Advanced Audio Coding (AAC)

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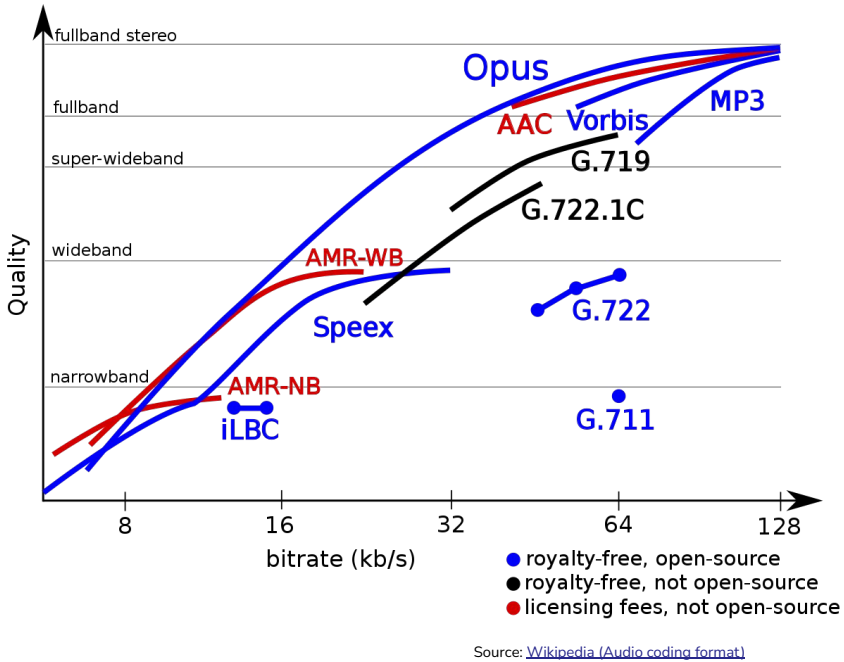
What is AAC?

- A content representation format for storage or transmission of digital audio
- An improvement over the widely used and popular MP3 format
- Defined through ISO and IEC Standards[1]

