

MAYAH in modern applications



Reduced Costs – Increased Flexibility and Quality: UMTS/3GP Reporting

Mobile data communications are evolving quickly because of Internet, Intranet, Laptops, PDAs and the increasing need of business applications. 3G UMTS will be the commercial convergence of conventional telephony with mobile and information technology.

The UMTS transport network is designed to deliver high speed, specific content to users at mobile and temporary locations. For professional broadcast reporting MAYAH combined the strength of UMTS with powerful encoding to achieve very low bit rates.

CENTAURI® Audio Codecs offer a wide range of audio formats via IP; e.g. UMTS, a mobile paket service with up- and download and interconnectivity with VPN networks for increased security. Realtime audio streaming/reporting over the UMTS network requires algorithms capable of achieving the lowest possible bit rates in order to assure a continuous broadcast. CENTAURI® offers the newest version of AAC+SBR (MPEG 4 AAC HE) with bit rates as low as 24, 32 or 48 kBit/s. The extensive UMTS coverage already available in most industrialised nations means that high quality, mobile reporting is available in large parts of the world today.

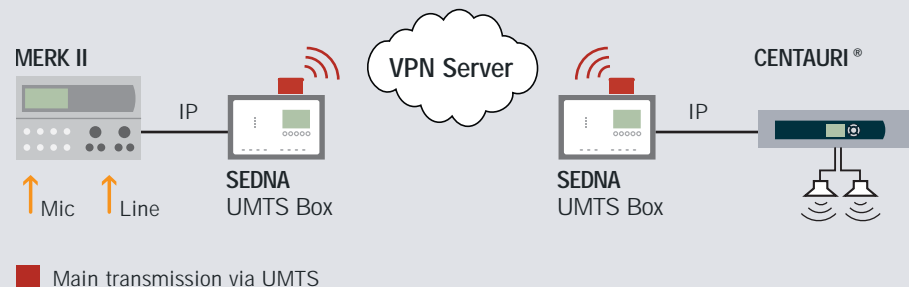
WDR premieres UMTS (3G) realtime audio transmission

In preparation for the Pope's visit to Cologne for the World Youth Day some special requirements needed to be met for the audio transmission. A live audio link was required from a ship on the Rhine to the WDR studios in the centre of Cologne from where they would be broadcast. As an alternative to satellite transmission, UMTS was considered and successfully tested. MAYAH CENTAURI® codecs were used for audio streaming at low bit rates via a Vodafone UMTS data card into a VPN network connected to another CENTAURI®, all bi-directional.

Economic advantages of UMTS (3G) reporting

Reporting typically needs particular equipment and network or satellite connections. Both require fixed or temporary installations and incur rental charges. Satellite needs specialised equipment such as a dish,

UMTS/3GP Reporting



modulator, etc. and provisions that adequate satellite capacity is available at a certain time. Terrestrial lines, such as ISDN need pre-ordering at the responsible Telcos.

UMTS (3G) has the advantage that the equipment is small, available and, due to the mass market factor, low priced. Further, UMTS (3G) is an increasingly available service with extremely low fees for data services – even flat rates exist and make a lot of sense for realtime streaming.

Complex setup or plug-and-play?

MAYAH is offering its UMTS (3G) transmission solution as a plug-and-play package. It consists of two UMTS Connection Boxes, each carrying a PCMCIA UMTS Vodafone data card and the choice of MAYAH CENTAURI® I or IIs, MERK II or ganymed en/decoders.

DVB-H reaching millions of mobiles and PDAs with audio-video content

DVB-H (Digital Video Broadcasting – Handheld) is the new digital broadcast standard for the transmission of content to handheld devices; developed by the DVB Project and recently published by ETSI (European Telecommunications Standards Institute).

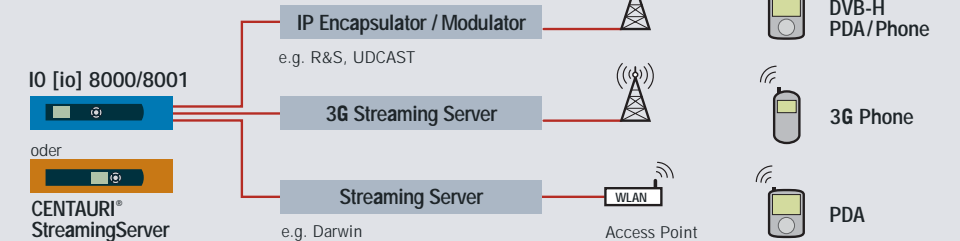
DVB-H is based on the DVB-T standard for digital, terrestrial television but enhanced and adapted to the special requirements of pocket-size products, such as mobiles, PDAs, etc. It is expected to become a multi billion EUR business by 2010.

