Broadcasting in 2020: A Prediction

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Broadcasting during last hundred years has been the man's companion. It has been a source of information and entertainment. During floods, cyclones, natural disasters, radio has been one of the prime carrier of information. Television has entertained the people as no other media has ever done. The technological revolution in the offing namely digital compression such as MPEG-2, MPEG-4, MHEG, and availability of many alternate forms of media such as fiber to home, satellite, Internet have opened vast opportunities to transform the broadcasting. Under this scenario broadcasting is bound to change a lot by the year 2020. This paper predicts the shape of broadcasting in 2020. The key predictions are death of public broadcasting, emergence of many key players such as network provider, program houses, subscription management agencies etc.

"Prediction is difficult – especially of the future".

— *Storm Petersen, Danish humorist.*

1. INTRODUCTION

RADIO and Television have become part of our lives. Broadcasting has helped to shape the twentieth century, has become deeply entwined in commerce and politics and continues to shape our personal views of the world. The world in which broadcasting operates is changing rapidly. New technologies and new players have created a more complex and demanding marketplace for commercial television. The traditional values of public service broadcasting are under threat. Global as well as domestic pressures are forcing the broadcasters and the players that administer the services to rethink their role. When we talk of "broadcasting in 2020", we need to ask ourselves a few questions. What exactly is entertainment ? What uses do people have for television ? Are radio and television means for entertainment alone ? Do these have bigger roles to play as a lane of information infrastructure ? The nature of such questions spawns interests in the design, management and production of media and 'smart' products. This also depends upon people, segments, groups and communities, their behaviour, social background, their purchasing capacity etc.

Prediction about the future is always risky. Many predictions made in the past have proved to be dramatically wrong even when made by experts with impeccable credentials. The eminent scientist Lord Kelvin predicted in 1895 that "Heavier-than-air-flying machines are impossible" and in 1897 compounded this error by further predicting that "Radio has no future". H M Warner said in 1927 "Who the hell wants to hear actors talk ?" President Franklin Roosevelt addressed the 1938 New York World's Fair over which he categorized Television as "an interesting curiosity of little commercial value". In case of broadcasting the prediction is much more difficult on two counts viz its changing role in the society and rapid technological developments in the field of computer and communications [1]. However, a keenly watched growth of the sector provides an input for a few predictions for the year 2020.

2. HUMAN BEHAVIOUR

Human values and institutions reflect and influence human behaviour and inspirations. Human behaviour and inspirations are related to human biology, environment, culture, technology and each person's individual experiences. New technologies affect human behaviour and act as agents of social change. The development of writing, printing press, electronic communication and others has influenced the behaviour of mankind on this earth.

All humans have some basic needs. Fulfilling of these basic needs helps people in getting over their natural fear of intimidating new technology. It could

be hunger, shopping for essentials or entertainment. In the initial stages and perhaps afterwards, the features fulfilling these basic needs are more likely to be popular with the masses. Of course the needs of human change with his economic growth. The shape of broadcasting in 2020 shall definitely depend upon the development of the country in the other sectors. It will depend upon the economic condition of the people, the level of their spending power for entertainment and so on. This means that the development will not be uniform in the whole world.

3. TECHNOLOGY OF THE FUTURE

The consumers of 2020 will be highly familiar with computers and accustomed to interactivity and navigating through 3D environments. Their television receivers will contain a computer with rendering power exceeding that of today's high-end workstations. Consumers shall demand many more services such as email, information about traffic, weather and so on with a human agent to read the mails and messages for him. Broadcasters already have some of the tools needed to originate such material. These are in the form of virtual studio technology [2], Hypermedia [3], Video-to-video linking [4], MPI (Multiple Perspective Interactive) Video Architecture [5], CORBA (Common Object Request Broker Architecture), ORB, JAVA, Server Push technology, Virtual Human Agent [6], Video Parsing [7], Scene Detection [8], View Processor [9], MHEG [10], TCP/IP etc.

