Deliverable D6.8

Report on novel methods for measuring creativity support

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Table of contents

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Executive Summary

This deliverable is a transversal summary of the methods used for measuring creativity support across the different projects related to the Audio Commons ecosystem. The projects are presented across the following eight use cases:

(i) An initial user requirements survey targeting different consumers and producers from the music industry; we collected self reports from 600 participants which informed the definition of the Audio Commons Ontology, API, the research on rights management, and also helped on developing the work on sound and music analysis algorithms and end user prototypes.
(ii) The hands-on workshop *Designing sounds in the Cloud* held during the Audio Mostly 2017 conference, where participatory methods and Audio Commons technologies were promoted among the sonic interaction design community to elicit ideas around sound/music production.
(iii) The user study with 20 participants from the sound/music production community, held during the Fall 2017, which looked into soundscape design using participatory ideation techniques and well-known HCI frameworks (e.g. CSI and SUS metrics) to assess the creativity support and usability respectively of the Audio Commons tools Audio Texture and Freesound.
(iv) The user study held during the Fall 2017 with 18 participants of varied musical skills which used the web interface Playsound for group-based free music improvisations and investigated patterns of collaboration from both quantitative and qualitative perspectives.
(v) The hands-on demonstration of a wearable e-textile sound generator presented at the Tangible, Embedded and Embodied Interaction Conference in March 2018, which promoted Audio Commons concepts to the e-textiles community mediated through bodily interactions.
(vi) The reports from self-reflection (autoethnography) over the course of 16 months combined with a small-scale user study with four expert live coders that gave feedback from using the tool for live coding music performance Music Information Retrieval for Live Coding (MIRLC), based on Audio Commons content, and helped follow-up development.
(vii) The two small-scale user studies with music learners held during the Spring 2018, which were used for agile prototyping of the web interface Jam with Jamendo and identify next round of design requirements.
(viii) An online blog related to the project to regularly narrate the different Audio Commons activities (e.g. projects, presentations, workshops), build a community around the Audio Commons technologies and services, and reflect on the impact of the new offered tools.

Each of the use cases is of different nature (e.g., time scale, objectives, results). Bringing diversity into the assessment of the project's outcomes has promoted the development of a set of tools and techniques for an inclusive ecosystem of users, technologies and services, which is important to build a new community of users.

Despite the multiplicity and diversity of the above use cases, there are particular commonalities in the methods used, which include:

(i) The use of participatory and hands-on methods that has involved different communities with interest in new ways of sound/music production.
(ii) The consideration of users' feedback, ranging from formal methods (e.g. using self reports and HCI metrics) to informal methods (e.g. through discussions with stakeholders during demonstrations and performances). This feedback has been helpful to inform follow-up iterations of the different prototypes and it is in alignment with the reflective cycle of developing and evaluating, typical in artistic practice and prototype design.
(iii) An agile prototyping style for some of the tools inspired by agile software development matching the timeframe of the Audio Commons project.

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In summary, the realization of an Audio Commons ecosystem of users, technologies and services requires an open space for envisioning and materialising new concepts that need to be assessed by users. This can be done, as evidenced with the different use cases, adopting an interdisciplinary approach of borrowing and combining methods from engineering, social sciences and the arts. Although some research methods from the above projects have proven to be useful to assessing creativity support from a more holistic perspective (e.g. HCI frameworks) and have clearly defined end-user applications. At the same time, other research methods have been helpful to design applications in a more open ended and flexible way, which indicates that there needs to be also a space for open-form exploration. This open-ended approach has proven to attract the implication of meaningful and potential communities of users that have helped to elicit new (and often times unexpected) design directions.

