

Moving Toward ?

Trends and Future Directions

A number of historical advances in television technologies have tried to achieve better transmission of video and audio images from the 1960s. Digital television is an emerging broadcasting technology that ensures the best signal transmission by far. Digital television is often used to refer to digital terrestrial television systems, but the term is generally used across all type of transmission networks conveying digital signals; digital terrestrial, digital cable, digital satellite, and other digital telecommunication networks.

Most governments have firm plans of digital conversion for terrestrial televisions, including national digital terrestrial television standards, the timelines of analog switch-off and a requirement of the simulcasting of analog services until the switch-off date. Digital television systems have been separately developed into several standards; Integrated Services Digital Broadcasting for Terrestrial (ISDB-T), Digital Video Broadcasting (DVB), and the Advanced Television Standards Committee (ATSC). ISDB-T was developed by Japan, DVB was adopted by most European countries, and ATSC was adopted by the United States, South Korea, Argentina, Canada and Taiwan. In 2007, the digital receiver market was estimated to be \$67 billions and digital television households were estimated to be around 320 million throughout the world.

Digitalization is promoting more competition in the television market in at least two ways. First, digitalization allows more channels transmitting over the limited waves than analog system has done, which means that more service providers enter the television channel market. Second, digitalization of communication infrastructure is blurring the border between telecommunication and broadcasting

because the digital format of video services can be conveyed to any type of digital communication infrastructures.

One of the prominent future types of television would be mobile television. Strictly defined, mobile television refers to a mobile service delivering television and radio streaming broadcasting to personal handheld devices or automobile receivers in the form of one-to-many communications. For the purpose of marketing, mobile carriers often use the term of mobile television to refer also to unicast or multicast of digital video data in the form of point-to-point communication such as video clip downloads and limited streaming video services through the existing 3G networks.

Current mobile television utilizes one of three standards; DMB (Digital Multimedia Broadcasting-Korea), DVB-H (Digital Video Broadcasting-Europe), and MediaFLO (the United States). Among the three standards, South Korea's DMB that implements two types of mobile television services is the most mature and profitable technology by far. Satellite DMB(S-DMB) is a subscriber based mobile services and terrestrial DMB(T-DMB) is a free over-the-air service. South Korea launched the world's first mobile broadcasting services with S-DMB standard in May 2005 and with T-DMB standard in January 2006. DVB-H, adopted by European Telecommunication Standards Institute as mobile TV standards in November 2004, has been developed by the DVB forum composed of European broadcasters, manufacturers, network operators, and regulators.

Mobile television is now becoming a reality in several countries. More than 10 countries, such as Finland, France, Italy, and the United Kingdom, are now implementing the test services with DVB-H. The joint venture of BT and

Virgin Mobile launched Movio, the first nationwide mobile television service in Europe, in September 2006. MediaFLO has been developed by Qualcomm in the United States and is backed by Verizon wireless. Using MediaFLO, Verizon wireless launched its live TV service, named V-cast mobile TV, in January 2007 in 20 television markets. Moreover, South Korea has pioneered the potential of mobile television by reaching the largest number of mobile television viewers, numbered over 3.5 million handheld devices sold by the end of 2006, including 2 millions of satellite DMB and 1.5 millions of terrestrial DMB.

The new television service over wireless network has evolved from mass communication to a private communication by allowing an individual to control their viewing situation and viewing time. Particularly, many mobile operators provide video-on-demand services via wireless network and it ensures the viewers to actively consume the media for their very personal satisfaction. For example, in South Korea 80 % of users of satellite DMB view mobile broadcasting by alone, while none of the users view with their family. Given the increasing penetration rate of mobile devices and the high popularity of television services, it is predicted by some scholars that mobile television will grow fast and would become a popular television services in the near future.

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Where Is Television

Television service is now available on both analog and digital platforms in various delivery networks, including terrestrial over-the-air radio waves, coaxial or fiber optic wire, and geostationary satellite networks. But where is it moving toward?

The Vigorous Expansion of Cable and Satellite TV

Cable television utilizes coaxial or fiber optic cables as a major distribution network. Recently, most coaxial cables are being replaced by fiber optic cables that can reduce interference and have more capacity than coaxial cables. As the transmission capacity of fiber optic cables increases and cable systems digitalize, current cable televisions are capable of handling huge data with high bitrates such as high-speed internet, telephony, on-demand video services and commercial transaction.

Now, cable service operators turned their eyes to cable's growing higher and higher capacity. Fiber cables could provide much more programs than coaxial cables, thus enabling several hundreds of channel television services to be delivered over one wire. Cable services have become more and more popular. Starting from 1949 with limited viewership, currently the United States has around 120 million cable television subscribers and more than 7,000 cable systems.

Indeed, cable television has produced a noticeable historical impact on television business model. Cable operators can control their television service to reach designated subscribers and can provide various television channel tiers with different subscribers at different rates ranging from basic package to premium package. After the early 1970s when the first pay television network, HBO, emerged in the United States, the subscription-based revenue model or

pay TV model has become the most popular revenue model in television service market. Subscription revenues generally consist of monthly-based subscription fees and initial installation fees. The current subscription based cable market was around \$74 billions in 2007, growing at a compound annual growth rate of 10% from 1989.

In the meantime, satellite television, which delivers broadcast signals via a communication satellite located in geostationary orbit above the Earth to the viewers, has also been gaining an increasingly noticeable market share. The initial purpose of the communication satellite was to supplement the existing cable network that has a smaller coverage area than satellite. The first commercial communication satellite, nicknamed Early Bird, was launched into a geostationary orbit over the Atlantic Ocean by the International Telecommunications Satellite Organization (Intelsat) in 1965. Early Bird delivered telecommunication network traffic and television service, which supplements a portion of traffic via the existing trans-Atlantic copper cable.

After witnessing the technological success of Early Bird, Home Box office (HBO), a cable network in the United States, began to use a satellite network to deliver its own signal to cable system in 1976, which virtually became a national service. Starting from HBO's satellite service, satellite television using C-band became increasingly popular as a broadcasting media during the 1980s. In the late 1980s and the 1990s, the satellite television industry saw a technological advance to direct satellite broadcasting (DBS). Currently, most satellite television is based on subscription revenue. The number of direct satellite broadcasting subscribers in the United States reached 23 million in the fiscal year

of 2004, including 13 million DirecTV subscribers and 10 million EchoStar's Dish Network.

New TV Market Landscape

Television is now one of the most widely adopted entertainment and information media throughout the world, particularly penetrating over 90% of households in the first world. The U.S has a highly developed television market in the world with 112 million television households and 73million cable TV households in 2006, accounting for a penetration rate of 98% and 66%, respectively.

Although televisions are widely distributed and reach high penetration rate of over 90% in developed countries, the television market is still growing at a moderate rate in terms of consumption and production. The viewing time has steadily increased after the emergence of television and the increasing trend is still continuing in spite of challenges by alternative information and communication technologies such as the Internet. The annual averages of television viewing times per day per U.S. household have steadily increased from nearly 6 hours in 1970 to more than 8 hours in 2006.

The world television network market has steadily grown to reach \$154 billion in 2005, at a compound annual rate of nearly 7 % from 2001. North America has been a leader in the TV network market, accounting for \$62 billion at a market share of 38% in 2005. Europe and Asia have \$58 billion and \$36 billion, respectively, followed by Latin America. Although Latin America has a very small market with \$6 billion, it has had the fastest growth after 2003 at a compound annual rate of almost 20%. Since the North American and Western European TV markets are highly saturated, the market growth in these regions is anticipated to be dampening in the future.