MPEG-2 has become the standard for distribution for today's linear broadcasting media. In the MPEG-4 [11], the content will be more than linear 2D images and 2D sound. MPEG-4 will provide support for animated face and body models, as well as more general 3D models. It can also represent arbitrary-shaped video objects, which may be texture-mapped onto 3D geometry. Work on a "new" MPEG initiative for very low bit-rate coding was approved by ISO (International Standards Organization)/International Electro-technical Commission / Joint Technical Committee. When completed, the much-discussed Version 2 of MPEG-4 will support a spectrum of applications, including interactive mobile multimedia communication. Similarly, an increase in the volume of content available and the pressure to re-use rather than re-manufacture creates the need for the catalouging, searching, and trading engines under development in MPEG-7 [12].

MHEG (hypermedia information coding expert group) is an ISO standard designed to meet the requirements of multimedia applications and services, running on heterogeneous workstations. These shall interchange information in real-time: computer supported multimedia cooperative work, multimedia message systems, audiovisual telematic systems for training and education, simulation and games, video on demand services, interactive TV-guides and other systems. MHEG seeks to fulfill these interchange requirements by defining the representation and encoding of final-form multimedia and hypermedia information objects.

HyTime defines an extensive meta-language for hypermedia documents, including general representations for links and anchors, a framework for positioning and projecting arbitrary objects in time and space, and a structured document query language. The purpose of HyTime is to standardize some of the facilities for all of the applications. In particular, it standardizes those facilities having to do with the addressing of portions of hypermedia documents and their component multimedia information objects including the linking, alignment and synchronization that standardized addressing makes possible.

The HyTime coordinate addressing is a generalization of the time model originally developed for another standards project, ISO/IEC 10743, the standard music description language (SDML). SDML, which is now an application of HyTime, is intended to foster the growth of applications that bring music into the information-processing world. This will apply information-processing technology to the musical domain (e.g. music publishing using modern text processing technology, including the integration of music with text and graphics).

4. GAZING THE CRYSTAL-BALL

By 2020, the radio and TV will become highly interactive with return channel in the form of telephone, GSM or Internet. What will a world be like in which the power of interactive radio and television is available to every home ? School children will be taught to write multimedia essays using clips from current news programs and material researched from online libraries and video servers around the world. Viewer's /listener's comments will be videotaped and transmitted directly to the production team. Fans will follow the daily schedules of their particular obsessions, whether pop stars or batsmen, receiving broadcast messages and other information at carefully planned intervals. Interactive radio / television will transform education. The rate of knowledge advancement will accelerate dramatically. Passive receiving devices (TVs and radios) will gradually give way to active digital devices. Some will be based on personal computers; some will be built by adding a digital box to a conventional TV set; some will consist of integrated intelligent televisions.

Online marketing will be a growth industry, with companies offering to put together buyers and sellers. Let us try to gaze the crystal ball.

- Public service broadcasting will die. It's role will be taken over by NGOs and other social groups in the digital future. However, the way frequencies are auctioned, regulated and delivered by the regulators will have to change to reflect the new conditions in which they operate. Frequencies shall be earmarked to broadcast ethnic, cultural and heritage programs.

- Stimulation, creativity and self-expression shall be the most sought after programs. Gambling is a wonderful fit. Through interactive TV viewer shall watch sporting events on the main screen and order up bets on a picture-in-picture screen.

- The present concept of broadcaster doing everything themselves shall go away. There shall be many players such as programme houses, network operators, commercial operators for service distribution etc. The trend is already visible with BBC and a few other prominent broadcasters having sold their transmission system and concentrating on program production.

- Currently, the airwaves can only handle a small amount of data. Digital TV will offer higher packaging capacity. Broadcasters will carve up the high definition television spectrum to stretch transmission to about 20 Mbps. They will use it to deliver data as well as high-resolution images to consumers.

