broadcast communications

Zetrox Ltd.
Archer Lodge, Chequers Road, Basingstoke,
Hampshire, RG21 7PU, United Kingdom
training@zetrox.com; www.zetrox.com
Tel. : +44 (0)1256 328484

Training Course Description

Course: **MPEG and DVB Essentials**
Course code: **ESS104**
Duration: **3 day**

Format:

Classroom Explanation and Demonstration

Supporting materials:

Each delegate completing the course will receive the following:

- A full set of course notes
- Certificate of attendance

Overview:

The course provides delegates with an understanding of the technologies, vocabulary, techniques and consequences of MPEG audio and video signal processing. The course covers the conversion of the audio and video base band signals into MPEG elementary streams and transport streams. DVB modulation schemes and SI tables.

Who should attend:

Technical staff working in a broadcast environment who need an understanding with the specific technologies and issues of this field.

Prerequisites:

A general familiarity with broadcast audio and video concepts is assumed.

Key benefits:

At the end of the course delegates will be able to:

- Describe the MPEG audio and video compression process
- Understand the limitations and effects of signal compression
- Describe the MPEG Elementary and Transport streams
- Understand the issues involved in manipulating MPEG signals
- Describe the artefacts resulting from MPEG compression

Course Content:

MPEG-2 Video Compression
- MPEG standards, Levels and Profiles
- Video sampling structures, 4:4:4, 4:2:2, 4:2:0
- Intra and Inter frame coding, I frames, P and B frames
- MPEG structure, GOPs (Groups of Pictures) Slices, Macroblocks and Blocks
- The advantages of interframe coding, P and B frame generation
- Motion estimation
- Discrete Cosine Transform (DCT)
- Zig Zag scanning
- Run length and entropy (Huffman) encoding
- Progressive and non-progressive scan DCT modes
- Quantisation and compression artefacts

MPEG-4 Coding
- MPEG-4 part 10 AVC and H264
- Adaptive block coding
- S frames and multiple reference frames
- De blocking filter
- Motion prediction
- Integer transform coding
- Entropy coding
- Performance comparison with MPEG-2

MPEG in Practice
- Choosing the right compression options
- Editing MPEG streams
- MPEG artefacts
- Optimising MPEG system concatenation

MPEG Audio Compression
- MPEG Audio Layers
- MPEG Audio modes
- Sample frequencies and bit rates
- MUSICAM coding
- Psycho-acoustic audio coding
- Noise masking
- Temporal masking

MPEG-2 System Layer
- The PES, Packetised Elementary Stream
- The Transport Stream
- PIDs, PATs and PMTs
- Time synchronisation and time stamping

DVB
- DVB SI and tables structure, NIT, TDT, TOT, EIT, BAT etc.
- Actual and Other tables
- DVB modulation schemes DVB-S, -T

System Considerations

- CA, Conditional Access
- Statistical Multiplexing
- PCR structures and issues
- MPEG testing and measurement