



My Home Town System

Introduction

The number of people in the world working or living abroad, displaced, refugee or from multiple backgrounds is increasing rapidly. Indeed, having access to information from other cultures is vital for any world citizen. Up to now, only the major broadcasters have been able to address their expatriate franchise, and then mostly in adjacent regions only. We call this type of broadcasting content 'My Home Town Television'.

DiviTel wants to deliver the promise of home town video by satellite and over the internet. Satellite will be used both as a distribution medium, to get the broadcasters material to the service providers, and as a delivery platform for internet and DVB-based video. This solution will create a cheap and smart way for (third world) broadcasters to deliver content to their audiences across the world (mainly in Europe) by satellite.

The MHT concept

The My Home Town concept was developed to serve the market for content contribution systems. Especially in cases where the number of end users is limited, the business case for high-end broadcast platforms is often difficult to finalize. Also editing facilities are often too complicated to serve simple applications and basic transmission of content over expensive infrastructures may jeopardize new broadcast initiatives for small markets.

The My Home Town solution of DiviTel addresses exactly the markets where a cost-effective solution needs to be combined with reliability, low bandwidth / opportunistic bandwidth use and at the same time professional picture quality. Thorough investigation learned that a market exists for 'niche market content'.

Examples for typical application of the system are seen in:

- local broadcasters offering their content outside of the usual working area
- ethnic communities to be served from countries abroad with 'Home Town' content
- content contribution in any setting with limited budget

The MHT system has been deployed in several settings and has proven to be a very cost-effective, reliable system. Above all, operation of the platform is

learned quickly where no special in-depth knowledge of broadcast or computer networking whatsoever is required.

The proprietary software developed by DiviTel for capture, editing and scheduling for distribution is highly useable and efficient (due to the graphical user interface that is each represented on one of the three screens. This is to enable broadcasters to contribute and send their MHT program feed with a relatively low knowledge barrier. For the project, DiviTel also prepared a server-based reception and play out solution.



1. The system setup of the capturing, editing, encoding and transmission platform

Offline delivery is in many cases not a problem for the targeted consumer market. This knowledge allows optimal planning of opportunistic bandwidth for transmission of the data. Even a very small channel bandwidth is still capable to carry the content to one or multiple destinations. The bandwidth needed is determined by the combination of MPEG-4 encoding bitrate, time available for transmission and scheduling of multiple transmission sessions.

Because the MHT system uses a sophisticated Forward Error Correction algorithm, a very robust transmission and data recovery is feasible. In cases where a data backhaul is available, retransmission of lost data can be requested. In cases where no backhaul is available, the FEC algorithms will recover upto 49% of lost data. Connection losses of several minutes during transmissions of multiple hours will be recovered easily.

