The Audio Commons Initiative

Name Surname

Place, date or other info about presentation
Outline

- Introduction
  - Motivation and goals
  - AudioCommons project grant
- The Audio Commons Ecosystem
  - Vision
  - Creative Commons content
  - Providers, annotation tools and embeddable tools
  - Business models
- Conclusions
Introduction
Motivation

- Creative Commons (CC) audio content has a huge potential for reuse which *is not being* exploited by the creative industries
  - Limited understanding of CC licenses
  - Content scattered
  - Content not properly labeled, unstructured
  - Lack of tools for seamless integration
- We refer to this content as the Audio Commons content (AC content)
Goals

- Promote publication of AC content and foster its reuse
- Develop open technologies to support publication and reuse of AC content
- Develop open technologies for the semantic annotation of AC content
- Bootstrap the Audio Commons Ecosystem (ACE)
- Define standard procedures for joining the ACE
- Develop business models based on open AC content
AudioCommons project

- The **AudioCommons** project will support first steps of the Audio Commons Initiative
- Funded by the European Commission
- Horizon 2020 programme, grant agreement 688382
- 3-year project starting in February 2016
AudioCommons project consortium

- **Academic partners:**
  
  ![upf logo](image)
  ![Queen Mary University of London logo](image)
  ![UNIVERSITY OF SURREY logo](image)

- **Industry partners:**
  
  ![jamendo logo](image)
  ![AudioGaming logo](image)
  ![WAVES logo](image)
THE AUDIO COMMONS INITIATIVE

The Audio Commons Initiative aims at bringing Creative Commons audio content to the creative industries. But what does this mean? We realise that significant amounts of user-generated audio content, such as sound effects, field recordings, musical samples and music pieces (among others), are uploaded to online repositories and made available under Creative Commons licenses. Furthermore, a constantly increasing amount of multimedia content, originally released with traditional copyright licenses, is becoming public domain as its copyright expires. However, we believe that the professional creative industries (e.g. videogames, film and music industries) are not yet using much of all this content in their media productions.

There are a number of reasons why such content is not yet extensively used in the professional sector. We think that a major one is the lack of a shared culture within the creative industries of open content and its potential use. But there are also technical and practical issues that do not facilitate this usage. Despite the amount of Creative Commons audio content available in online repositories such as Jamendo or Freesound, other potentially useful content remains scattered around the web (if available at all) and typically not properly labeled with specific licenses or reachable through search engines. Also, the nature of this content, coming from a variety of sources and from authors with different levels of expertise, results in unstructured (or not uniformly structured) mass of resources, limiting its potential retrieval and reuse possibilities. Moreover, no tools are easily available to search and incorporate Creative Commons audio content in the production workflows of the creative industries.

The Audio Commons Initiative is therefore aimed at promoting the use of open audio content and at developing technologies with which to support an envisioned ecosystem of content repositories, production tools and users (the Audio Commons Ecosystem). These technologies should enable the reuse of this audio material, facilitating its integration in the production workflows of the creative industries.

The Audio Commons Initiative is supported by the European Commission through the Horizon 2020 programme (research and innovation grant 688382), and its project consortium is formed by leading research institutes in sound and music computing and key players in the creative industries. Do you want to be updated on the progress of the project? Please feel free to subscribe to our mailing list or follow us on Twitter at @AudioCommons.

www.audiocommons.org, @AudioCommons
The Audio Commons
Ecosystem
Content users negotiate license for CC-BY-NC content with content creators.

Content users can become content creators by publishing derivative or new content.

- Content creator (e.g., individual user)
  - Creative Commons audio content
- Content creator (e.g., sound fx producer)
- Annotation tools
- Music sharing site (music pieces)
- Sound sharing site (music samples and non-musical content)

Creative Commons audio content enhanced with generated metadata

Embeddable tools
- Videogame developers
- Music producers
- Sound designers
- Tool developers

AC Ontology Specification
AC API Specification

Audio commons
Distributed framework

- Designed to incorporate an undetermined number of services and clients
- Support sustainability of the ecosystem
Creative Commons audio content

- More than 1 billion Creative Commons licensed works (not necessarily audio) available online
  Source: “State of the Commons 2015”

- Creative Commons licenses offer better and clearer opportunities for content reuse than traditional copyright models

- Authors establish the rights for the reuse of their content (CC0 - public domain, CC BY, CC BY-NC...)

