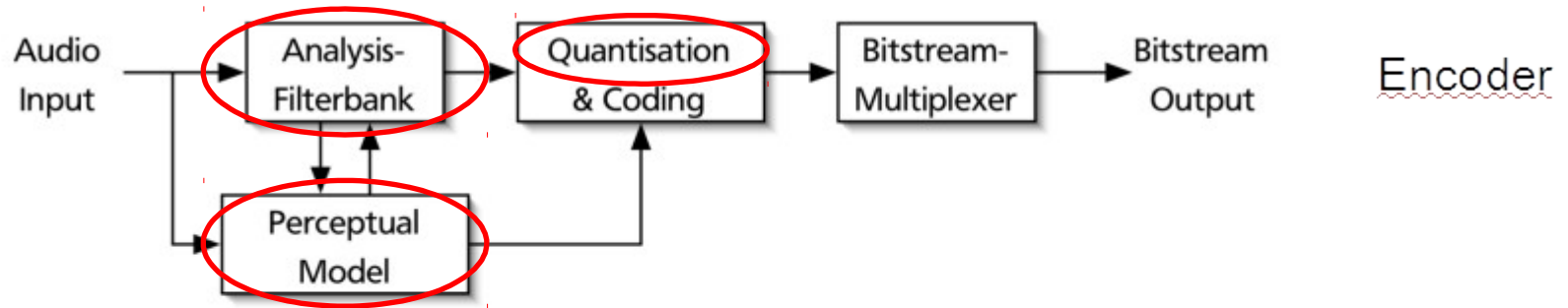

Audio Coding - Practice Lessons

Seminar 4 – Combination of Perceptual Model & Quantization

Perceptual Audio Encoder



Homework Assignment 4

Goal:

- Combine the last two seminar tasks, to get a perceptually coded audio signal

How to achieve that:

- Take your perceptual model, with its quantization step sizes or scalefactors (reverse quantization step sizes) from Seminar 2, and apply quantization to your MDCT analysis filter bank output (Seminar 3) in the encoder.
- In the decoder, apply de-quantization with the quantization step sizes or scalefactors from the encoder (side-information), and apply the synthesis MDCT filter bank.

Homework Assignment 4

Task 1:

- Take the psycho-acoustic model of last time and implement it in your coder with the MDCT.
- Then include the quantizer and the de-quantizer in the decoder and control them both with your psycho-acoustic model.
- Transmit the side-information of your psycho-acoustic model (the scalefactors or quantization step sizes for the scalefactor bands) from the encoder to the decoder, so that the decoder has the suitable de-quantizer.
- To avoid too much bitrate from the scalefactors or quantization step sizes, transmit them only once per scalefactor band

Homework Assignment 4

Task 2:

- **Save encoded audio to „*.bin“ file with scalefactors (quantization step sizes)**
- **Listen to the decoded sound file.**
- **Plot quantization error with your masking threshold to ensure that your quantization error is hidden**
- How does it sound?
- If it sounds bad, try to improve (fine-tune) your coder.