- The TV companies will emphasise the Internet's open network protocol, TCP/IP, instead of its display mechanism, HTML.

- The broadcasters will carve up the HDTV spectrum and deliver better images over existing televisions, and use the rest of the spectrum for more channels and data. HDTV spectrum will become the t-commerce network backbone.

- The DTH service will provide broadband interactivity. With the recent adoption of specifications for interactive channel satellite distribution, DVB-RCS by European Telecommunications Standards Institute (ETSI), the satellite-based delivery of interactive TV services will get a boost. SES (Societe Europeenne des Satellites) is already implementing "the world's first interactive satellite network based on DVB-RCS, the Astra Broadband Interactive (BBI) system, which uses Ka-band payload on the Astra IH satellite. BBI enables the user to benefit from a high peak data rate on the forward and the return link, integration with DTH broadcast, independent from terrestrial infrastructure, and the inherent multicast support from the satellite [13]". Broadcasters are also trying to provide return channel using radio signal (Fig 1).
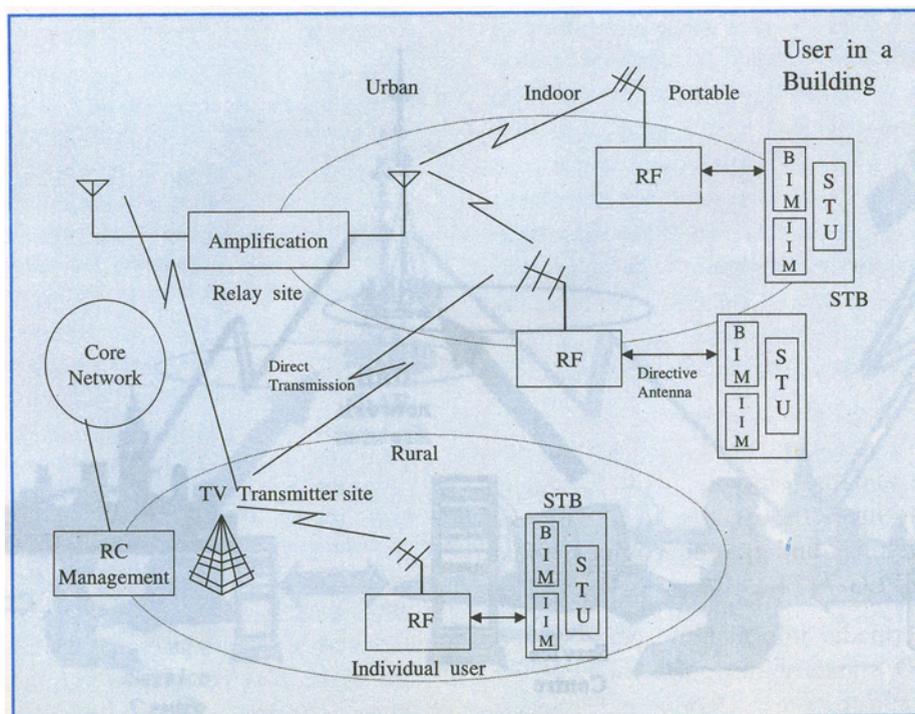
- The mobile phone will play an important role in

Fig 1 Return channel using radio

interactivity and shall provide for the return path. With Java enabled handsets, the third party application developers will have access to the mobile phone platform. Mobile subscribers will be able to download games and applications on to their handsets. These will run locally using the handset's memory and processing power [14]. By connecting a mobile to various sensors, the phone will be turned into a device that could measure heart rate, send data to someone, and seek advice. The integration of these mobile devices with the ITV content will generate new revenue streams [15].

- Combined with GSM (Global System for Mobile Communications) and/or GPS, DAB [16] will support a range of ITS (Interactive Traffic System) services for pre-trip information, route guidance and dynamic navigation (Fig 2). These combined services shall make traffic and travel information, together with tourist and weather information, available at the home, in the office, in a vehicle and at kiosks. This would enable travelers to plan and compare trips that use a combination of transport modes. On-trip services could range from traffic information, which can be filtered for the trip to public transport information. The added value services shall be reserved and paid for.