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Background

This deliverable looks transversally across the methods we used to assess creativity support of the different Audio Commons tools developed especially over the course of the last academic year (2017-2018). This includes reflections on the following deliverables from Work Package 2 “Ontology specification and service orchestration” and Work Package 6 “Prototyping and evaluation in production workflows”: “D2.1 Requirements report and use cases”, “D6.4 Evaluation report on the prototype of an embeddable tool for integrating AC music samples”, “D6.5 Evaluation report on the prototype of a web interface for accessing Audio Commons music pieces”, “D6.6 Evaluation report on the prototype of an embeddable tool for integrating non-musical Audio Commons content” and “D6.7 Guidelines for second phase implementation”. It also includes reflection material from conference papers and blog posts around a range of prototypes developed around the Audio Commons theme.

The main scope of this deliverable is to identify methodological patterns across the assessment of different tools developed for Audio Commons so far, which will be helpful for the next round of development of the tools and will inform the final deliverable “D6.12 Report on the evaluation of the ACE from a holistic and technological perspective”.

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1 Introduction

This deliverable aims to provide an overview of the methods we used so far to assess creativity support across the different Audio Commons tools. This report is organized as follows. In this section, we outline the main objectives and goals of this deliverable and introduce the key terminology related to the Audio Commons project and this report in particular. In the next section, we present eight projects in the form of use cases, focusing on the methods used to assess creativity support: the hands-on workshop Designing sounds in the Cloud; a user study on soundscape design based on Audio Texture and Freesound; a user study of Playsound.space; a sonic wearable prototype using e-textile; an autoethnography and users's feedback from using the live coding tool MIRLC; two small-scale studies of Jam with Jamendo; and the reflections reported in the Audio Commons blog. To conclude, we summarize the main aspects for the next and final round of design and evaluation framed to identify an holistic analysis of the methods and technologies used along the project.

1.1 Main objectives and goals

The main objectives of this deliverable are to inform the next round of development and evaluation toward informing the evaluation of the ACE from a holistic and technological perspective to be due on D6.12. To achieve this goal, this deliverable should be combined with the results from the deliverable "D6.7 Guidelines for second phase implementation", which provided a set of holistic guidelines for the second phase implementation of the AudioCommons tools.

The goals are to identify key common patterns in the novel methods used to assess creativity support, and analyze whether additional novel methods are needed for the last round of design and evaluation of the Audio Commons tools.

1.2 Terminology

American Psychological Association (APA) style: it is a writing style and format for academic documents such as journal articles and books.

API: Application Programming Interface; a set of functions and procedures that allow the creation of software applications which access the features or data of an operating system, application, or other service.

AudioCommons: reference to the EC H2020 funded project AudioCommons, with grant agreement nr 688382.

Audio Commons Initiative: reference to the AudioCommons project core ideas beyond the lifetime and specific scope of the funded project. The term "Audio Commons Initiative" is used to imply i) our will to continue supporting the Audio Commons Ecosystem and its ideas after the lifetime of the funded project, and ii) our will to engage new stakeholders which are not officially part of the project consortium.

Audio Commons: generic reference to the Audio Commons core ideas, without distinguishing between the concept of the initiative and the actual funded project.

Audio Commons Ecosystem (ACE): set of interconnected tools, technologies, content, users and other actors involved in publishing and consuming Audio Commons content.

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Audio Commons content (ACC): audio content released under Creative Commons licenses and enhanced with meaningful contextual information (e.g., annotations, license information) that enables its publication in the ACE.

Content creator: individual users, industries or other actors that create audio content and publish in the ACE through content providers.

Content provider: services that expose content created by content creators to the ACE.

Content user: individual users, industries or other actors that use the content exposed by content providers and created by content creators in their creative workflows.

Digital Audio Workstation (DAW): electronic devices or software used for recording, editing and producing audio files ranging from songs, speech or sound effects.

Focus Group: a qualitative research method consisting in studying the opinions and behaviours of a a small but representative group during a structured conversation.

Graphical User Interface (GUI): A human-computer interface based on windows, icons and menus that can be typically manipulated by a mouse and a keyboard.

Human-computer Interaction (HCI): a discipline that researches the design and use of computer technology, focusing on the interactions and interfaces between users and computers.