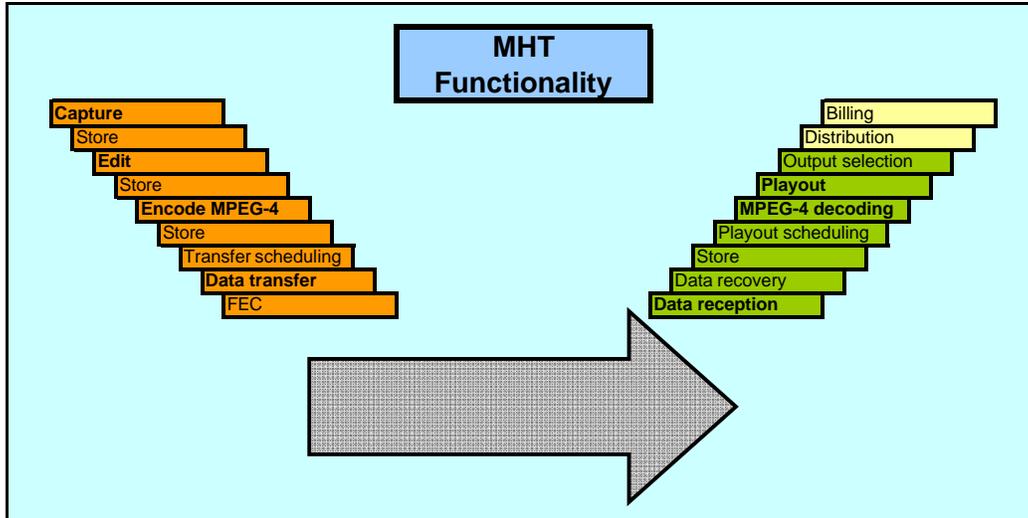
Technology

To reduce the operational cost, a user friendly MPEG4 IP based file transfer content delivery system is implemented that is perfectly qualified to offer cost-effective transmission of high quality content via satellite. Playout is established over any local network. Modern IP infrastructure as well as conventional CATV networks interface directly to the MHT platform.

The concept is designed to be independent of the actual physical transport layer. The IP based infrastructure provides for a system which is independent of the transport layer. Content can be delivered via CATV or ISP providers in MPEG2 or MPEG4 formats.

The technology of MPEG-4 video encoding was carefully chosen. Currently the ISP market is rolling out Triple Play. Almost all content will be MPEG-4 or WindowsMedia9 based.

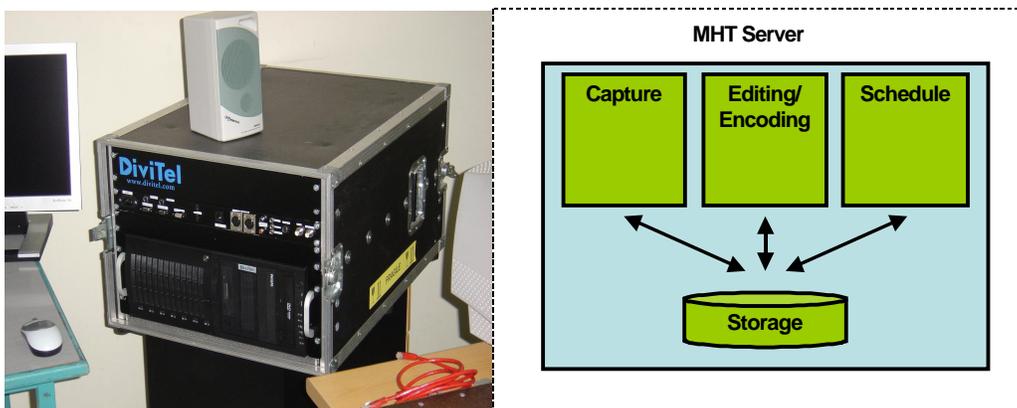
Remote management is established via either a normal PSTN or ISDN telephone line. If available, also an Ethernet connection with VPN can be used.



2. Functional overview of the My Home Town system

Fly –away kit

The main component of the concept is the Fly-away kit, including all facilities of capturing, (light) editing of content, like cut/paste, encoding to MPEG-4 files, and scheduled transmission via UDP/IP with an advanced forward error correction mechanism that allows significant signal drops without immediately losing essential data.



3,4. The Fly-away kit including the editing platform: main component of the concept

The user interface is esteemed highly for its user friendliness. After half a day of training a broadcaster can already operate the system by themselves. One could quickly learn to work with it.



5. The MHT system as installed at Curacao. In the headend the local technicians are trained to work with the platform.

Features

The MHT-TV concept creates a solution for a total satellite distribution system taking care of the technical aspects as well as the software, administration, service and commercial aspects of the products and services distributed. The concept comprises a generic, turnkey scalable studio solution for satellite play out and delivery.

The system allows for several input streams (multiple feeds) to be edited, combined or otherwise manipulated. A simple uplink station distributes the signal to potentially multiple points on earth. The signal can be managed and redistributed locally as well. Our solution will enable users to switch between 'off line work' versus 'real time work'. This will ensure that broadcasters around the world can address worldwide markets through the most appropriate distribution methods, be it DTH, cable or IP-streaming.

