An HTML5 Interactive (MPEG-A IM AF) Music Player

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1 Background

The music industry is nowadays going through a transformation. With the advent of new paradigms of recording, producing and sharing music over the Internet, an advanced audio file format, that enables users to interactively enjoy music as it best suits them, is needed.

The MPEG-A: Interactive Music Application Format (IM AF) provides the users a way to mix, tweak and rearrange the different musical instruments tracks of which a song is composed, allowing them for example to only listen to the vocals, or mute them.

2 The IM AF Standard

- The contents of a song, with multiple unmixed tracks, is structured into an ISO-Base Media File Format container.
- Synchronised lyrics, album artwork and a set of rules that limit the users' mixing options to a range allowed by the creator.
- Several formats accepted: MP3, PCM or AAC for audio data, JPEG for still images and 3GPP Timed Text for synchronised lyrics.
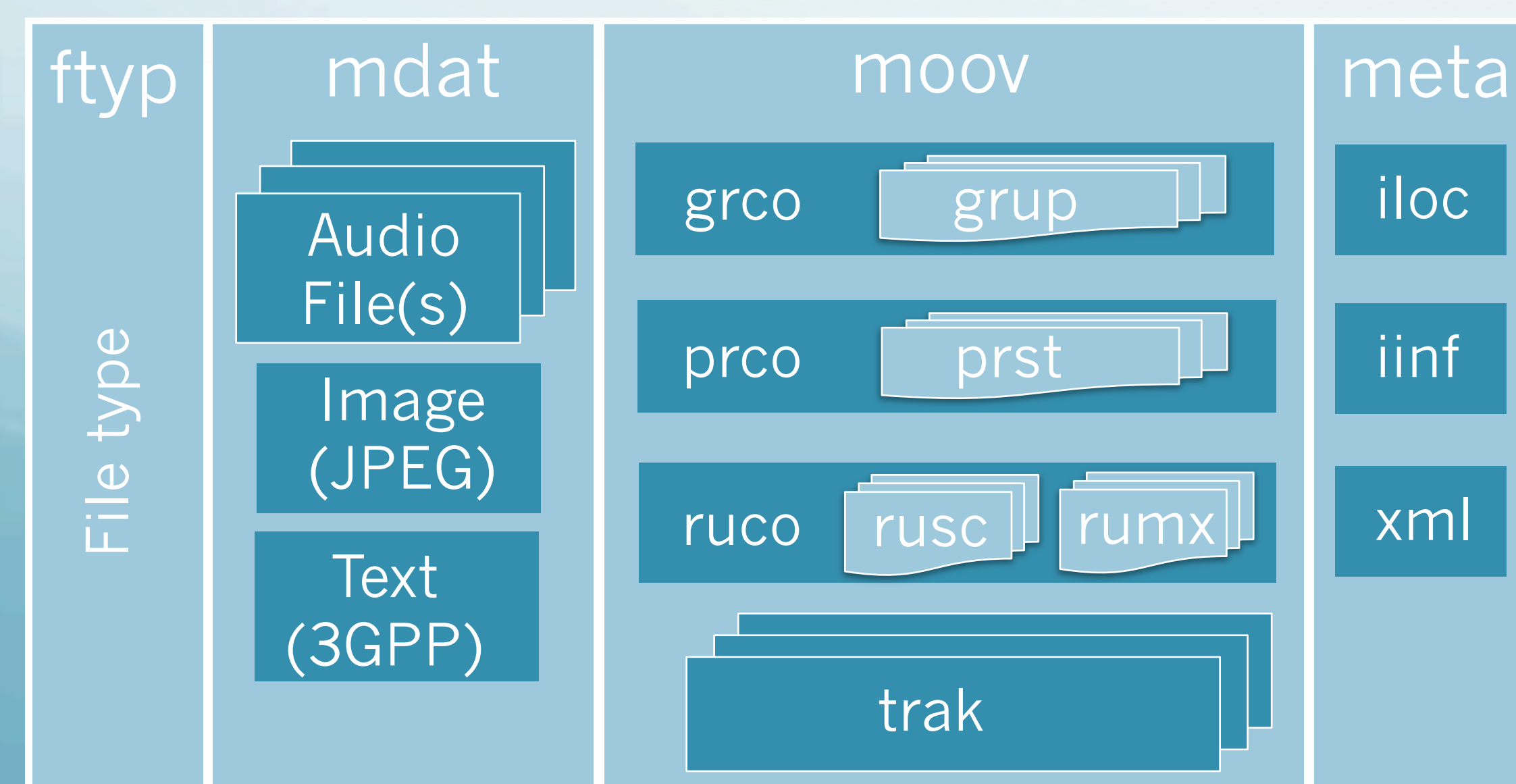
Basic structure of an IM AF file
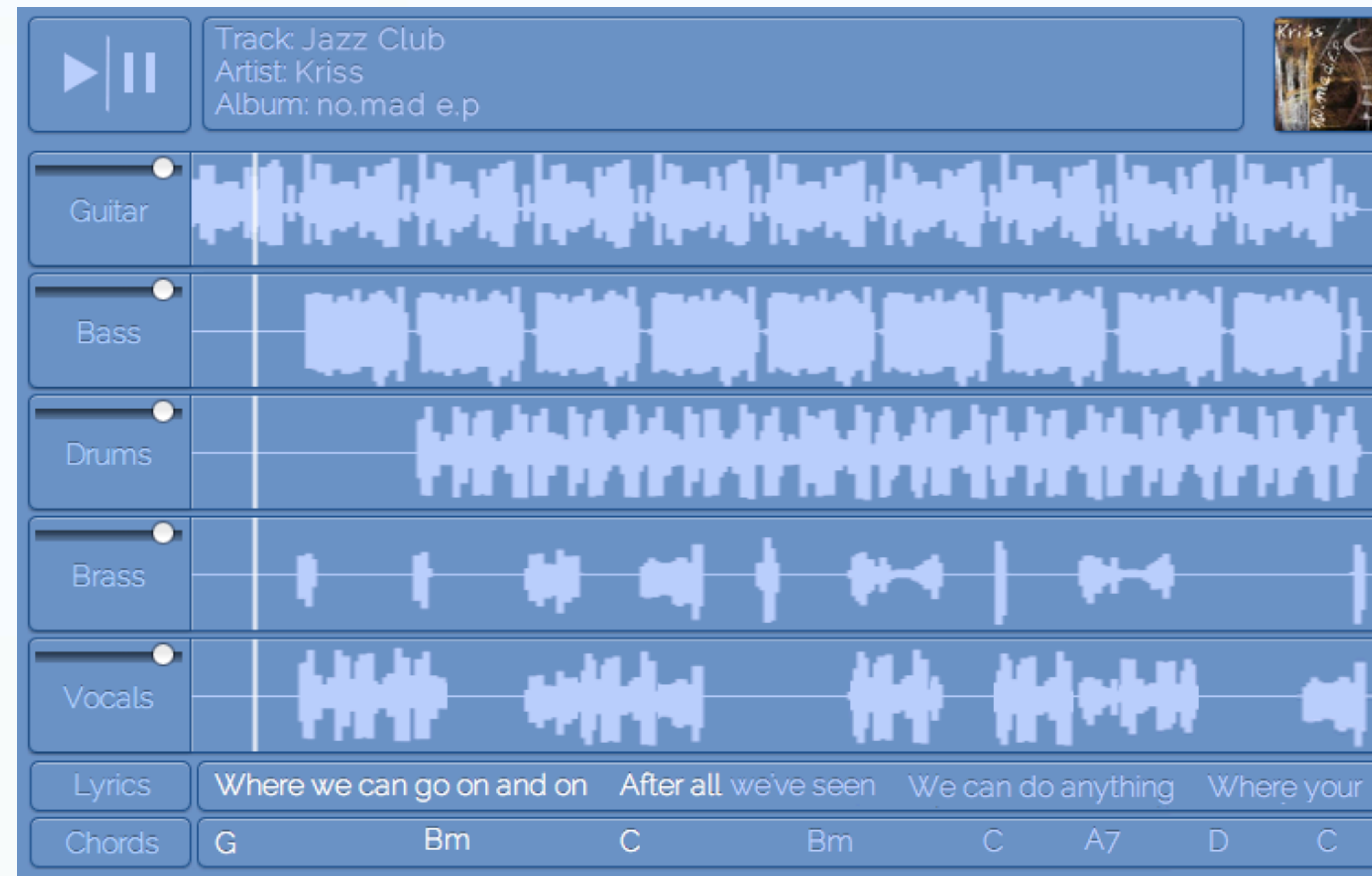
Graphical User Interface of the prototype IM AF player

3 Player Requirements

- Reading `.ima` files and perform basic functionalities.
- Cross-platform and cross-browser within possible limits.
- Sustainability. Services and technologies used should be available in the future.
- Adaptability to support any device independently of their limits.

4 HTML5 for Audio Processing

Advantages

- New but well established technology
- Front- and back-end development
- Powerful APIs for audio and file management

Disadvantages

- Availability of APIs depending on browser manufacturers
- Processing power depending on browsers' engines.