Soundscape (acoustic ecology): "acoustic environment as perceived or experienced and/or understood by a person or people, in context" (ISO, 2014).

Soundscape composition (music): a music composition "characterized by the presence of recognizable environmental sounds and contexts, the purpose being to invoke the listener's associations, memories, and imagination related to the soundscape" (Truax). The essence of soundscape composition is "the artistic, sonic transmission of meanings about place, time, environment and listening perception" (Westerkamp). A soundscape composition is "a piece with its own integrity, a new moment in time in a new place with its very own life and characteristics, yet still sonically connected to the place and time of the original recordings and the composer's own experiences" (Westerkamp).

Tool developer: individual users, industries or other actors that develop tools for consuming (and also potentially publishing) Audio Commons content.

Embeddable tools: tools for consuming Audio Commons content that can be embedded in existing production workflows of creative industries.

1.3 Convention

When reporting statistics, *M* and *SD* refer to mean and standard deviation, respectively. Definitions and quotes from participants from user evaluations, categories from the HCI metrics and questions from the questionnaire are reported in italic. We report our results following the APA style. We chose a alpha level (Type I error) of 0.05 in statistical analyses.

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2 A reflective perspective on the research methods used for measuring creativity support

In this section we present eight use cases of projects related to Audio Commons from the angle of the methods used, ranging from formal to informal approaches, for measuring creativity support.

2.1 Surveying music industry consumers and producers

A large-scale online survey targeting the music industry community was distributed at the beginning of the Audio Commons project to inform the definition of the Audio Commons Ontology and API, inform research on rights management and help focusing the work on sound and music analysis algorithms and end user prototypes. 600 participants completed the survey, who were asked about various subjects like demographics, workflows they use and metadata they would like to use when searching for new audio content on the Web, and search strategies and metadata associated with the audio files.

We analysed which ontologies and vocabularies exist that describe the music domain. We followed the guidelines of Semantic Web to reuse as much of the existing knowledge representation as possible (ontologies and vocabularies like Music ontology, Musical Instrument Taxonomies, Media Value Chain Ontology, Audio features ontology, Studio Ontology).

According to the results of our large-scale survey, our targeted users demand a clear and understandable licensing information, intelligent interfaces with drop down functionalities straight into their workflows, high quality recommendation, rich metadata describing the audio content and availability of services that are capable of conducting various tasks in the audio domain.

This survey helped us to identify the design requirements to formally develop the Audio Commons technologies in collaboration with our industry partners: Waves Audio LTD's SampleSurfer, Jamendo's MuST (Music and Sound search Tool), and AudioGaming's AudioTexture.

2.2 Designing sounds in the Cloud using a hands-on participatory workshop

As a pilot workshop at the conference Audio Mostly 2017, named Designing Sound in the Cloud,[1] we introduced an array of design mediums to create sound/music in a participatory manner. Participants, who were musicians and researchers interested in audio design were invited to conceive and produce a sonic or musical artifact in a participatory way using provided web-based technologies.

In particular, we introduced web-based and sound design technologies including those created in AudioCommons and Rapid-Mix,[2] followed by a short creative sound walk. The participants were invited to team up and reflect on an artistic concept to realize collaboratively (see Figures 1 and 2). We dedicated the second half of the workshop to hands-on creative sound/music production and

[1] http://dsic2017.org/
[2] http://rapidmix.goldsmithsdigital.com/

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hacking. The purpose was to engage the participants to become both active listeners and sound makers.

We used participatory design techniques [Blomberg and Henderson, 1990], particularly by using bootlegging [Holmquist, 2008] for ideation and other participatory-based activities that promoted knowledge building in group. Using participatory methods for elicitation and creation of sound-related concepts proved to be useful, provocative and productive within the sonic interaction design community.

Figure 1: Bootlegging session during a workshop.

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Figure 2: Teamworking during a workshop.