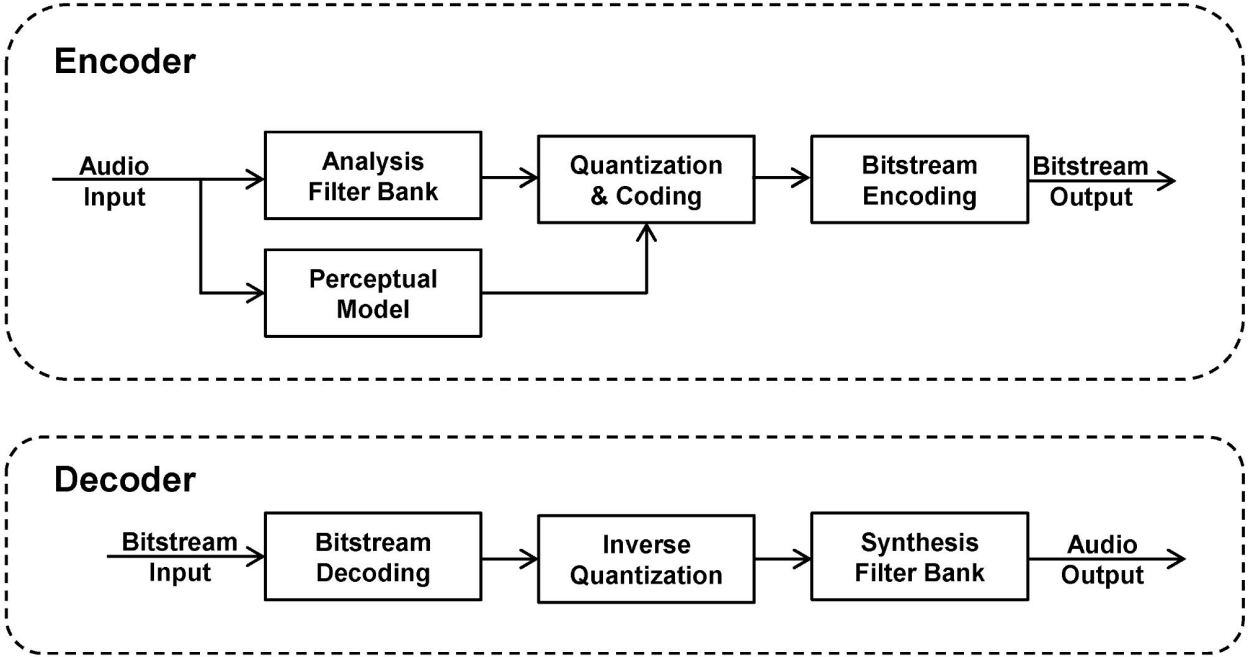


Source: Wikipedia (Audio coding format)

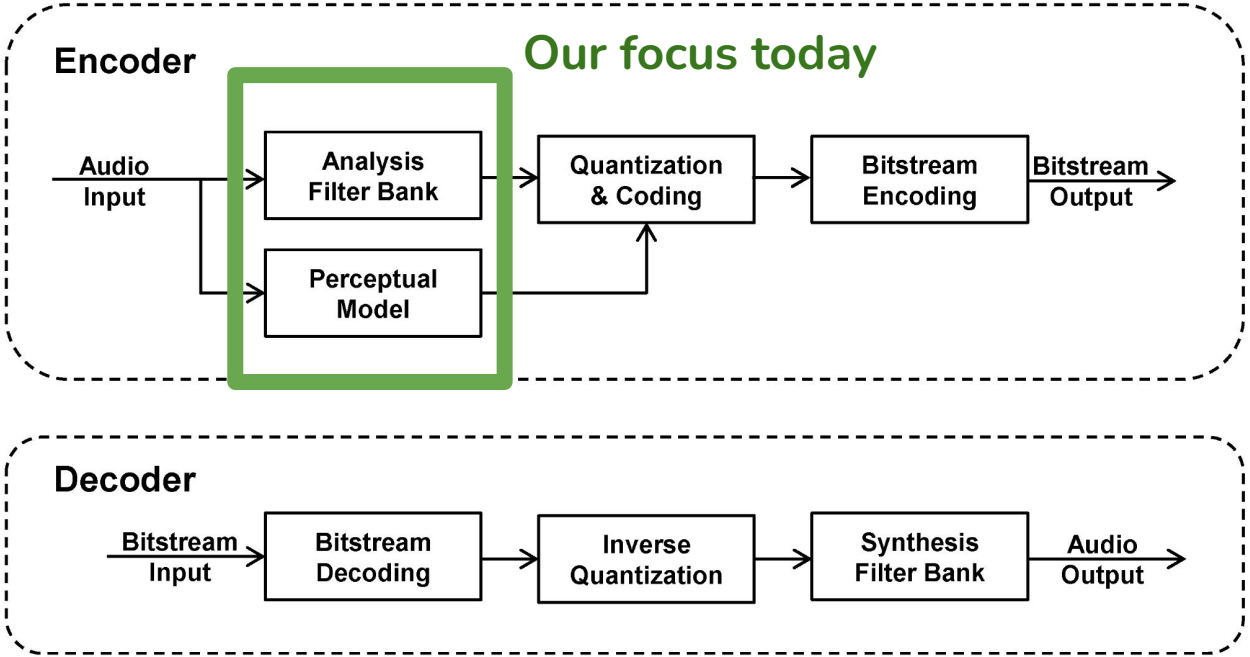
[1]ISO/IEC 13818-7:2006

How Does AAC work?

