DMB is based on the Eureka 147 DAB (Digital Audio Broadcasting) system that is widely deployed in the UK and many other countries and now gaining considerable popularity. This system could be used without much modification, simply increasing the level of error correction to cope with the mobile environment.

T-DMB has been commercialized in countries such as South Korea, Germany and China. In 2005, South Korea became the first country to launch commercial DMB services. The South Korean government and Samsung have played an active role in promoting the technology. Pilot test services have been conducted in Indonesia, Italy and South Africa. In addition, T-DMB is also expected to spread in Spain and Norway.

The advantage of DMB is that in addition to DMB multimedia services, DMB devices can also receive DAB audio services, helping the technology to expand. T-DMB and DAB are delivered on the same system, developed by the Eureka 147 project, which is composed of a consortium of broadcasters, mobile operators, consumer electronics industries and research institutes worldwide. The consortium developed DAB standard, which is currently being used in many countries.

MediaFLO: The FLO in MediaFLO stands for "Forward Link Only". MediaFLO technology covers transmission of files and multimedia

Mobile TV Forecasts

Mobile TV is still on the starting blocks. There are many forecasts predicting a very fast growth:

- This relatively non-existent market is expected to grow exponentially to 69 million people worldwide by 2009, generating total revenue of around \$5.5 billion.
- Mobile TV will represent US\$ 5 billion in 2010 world wide, and € 17.5 billion in Europe by 2015.
- By 2010, 125 million people over the world will own a Mobile TV phone, and 65 million will be subscribed to a Mobile TV offer.
- In Korea, SK Telecom already has 1 million subscribers to its Broadcast Mobile TV bouquet.
- These forecasts, together with the fact that many stakeholders such as handset vendors (Nokia, Samsung, LG), mobile operators (Orange, Vodafone, Telefónica) and TV stations see Mobile TV as a priority in their development strategy, will bring important investments in infrastructure for the Mobile TV market over the next two years.

Source: Internet

content from media control to handheld devices. As with DVB-H, MediaFLO uses OFDM (Orthogonal Frequency Division Multiplexing) transmission with approximately 4,000 carriers with either QPSK or 16-QAM modulation of the carriers. MediaFLO also uses time division multiplexing, which is similar to what DVB-H refers to as time-slicing, to transmit specific content at specific time intervals. This allows the receiver to be shut down in between these intervals to save power. MediaFLO, is a technology developed by Qualcomm and is mostly adopted in the U.S. In March, 2007 Verizon Wireless launched 'V Cast Mobile TV' based MediaFLO to provide live TV on the move, offering popular programs from CBS, ESPN, Fox, NBC, MTV, etc. AT&T is also planning to launch MediaFLO based mobile TV service. In Japan, Qualcomm has been working

closely with KDDI to bring MediaFLO based mobile broadcast services for the Japanese market. In addition, Qualcomm hosted the first-ever MediaFLO conference in Tokyo, in June 2007, showing that Qualcomm intends to strengthen the position of MediaFLO technology in the Japanese market as well.

MBMS: MBMS provides the capability for Broadcast and Multicast Services for the WCDMA. 3G (WCDMA/ HSPA) network is the fastest and easiest way to get Mobile TV off the ground. There is more than enough capacity in 3G networks to scale up for a mass market of Mobile TV services, particularly if an operator has HSPA. MBMS is a point-to-multipoint service, means data is transmitted from a single source entity to multiple recipients. MBMS allows network resources to be shared and allows a traffic channel to be shared by all the users that are simultaneously watching the same program in the same area. MBMS complements HSPA to support higher loads in dense areas and ensure efficient network utilization

ISDB-T: It is the digital television (DTV) and digital audio broadcasting (DAB) format used in Japan.

Advantages of Mobile TV

(i) Operator perspective

By introducing Mobile TV, telecom mobile operators have opportunity to drive new revenue growth, improve network utilization and reduce subscriber churn. Mobile TV is seen as having good revenue potential because of its mass appeal across the customer base, unlike many other content services such as games, which appeal only to selected customer groups, such as teenagers.