- Allow circular co-creation model
Example Creative Commons licenses

Public domain, no restrictions on use and redistribution, no attribution to source needed

You can copy, modify and redistribute the sound, but you need to give an attribution to the original source

You can copy, modify and redistribute the sound, but you need to give an attribution to the original source and you cannot use it commercially
## remixing creative commons content

<table>
<thead>
<tr>
<th>License of sound of A</th>
<th>B wants to distribute the new sound under</th>
<th>Can B do this?</th>
</tr>
</thead>
<tbody>
<tr>
<td>cc0</td>
<td>cc0</td>
<td>Yes</td>
</tr>
<tr>
<td>cc0</td>
<td>by</td>
<td>Yes (*)</td>
</tr>
<tr>
<td>cc0</td>
<td>by-nc</td>
<td>Yes (*)</td>
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<td>by</td>
<td>cc0</td>
<td>No</td>
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<tr>
<td>by</td>
<td>by</td>
<td>Yes (**)</td>
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<td>by</td>
<td>by-nc</td>
<td>Yes (**)</td>
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<td>by-nc</td>
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<tr>
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<td>by-nc</td>
<td>by</td>
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</tr>
<tr>
<td>by-nc</td>
<td>by-nc</td>
<td>Yes (**)</td>
</tr>
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</table>

(*) If a third user C uses the sound from B, she must attribute to B.  
(**) B must attribute the sound to A. If a third user C uses the sound from B, she must attribute both A and B.
Licensing procedures for CC resources

- Uncertainties about licensing for using CC content in commercial productions
- Lack of standardized procedures for (re)licensing content with CC licenses
- **Our goal**: clarify usage of CC licenses in complex reuse scenarios and provide clear and standard ways in which to license AC content
Business models on top of open content

• Uncertainties about business models based on CC audio content but...

• ... business do exist on top of CC music pieces for commercial use (e.g. jamendo.com, magnature.com, ...)

• **Our goal**: identify emerging business models that can make the Audio Commons Ecosystem self-sustainable
Shared goals with Creative Commons

Made with Creative Commons: A book on open business models

Let’s write a book that shows the world how sharing can be good for business.

Created by
Creative Commons

1,887 backers pledged $86,420 to help bring this project to life.
Content providers

• Will populate the Audio Commons Ecosystem with CC licensed audio content
• Will annotate their content with Audio Commons tools using a unified metadata representation (AC Ontology)
• Will offer their content through an API that implements a commons specification (AC API specification)
• **Our goal**: make it easy for potential content providers to connect to the ACE
ACE initial content providers

- freesound
  300k sound samples

- jamendo
  470k music pieces
Breakbeat music by independent artists for all uses
Breakbeat music for all moods, copyright free.
Breakbeat music with electronic instruments and technology to bring your project to life. Many different tempos and styles. All rights included.

Organique Love
5:51 / Emorej
breakbeat, electronic, jumplistyle

breakbeat retro
4:06 / Waykyky

GET A LICENSE
GET A LICENSE

SEE SIMILAR TRACKS
ADD TO PLAYLIST
Some other sites with CC audio content

- Bandcamp
- FMA
- Comixter
- Internet Archive
- SoundCloud
- Europeana
- Magnatune
Some other sites with CC audio content

<table>
<thead>
<tr>
<th>Site</th>
<th>Content type</th>
<th>Size</th>
<th>CC-licenses</th>
<th>License friendly</th>
<th>API</th>
<th>Access via API</th>
<th>Licensing tools</th>
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<tbody>
<tr>
<td>Jamendo</td>
<td>Music pieces</td>
<td>470k</td>
<td>All 6 CC variants + CC0</td>
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<td>Yes</td>
<td>Yes</td>
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<td>Music samples, sound effects, field-recordings</td>
<td>300k</td>
<td>CC0, CC-BY, CC-BY-NC</td>
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<td>Yes</td>
<td>Yes</td>
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<td>CC-mixer</td>
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<td>38k</td>
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<td>Yes (old)</td>
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<td>Internet Archive</td>
<td>Music pieces, radios, live concerts</td>
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<td>Europeana</td>
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</table>
Semantic annotation of sound and music