- In conjunction with the GSM and DMB (Digital Multimedia Broadcasting), a number of services such as navigation system shall be used in automobiles (Fig 3). Coupled with a GPS network it shall provide details of arriving cars etc (Fig 4).

- Advanced radio frequency (RF) handheld devices will become available. These devices will be able to control household entertainment units via a touch-screen pad that will also serve as a monitor. TV viewers will be able to download interactive contents directly from a digital set-top box. Universal Electronics, Inc (UEI) demonstrated such a unit at CCTA Western Show 2001, at the Los Angeles Convention Center. According to the manufacturer, the device allows users to control up to 15 audio-visual devices by using different screens that can be personalized in order to access any home entertainment system [17].

- Internet broadcasting shall become popular. As an open medium for all users and suppliers of information, the Internet will make a great range of services available to the mobile customer. Hotels or restaurants, for instance, will be able to encode their local coordinates on their Web page, which—when accessed by the navigation system—will automatically guide the driver to this destination. The Internet Protocol WAP (Wireless Application Protocol), used on cellular phones should therefore also be standardized for location-specific data. New vehicle functions such as remote diagnostics and remote service are now entering the realms of motoring reality. In
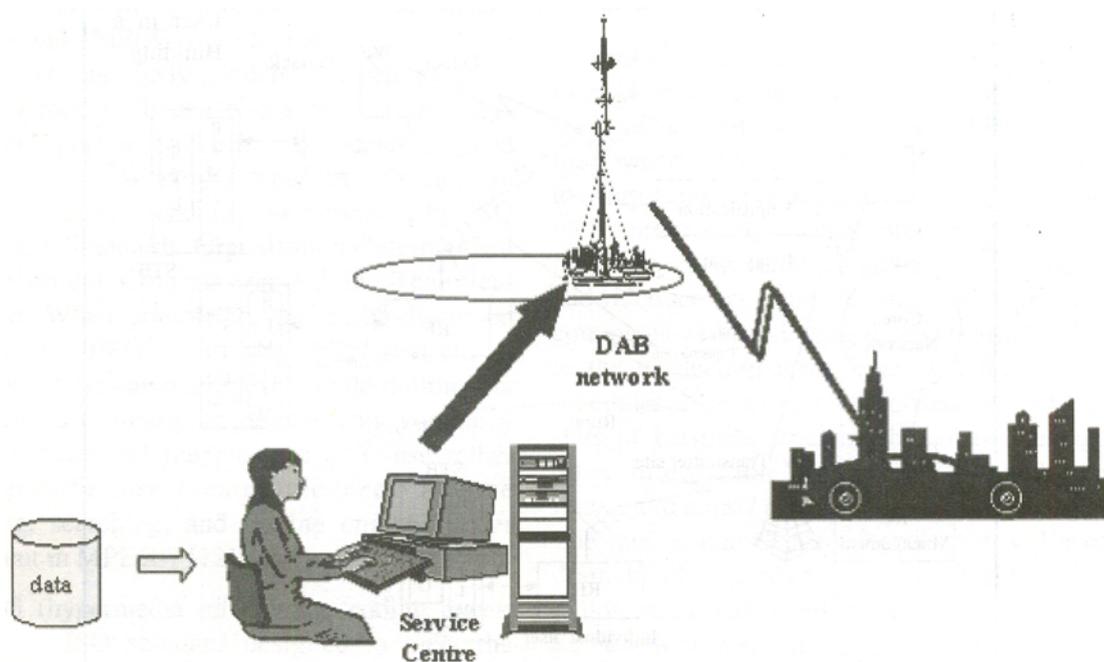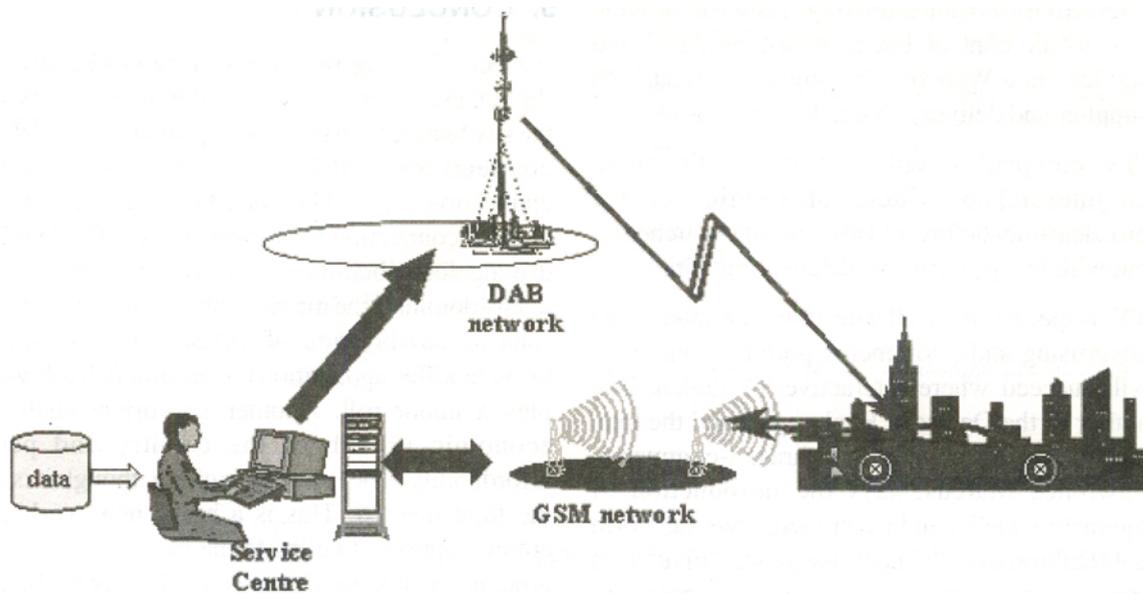