MAYAH's first presentation of DVB-H was at this year's IFA in Berlin. At the IBC in Amsterdam MAYAH will be demonstrating "Mobile TV" using its new IO [io] 8001,

with AVC/AAC Encoding, communicating with a server platform for mobile television and handsets/PDAs running AVC Players from Fraunhofer IIS and others. Thanks to our extensive product range we will also be demonstrating audio only via DVB-H, supporting stereo and multichannel audio.

MAYAH equipment enables mobile operators to conduct DVB-H trials to test flexibility in bit rates and formats as well as the level of acceptance for Mobile TV and audio by consumers.

DVB-H / 3G / WLAN



ORF, Austrian Broadcasting uses MAYAH's 5.1 multichannel codec solution to transmit Carmen from Graz to Vienna

High Quality 5.1 Multichannel with CENTAURI® II 3300/3301

The new CENTAURI® II Audio Codecs offer multichannel audio en-/decoding, streaming and transmission in a wide range of audio formats. Multichannel audio transmission is a rapidly expanding market and the requirements vary greatly depending on the specific application. So far, two major applications have been addressed using the CENTAURI® II 3300/3301:

- Production quality for contribution and distribution using linear audio, apt-X or Enhanced apt-X in IP and/or E1 networks with bit rates between 1 and 6 mbps.
- monitoring/pre-listening applications using AAC or AAC+SBR (MPEG 4 AAC HE) in IP and/or ISDN networks with bit rates as low as 160 kbps.

This flexible concept allows CENTAURI® to be used in various environments and in combination with Dolby E or Dolby AC-3 technology.

Existing CENTAURI® I or II 3000/3001s can be easily upgraded to multichannel capability with the appropriate multichannel audio I/O. Both digital and analog versions are available.

Carmen opera in 5.1 live from Graz to Vienna

In June 2005, ORF transmitted the opera Carmen from the Franz-Liszt hall in Graz to the ORF Broadcasting Center in Vienna for the first time using multichannel 5.1 audio. The successful transmission

continued via satellite on ORF 1 (±1) to the listeners. The 6 discrete audio channels were connected directly, via AES/EBU, between the digital mixing console and the MAYAH multichannel equipment; an AES/ADAT optical converter and the multichannel audio codec CENTAURI® II 3301 for realtime encoding and streaming. For the desired high quality, Enhanced apt-X was used with a total bit rate of 152 kbps net. The IP signal was connected to the ATM-network of ORF (L-NET) and the audio was then decoded with another CENTAURI® II 3301 at ORF's Broadcasting Center in Vienna. The multichannel audio signal was then turned into DolbyE (5.1) and then encoded in AC-3 in order to be inserted into the multiplexer for the satellite uplink. This modern and efficient way of multichannel transmission allows ORF to use cost-effective IP connections for transmission and to avoid using additional encoders. ORF considers it particularly advantageous to use CENTAURI® 3301

bi-directionally, thus obtaining a monitoring signal of the final broadcast audio. This shortens any activity in case of transmission problems and simplifies the control of the start and end of the broadcasted multichannel program.

An identical configuration is used to transmit the "Salzburger Festspiele" to Vienna in 5.1 technique with CENTAURI®.

Economic efficiency; Bi-directional 5.1 via IP

Until now, multichannel audio transmissions were very cost intensive because of equipment and line capacities. With CENTAURI® 3300/3301 this has changed; the equipment is a standard MAYAH product with multichannel I/O. The required bit rates depend on the application and can be as low as 160 kbps with AAC+SBR (MPEG 4 AAC HE) or up to 6 mbps with linear audio. As the best compromise, Eapt-X with bitrates between 1 and 2 mbps is recommended. Connectivity via both IP and ISDN is possible and access to such networks is today standard.

Complex setup or plug and play?

The experience of ORF for their concert transmissions between Graz and Vienna demonstrates the simplicity of the MAYAH solution, simply needing multichannel audio connections and access to a network with the required capacity. Since their initial success, ORF have been using the system for further events, including some mobile installations; another example of its plug-and-play simplicity.