5 Client- or server-side

- Client-side decoding implies that the IM AF file is sent intact to the browser and the decoding of the file is done on the user's end.
- Server-side decoding of the IM AF file implies that the individual files of each track, artwork, lyrics, etc. is sent separately to the user's browser after the decoding on the server.
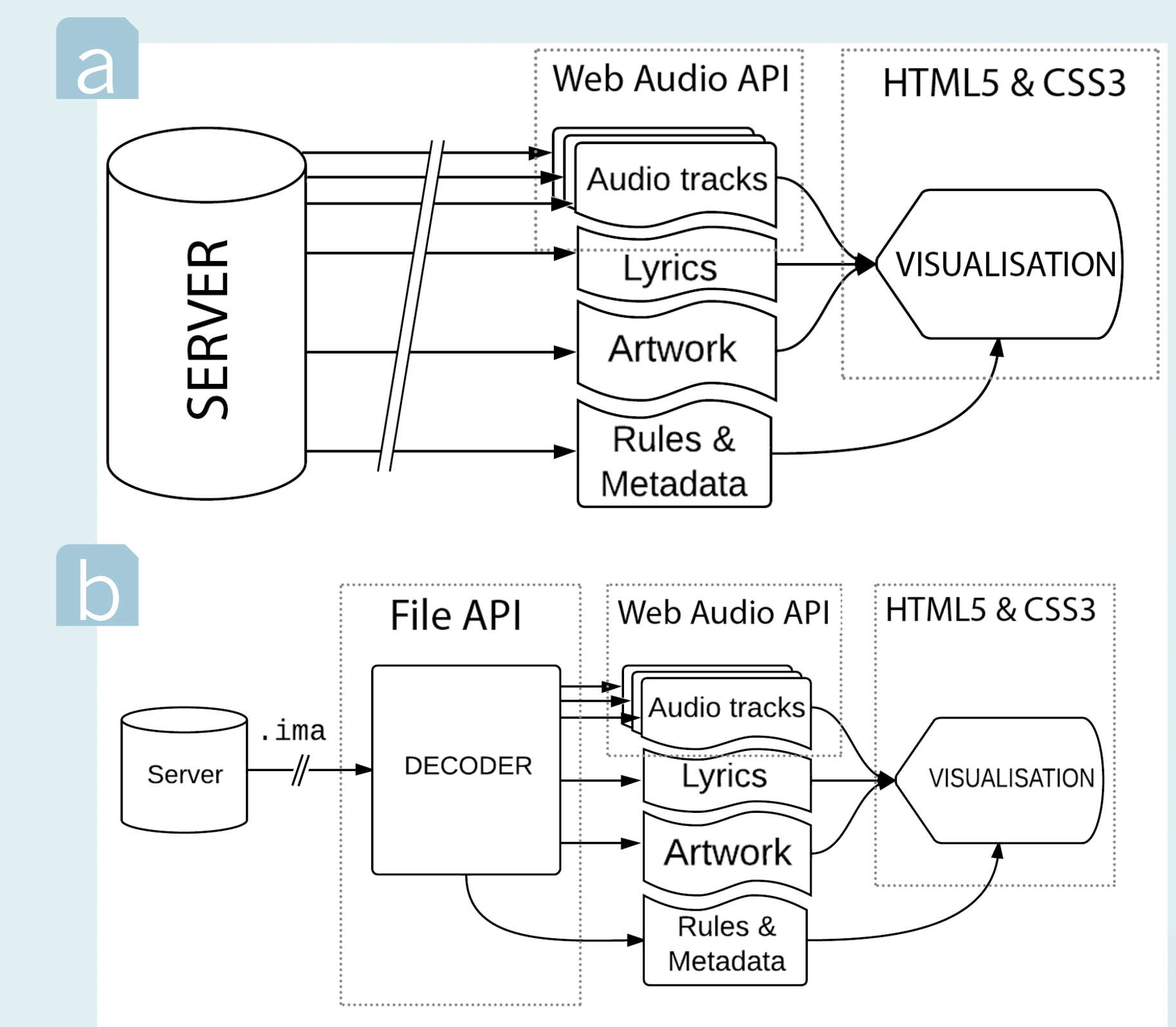
a) Server- and b) client-side decoding diagrams

6 Results

Interactive (IM AF) music player prototype with the following functionalities:
- Requesting tracks from a server (server-side approach) and decoding in-browser (client-side approach).
- Display of waveform of each track and album artwork.
- Synchronised lyrics

Check the desktop version at:
www.giacomoherrero.com/clientside
OR scan the code for the mobile version