

# MPEG-2 & Video Compression

## Course Description

This seminar will cover technical aspects of MPEG-2 and MPEG-4. These standards made interactive video on CD-ROM, DVD and Digital Television possible. Will introduce digital video, as well as Intra-Frame and Inter-Frame, discuss Audio Compression, and streaming, provide a Standards Overview, and strategic summary.

**Duration:** 2 days

## Course Outline

### 1. Introduction

- General compression (Text, Frames, Video)
- Compression Standards
- Encoder structure

### 2. Spatial Compression (Intra-Frame)

- Transform to frequency domain (DCT)
- Coefficients Prediction
- Quantization
- Entropy coding: VLC (Huffman) and Run-length

### 3. Temporal Compression (Inter-Frame)

- Motion estimation and frame types
- Suboptimal solutions for ME

### 4. GOP Structure

- I, P, B
- Bits distribution

### 5. Code Hierarchy

- Scene
- Frame
- Slice
- Mb & block

### 6. Rate model control

- R&D model
- Bit allocation

### 7. Audio Compression

- The Psycho-Acoustic effect

- Masking

### 8. MPEG-2 and MPEG-1

- Introduction
- Profiles & Levels

MPEG-1 / MPEG-2 and

### 9. Broadcasting & MPEG-2

- MPEG-2 System
- Program Stream and Transport stream
- DVB-world (PSI / SI)
- DVB CA mechanisms

### 10. Advanced techniques for compression

- Statistical multiplexing
- Dual compression
- Pre processing

### 11. New compression standards - intro

- MPEG-4 part 2
- MPEG-4 part 10
- WM9
- H.26x family

### 12. Format/rate conversion

- The challenge heterogeneous environment
- Transrating & transcoding

### 13. Summary - Annex:

- Bibliography

## Who should attend?

- System designers or potential users of multimedia distribution systems
- Engineers that develop either CATV systems or Satellite based DVB systems
- People involved in designing multimedia distribution and interactive applications over the Internet
- Engineers involved in the design of multimedia components or high-speed data communications systems and want to have better view of the full picture
- Other people who want to establish knowledge as a complementing background for activities in other fields of interest