(ii) Consumer perspective

For the consumer, Mobile TV has the potential to deliver new and revolutionary content that will extend the entertainment concept beyond new ways of watching TV. Mobile TV enables consumers to personalize their viewing experiences with the content to suit their tastes,

wherever and whenever they want; a first step toward Personal TV in a multi-device (TV, computer, mobile) and networked environment.

Key issues requiring attention before widespread of Mobile TV can become a reality:

Technical issues

- **Mobile Reception:** Antenna inside the terminals are moving fast (inside cars, trains etc.), as compared to a stationary roof-top antenna (DVB-T).

- **Battery Consumption:** Since receiver is always on in DVB-T, constant rendering of 4-5 Mbps stream requires lot of processing power.

- **Technology standards and spectrum allocation:** The coexistence of several incompatible standards and problems with harmonization of the frequency bands.

Commercial issues

- **Content:** Availability of the right content is the key. Consumers want access to specific content to suit their tastes.

- **Pricing:** The success of Mobile TV depends on consumer's willingness to pay. Bundled, tiered flat rate pricing is more likely to be accepted than metered pricing. Additional fees can be based on pay-per-view, clip casting and interactivity-driven purchases.

- **User friendliness:** Key issues including power consumption, added functionality and TV picture quality are yet to be resolved. Handsets may be attractive and affordable.

- **Business model:** All parties involved have to agree on their roles in the Mobile TV value chain, including the adoption of a revenue sharing model that is acceptable to all.

- **Digital Rights Management:** Content providers see Mobile TV as a new channel to market for their content and want to enforce content rights and payments.

Important Activities of TEC during September 2007 to November 2007

New GRs/IRs

- Ethernet Traffic Analyser- Hand held
- Ethernet Traffic Analyser- Table Top

Revised GRs/IRs

- Rooftop Towers Cellular Mobile system
- SDH STM-1 Microwave Equipment in 4 GHz and 11 GHz Frequency bands
- 40 Meter Narrow Base Heavy Weight Tower
- Ribbon Optical Fibre Splicing Machine
- Splice Protection Sleeves for Ribbon Optical Fibre
- High Precision Cleaver for Ribbon Optical Fibre
- Hot Jacket remover for Ribbon Optical Fibre
- Digital satellite phone system (DSPPS) in Kuband
- 10W/20W Solid State Power Amplifier (SSPA) (1+1) system in C band
- 7 GHz, 11 GHz and 13 GHz Wave Guide

Tests and Field trials

- Testing of Terminal connecting to PSTN of M/s. Suren Telecom solution Pvt. Ltd, Mumbai.
- Carrier-n-Carrier modern trail at Kulpi (Kolkata)
- Testing of E-PABX of M/s Coral Telecom connected over V 5.2 protocol

Manufacturers' Forum conducted for

- Radio Access Network (RAN) for IP Based CDMA2000 1x Core networks
- 10G Ethernet Traffic Analyzer
- Radio Products and Towers

Other Activities

- Meeting of International Commission on Non Ionizing Radiation Protection (ICNIRP) guidelines in telecom sector with COAI, TEMA, ICA, AUSPI for adoption for limiting EMF
- Technical Advice to DoT on proposal of M/s HCIL for providing service IP-II to M/s Hutch for Karnataka, Gujrat, M.P., UP west, Region with modified setup.
- Technical Advice to DoT on proposal of M/s Hughes communication India Ltd. (HCIL) for permission for installation and operation of VSAT Hub at Hyderabad.
- Technical Advice to DoT on proposal of Karnataka power Transmission Corporation Limited (KPTCL) for installation of 9m antenna at main Hub and shifting existing 7m antenna to the recovery Hub at Nelamangala
- Technical advice to BSNL regarding:
 - i) Service codes for Centrex Applications.
 - ii) Implementation of promotional tariff plan.
- Preparation of Technical specifications of E-PABX for Ministry of Labour & Employment

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