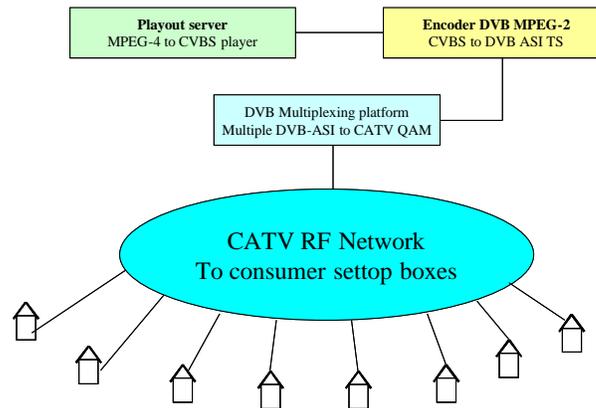
The system consists of a high end server with a professional capture card, large storage and professional MPEG-4 coding software. For scheduling and sending, a highly efficient professional application is used in the background.

Re-distribution

Once arrived at the reception site(es), usually in the cable headend, the MPEG-4 files are stored at the playout server and pre-scheduled for playout. Remote control of this server allows for a dial-in or VPN to modify all scheduling tasks.

Scheduled content playout enables the playout over IP in MPEG-4, but also local playout of decoded analogue CVBS is possible. Typically the CVBS output is fed into an MPEG-2 encoder. For this purpose DiviTel offers a cost-effective, in-house developed MPEG-2 encoder to transcode into a MPEG-2 DVB ASI Transport Stream. This ASI TS can be fed into a multiplexing platform, allowing to be directed to any settop box in the network. Conditional

Access can be applied in the distribution network to segment only to the appointed end customers.



5. Distribution to end customers

Market context

The market for additional television programming, supplementing the existing broadcast channels, is likely to expand rapidly. Due to the increasing competition between infrastructures and technological progress in distribution facilities, the addition of new broadcast channels is getting easier and less expensive. New technology and sophisticated business models lead to new opportunities for niche market content. Simultaneously content providers and network owners seek for new ways to attract consumers for package deal subscriptions. A market trend is that important players will cooperate together to win a long-term commitment for service delivery from the end consumer. Suppliers want to expand their offering to attract new customers. As soon as existing material from all over the world can be delivered to niche communities, this market segment can take off. Paid television for the larger expatriate communities has already proven this point. Currently, facilities are not yet in place, especially for overseas content to be interesting expats. The internet is expected to play a significant role in this context. The introduction of WindowsMedia9 and broadband access in many places in the western world is seen as one of the major alternatives for satellite distribution, able to reach almost every household.

In distribution, digital has become the norm for satellite and is progressing in the cable distribution. Terrestrial digital television is taking hold in some areas, even though the success and penetration of paid terrestrial digital television is very different between the 'Free to Air' distribution that is taking place in several regions with analogue television already switched off.

Over the internet, video content is becoming available in a rapid pace. The movie and television industry seems to be prepared not to make the mistake of not coming up with a business model for internet distribution that the record companies made. Internet users are increasingly prepared to pay for premium content over the internet.

The My Home Town concept is not strictly limited to ethnical target groups, as finding a match between broadcasters and target groups will cross ethnical as well as national boundaries. Also, the profile and level of integration for ethnic groups versus expat communities can be very different across the board.

The concept of the My Home Town platform is flexible enough to adapt to WindowsMedia9 and is capable to connect to any physical infrastructure that allows TCP or UDP IP.

In the even short history of the development of the platform, new and alternative applications for the My Home Town have been suggested by marketing specialists and potential customers. Examples of these alternative user areas are:

- use of the technology in SNG systems where pre-editing is an advantage and where bandwidth is an important cost factor
- use of the system for relatively small distance terrestrial content contribution in circumstances where no high-bandwidth network is available
- not only contribution, but also distribution from studio to a number of sub-stations, even world-wide, is easily done with the MHT platform; binging content to colonial residences become profitable when transfer costs drop significantly.

The My Home Town concept works from the vision that establishing a general framework and technology solution to deliver broadcast material to any target group over any infrastructure, will enable each target group of sufficient size requiring or interested in this material to acquire access to it.

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