Fig 2 ITS services using DAB

Fig 3 Use of DMB and GSM for navigation services

the event of a breakdown, the motor vehicle is able to contact a service center automatically via the Internet. In turn, the service center diagnoses the fault and then directs the vehicle to the nearest repair shop or notifies the breakdown service.

While click through to Web destinations via current set-top box technology is now available, the Web as an ITV destination is a short-term model. The real future will lay in ITV-specific

content and delivery channels, where the Web and Web marketers will provide a database management and perhaps even content provision roles.

- Instead of TV programs telling customer to visit this or that Web site, within five years majority of TV channels will have embedded Internet content and the TV experience will be highly personalised.

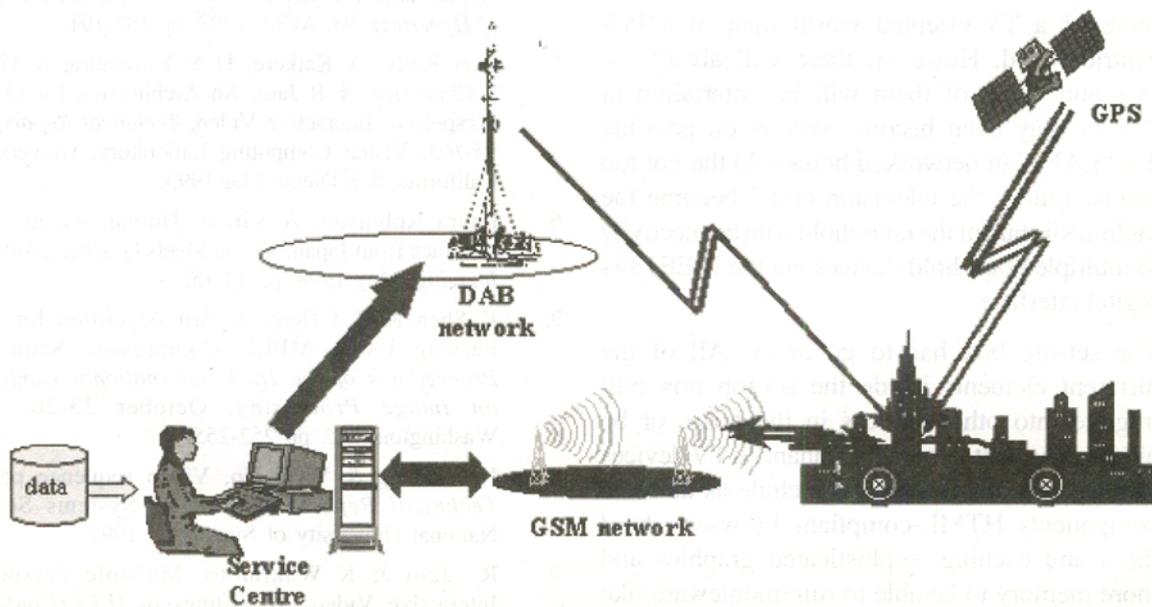- Online marketers already skilled at forms of

Fig 4 GPS combination for positioning and information

interactivity will enter the fray. They will provide free to air content but also sell products and service via a Web site, becoming in effect both supplier and delivery channel/content provider.

- ITV companies will continue as the main commercial providers of public service broadcasting, before and after digital switchover, but with less prescriptive detailed regulation.

- TV is poised to be the next major interactive advertising and t-commerce portal. t-commerce will succeed where interactive TV failed. The author of the Deutsche Bank report and the man responsible for coining the phrase t-commerce, Lawrence Marcus, says the introduction of interactive media and t-commerce will be worth $300 billion over the next five years. "Five years from now, t-commerce revenue is going to be greater than e-commerce revenue," says Mr Marcus.

- Advertising within actual programming will become more sought after. That means companies will pay to have a character in a movie drinking a brand name soda or wearing a brand name pant [18]. e-commerce will become a business to business medium while T-commerce (television commerce) will be a business to consumer medium.

- Many homes will have the TV as a nerve center or have the TV as part of a networked home controlling devices and appliances throughout the home. There will also be TV networked homes like in a TV "LAN" package with TVs throughout the home linked to a central set-top or computer in the home. The future would be more of a TV-oriented world than of a PC-centric world. However, there will always be PCs and many of them will be entertainment PCs or may even become servers on possible TV "LANs" in networked homes. In the not too distant future, the television could become the multimedia hub of the household with connectivity to multiple household devices via the IEEE1394 digital interface.

- The set-top box has to go away. All of the different elements inside the set-top box will migrate into other devices in the home or be hidden. The next-generation enhanced TV devices will be standards-based and include as de facto components HTML-compliant browsers, hard disks and caching, sophisticated graphics and more memory to be able to run middleware like Sun Microsystems's Java Virtual Machine.

5. CONCLUSION

Broadcasting in 2020 is poised to be technology driven, user friendly and exciting. Interactivity will be the key feature with the service provider using telephone connections, cable TV connections, satellite connections, digital broadcast connection, mobile and cellular connection for the return link. Cable will be a driving force behind the market, but cable may not totally dominate the market. Other means of connectivity such as combination of DAB/DVB and GSM will provide killer applications. Consumers habit will also play a major roll. Another key driver shall be the economic growth of the country and people's affordability. The future is exciting, though it is not for the faint hearted. This is a brave new world. There are two options: to cling to the past, in a world, which is being torn apart and reassembled, piece by interactive piece. We can place our heads in the sand and hope for the best. There is another option. We can embrace the future, and accept the challenge of learning what it takes to survive and prosper by new rules. The rewards, for those who take this step, are there for the taking.

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