Claims

1. Audio data converter, comprising:

an input interface (100) for receiving an object description of an audio object having audio object metadata;

a metadata converter (150, 125, 126, 148) for converting the audio object metadata into DirAC metadata; and

an output interface (300) for transmitting or storing the DirAC metadata.

2. Audio data converter of claim 1, in which the audio object metadata has an object position, and wherein the DirAC metadata has a direction of arrival with respect to a reference position.

3. Audio data converter of one of claims 1 or 2,

wherein the metadata converter (150, 125, 126, 148) is configured to convert DirAC parameters derived from the object data format into pressure/velocity data, and

wherein the metadata converter (150, 125, 126, 148) is configured to apply a DirAC analysis to the pressure/velocity data.

4. Audio data converter in accordance with one of claims 1 to 3,

wherein the input interface (100) is configured to receive a plurality of audio object descriptions,

wherein the metadata converter (150, 125, 126, 148) is configured to convert each object metadata description into an individual DirAC data description, and

wherein the metadata converter (150, 125, 126, 148) is configured to combine the individual DirAC metadata descriptions to obtain a combined DirAC description as the DirAC metadata.

5. Audio data converter in accordance with claim 4, wherein the metadata converter (150, 125, 126, 148) is configured to combine the individual DirAC metadata descriptions, each metadata description comprising direction of arrival metadata, by individually combining the direction of arrival metadata from different metadata descriptions by a weighted addition, wherein the weighting of the weighted addition is being done in accordance with energies of associated pressure signal energies.

6. Audio data converter in accordance with claim 4, wherein the metadata converter (150, 125, 126, 148) is configured to combine the individual DirAC metadata descriptions, each metadata description comprising direction of arrival metadata and diffuseness metadata, by individually combining the direction of arrival metadata from different metadata descriptions by a weighted addition, wherein the weighting of the weighted addition is being done in accordance with energies of associated pressure signal energies, and by combining the diffuseness metadata from the different DirAC metadata descriptions by a weighted addition, the weighting of the weighted addition being done in accordance with energies of associated pressure signal energies.

7. Audio data converter in accordance with claim 4, wherein the metadata converter (150, 125, 126, 148) is configured to combine the individual DirAC metadata descriptions, each metadata description comprising direction of arrival metadata or direction of arrival metadata and diffuseness metadata, by selecting the direction of arrival value among a first direction of arrival value of a first DirAC metadata description and a second direction of arrival value of a second DirAC metadata description that is associated with a higher energy of an associated pressure signal energy as a combined direction of arrival value.

8. Audio data converter is accordance with one of claims 1 to 7,

wherein the input interface (100) is configured to receive, for each audio object, an audio object wave form signal in addition to this object metadata,

wherein the audio data converter further comprises a downmixer (163) for downmixing the audio object wave form signals into one or more transport channels, and

wherein the output interface (300) is configured to transmit or store the one or more transport channels in association with the DirAC metadata.

9. Method for performing an audio data conversion, comprising:

receiving an object description of an audio object having audio object metadata;

converting the audio object metadata into DirAC metadata; and

transmitting or storing the DirAC metadata.

10. Computer program for performing, when running on a computer or a processor, the method of claim 9.

11. Audio scene encoder, comprising:

an input interface (100) for receiving a DirAC description of an audio scene having DirAC metadata and for receiving an object signal having object metadata;

a metadata generator (400) for generating a combined metadata description comprising the DirAC metadata and the object metadata, wherein the DirAC metadata comprises a direction of arrival for individual time-frequency tiles and the object metadata comprises a direction or additionally a distance or a diffuseness of an individual object, wherein the metadata generator (400) comprises a metadata converter (150, 125, 126, 148) as described in any of the claims 1 to 7.

12. Audio scene encoder of claim 11, wherein the input interface (100) is configured for receiving a transport signal associated with the DirAC description of the audio scene and wherein the input interface (100) is configured for receiving an object wave form signal associated with the object signal, and

wherein the audio scene encoder further comprises a transport signal encoder (170) for encoding the transport signal and the object wave form signal.

13. An audio scene encoder of one of claims 11 to 12,

wherein the metadata generator (400) is configured to generate, for the object metadata, a single broadband direction per time and wherein the metadata generator is configured to refresh the single broadband direction per time less frequently than the DirAC metadata.

14. Method of encoding an audio scene, comprising:

receiving a DirAC description of an audio scene having DirAC metadata and receiving an object signal having audio object metadata; and

generating a combined metadata description comprising the DirAC metadata and the object metadata, wherein the DirAC metadata comprises a direction of arrival for individual time-frequency tiles and wherein the object metadata comprises a direction or, additionally, a distance or a diffuseness of an individual object, wherein the generating comprises using a metadata generator (400) comprising a metadata converter (150, 125, 126, 148) as described in any of the claims 1 to 7.

15. Computer program for performing, when running on a computer or a processor, the method of claim 14.

16. Apparatus for performing a synthesis of audio data, comprising:

an input interface (100) for receiving a DirAC description of one or more audio objects or a multi-channel signal or a first order Ambisonics signal or a high order Ambisonics signal, wherein the DirAC description comprises position information of the one or more objects or side information for the first order Ambisonics signal or the high order Ambisonics signal or a position information for the multi-channel signal as side information or from a user interface;

a manipulator (500) for manipulating the DirAC description of the one or more audio objects, the multi-channel signal, the first order Ambisonics signal or the high order Ambisonics signal to obtain a manipulated DirAC description; and

a DirAC synthesizer (220, 240) for synthesizing the manipulated DirAC description to obtain synthesized audio data.

17. Apparatus of claim 16,

wherein the DirAC synthesizer (220, 240) comprises a DirAC renderer (222) for performing a DirAC rendering using the manipulated DirAC description to obtain a spectral domain audio signal; and

a spectral-time converter (240) to convert the spectral domain audio signal into a time-domain.

18. Apparatus of claim 16 or 17,

wherein the manipulator (500) is configured to perform a position-dependent weighting operation prior to DirAC rendering.

19. Apparatus of one of claims 16 to 18,

wherein the DirAC synthesizer (220, 240) is configured to output a plurality of objects or a first order Ambisonics signal or a high order Ambisonics signal or a multi-channel signal, and wherein the DirAC synthesizer (220, 240) is configured to use a separate spectral-time converter (240) for each object or each component of the first order Ambisonics signal or the high order Ambisonics signal or for each channel of the multi-channel signal.

20. Method for performing a synthesis of audio data, comprising:

receiving a DirAC description of one or more audio objects or a multi-channel signal or a first order Ambisonics signal or a high order Ambisonics signal, wherein the DirAC description comprising position information of the one or more objects or of the multi-channel signal or additional information for the first order Ambisonics signal or the high order Ambisonics signal as side information or for a user interface;

manipulating the DirAC description to obtain a manipulated DirAC description; and

synthesizing the manipulated DirAC description to obtain synthesized audio data.

21. Computer program for performing, when running on a computer or a processor, the method of claim 20.