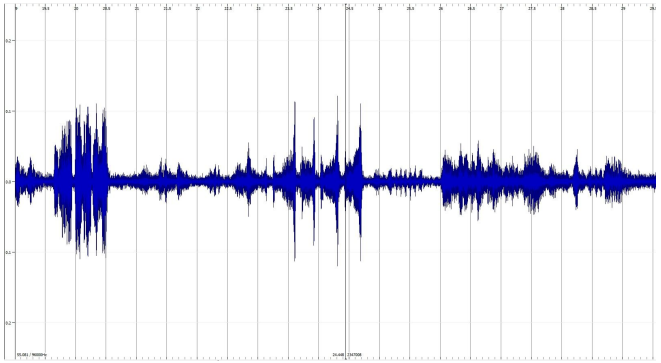
Our Simplified Implementation of AAC



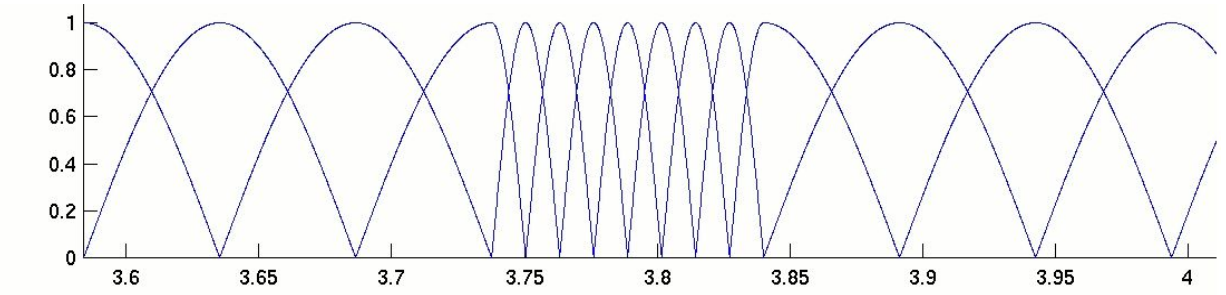
Our Simplified Implementation of AAC



Filterbank and Block Switching



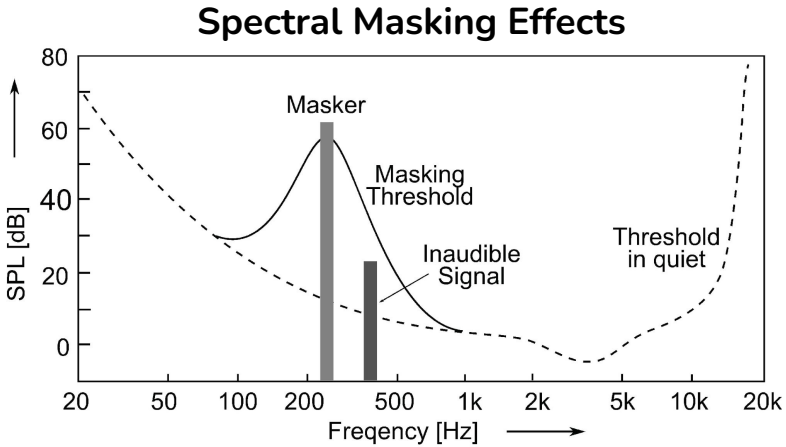
Source: British Library Blogs

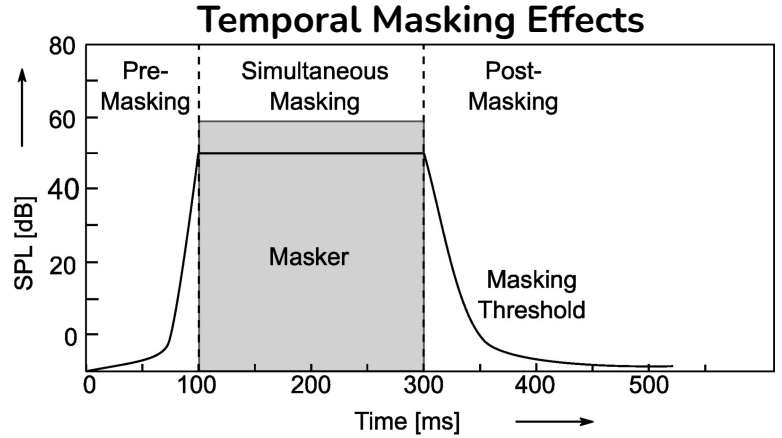


Source: CCRMA Stanford

Psychoacoustic Model

- Exploit limitations of perception in human hearing
- Loud sounds mask soft sounds, so can discard these inaudible parts of the frequency spectrum
- In AAC the model generates a set of thresholds which is used in the quantization step





What We've Done & Next Steps

Implementation completed

- Filterbank
- Bitstream formatter
- Simplified psychoacoustic model
- Simplified linear quantization

Components still to complete before report deadline

- Non-linear quantization
- Perceptual listening tests and traditional error metrics

Conclusion

Thank You