- Standardized generic metadata for media content (e.g. Dublin Core ontology, ...)
- Existing sound and music specific models (e.g. Music Ontology, Europeana Data Model, MusicBrainz...)
- Rights management ontologies in the media domain (e.g. MPEG-21, Media Value Chain Ontology...)
Semantic annotation of sound and music

- **Our goal**: define an Audio Commons Ontology that contains audio properties and relations useful for its reuse, provide automatic annotation tools for sound and music collections that annotate the content according to this ontology, with the focus on:
  - High-level music description (genre, mood, instrumentation...)
  - Musical properties (notes, tempo, tonality...)
  - Perceptual qualities (timbre aspects)
## Audio annotation tools

<table>
<thead>
<tr>
<th></th>
<th>Low-level features</th>
<th>Machine learning based features</th>
<th>Open license</th>
<th>Core language</th>
<th>Interface to other languages</th>
<th>Easy for large scale analysis</th>
<th>Last release</th>
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<tbody>
<tr>
<td>Essentia</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>C++</td>
<td>Python, Matlab, Javascript</td>
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<td>Nov 2015</td>
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<td>jMIR/jAudio</td>
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<td>Yes</td>
<td>Yes</td>
<td>Java</td>
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<td>LibROSA</td>
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<td>Python</td>
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<td>Aubio</td>
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<td>C</td>
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<td>MIRtoolbox</td>
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<td>Matlab</td>
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<td>Marsyas</td>
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<td>Yes</td>
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<td>C++</td>
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<td>yaafé</td>
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<td>Yes</td>
<td>C++</td>
<td>Python/Matlab</td>
<td>Yes</td>
<td>Nov 2011</td>
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</table>
Essentia

Music extractor

Usage

streaming_extractor_music computes a large set of spectral, time-domain, rhythm, tonal and high-level descriptors. The frame-wise descriptors are summarized by their statistical distribution. This extractor is suited for batch computations on large music collections and is used within AcousticBrainz project.

It is possible to customize the parameters of audio analysis, frame summarization, high-level classifier models, and output format, using a yaml profile file. For example, in the following profile, the extractor is set to analyze only the first 30 seconds of audio, output frame values as well as their statistical summarization, and apply two high-level models associated with the respective file.

```yaml
startTime: 0
endTime: 1.6
analysisSampleRate: 44100.0
outputFrames: 0
outputFormat: json
requireMidi: False
indent: 4

downlevel:
  frameSize: 2048
  hopSize: 1024
  zeroPadding: 0
  windowType: blackmanhar
  silentFrames: noise
  stats: ["mean", "var", 
  
  averageLoudness:
  frameSize: 88200
  hopSize: 44100
  windowType: hann
  silentFrames: noise
```

[Diagram of audio processing flow]
Sonic annotator, Vamp audio analysis API
Embeddable tools supporting AC content

• Some tools exist that integrate CC audio content in the production workflow but...

• ...these need to be improved, and new tools need to be created that take full advantage of the ACE (browsing, licensing, uploading...)

• **Our goal**: develop tools (e.g., audio plugins) that take advantage of the ACE
Ardour (DAW integration)

![Add Existing Media screenshot](image)

<table>
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<tr>
<th>ID</th>
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<td>Nord Drum BD_4.wav</td>
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<td>66.5 kb</td>
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</table>

www.ardour.org
Cloud browser (audio plugin)

www.stagecraftsoftware.com
Conclusions
Example potential applications of ACE

- Music production tools: sampler, drum machine, loop browser, sound transformation...
- Music browser
- Sound FX browser
- Video editors
- Soundscape generator
- Audio SDK for video games
- ...

Place, date or other info about presentation
To sum up... (1/2)

- We propose the ACE as an extendable ecosystem of users, tools and services
- The ACE will be bootstrapped with Jamendo and Freesound content, and embeddable tools by industry partners in the AudioCommons consortium
- Our aim is to engage new stakeholders, content providers, tool developers...
To sum up... (2/2)

- Audio Commons challenges current licensing procedures, supports the use of CC content
- Audio Commons challenges traditional business models based on copyright licensing
- Audio Commons can serve as an example model to be applied in other multimedia domains
The Audio Commons Initiative

Name Surname

Place, date or other info about presentation