2.3 Soundscape design using a participatory design approach

As discussed in the deliverable "D6.6 Evaluation report on the prototype of an embeddable tool for integrating non-musical Audio Commons content", 20 participants were asked to use the AC tools Freesound [Font et al., 2013] and AudioTexture (see deliverable D6.3 "Prototype of an embeddable tool for integrating non-musical Audio Commons content") to complete a task of soundscape composition. Soundscape composition is considered a music composition "characterized by the presence of recognizable environmental sounds and contexts, the purpose being to invoke the listener's associations, memories, and imagination related to the soundscape" (Barry Truax, https://www.sfu.ca/~truax/scomp.html).

AudioTexture is a plugin prototype for sound texture synthesis (see Figure 3). The AudioTexture plugin lets users generate sonic textures from audio recordings within a digital audio workstation (DAW) environment, such as Logic Pro X, Ableton Live, or Reaper. Developed by AudioGaming, the plugin has a user interface that integrates the AudioCommons content for creative sonic/musical explorations. This plugin implements a concatenative synthesis technique (see Schwarz [2007] for a discussion on concatenative synthesis). The plugin is particularly suited for environmental sounds

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with short-term textures (e.g., water drops, rock falls, construction work, and so on). It is however possible to use the plugin with musical sounds which can also lead to interesting textures.

Figure 3: AudioTexture (i) left: plugin main interface, (ii) right: showing results from a query.

Freesound[3] [Font et al., 2013] is an online collaborative database of sounds that provides content under Creative Commons licenses. It is possible to use this database to browse, playback and download specific sounds that have been uploaded by members of the platform. The main way to find sounds on Freesound is to do searches using specific keywords or tags (e.g. “street market”, “running”). The result Sounds page display the sound names, textual descriptions, user ratings (from 0 to 5 stars), as well as small visualisations of the waveforms. Playback buttons at the bottom of each sound’s waveform window let users quickly audition the sounds. It is also possible to visualize the spectrogram of the sound. Freesound also provides an Advanced search option. Another feature of Freesound is to search for sounds by geo-location.

Our assessment included (i) soundscape ideation using participatory design approach and production with creative constraint; (ii) a survey combining the level of usability (SUS metric) and the level of creativity support (CSI metric) of each of the tools, which are two well-established metrics in the discipline of Human-Computer Interaction (HCI). We were also interested in the participants’ opinions a various range of topics about the tools.

AudioTexture was the tool that elicited more reflective feedback around the creation of novel sounds and sonic properties. Several participants used musical content with AudioTexture in a number of creative ways (e.g., to create a bass line). Thus, unique textures were created from given sounds (both musical and non-musical). The established AudioCommons Freesound tool obtained a significantly high score of the creativity-support metric, which may be related to the more than 10 years of development of the tool tailored to users with interest in searching and uploading sound recordings.

[3] https://freesound.org/

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These research methods helped us to define a set of design recommendations to continue the next stage of development of the AudioTexture plugin. The areas of improvement that were highlighted included: (i) a more transparent GUI, where the information and processes are displayed clearly, (ii) an advanced search engine like in Freesound that incorporates ratings from the community of users of the different online sound libraries to quickly distill the quality of a sound, (iii) a better integration between browsing, editing the sound and copying it to the DAW.

2.4 Collaborative music making using mixed methods approach

As explained in the deliverable "D6.4 Evaluation report on the prototype of an embeddable tool for integrating Audio Commons music samples", the Playsound.space[4] platform [Stolfi et al., 2018] was designed using Web Audio to let users mix Audio Commons content using semantic searches without requiring specific musical knowledge. The ACE provides ways to query sounds using descriptive metadata through its API. Playsound provides a fast access to the Freesound audio content and allows users to play and loop multiple audio files with basic editing capabilities, including segment selection, panning, playback rate and volume controls. Figure 5 shows the GUI of Playsound, with the list of selected sounds to the left and the search interface to the right, displaying the search textbox, and the list of retrieved sound items with metadata and visual spectrogram representations. Credits to authors of selected CC sounds are displayed at the bottom of the interface. Live interactions with Playsound can be recorded and exported.

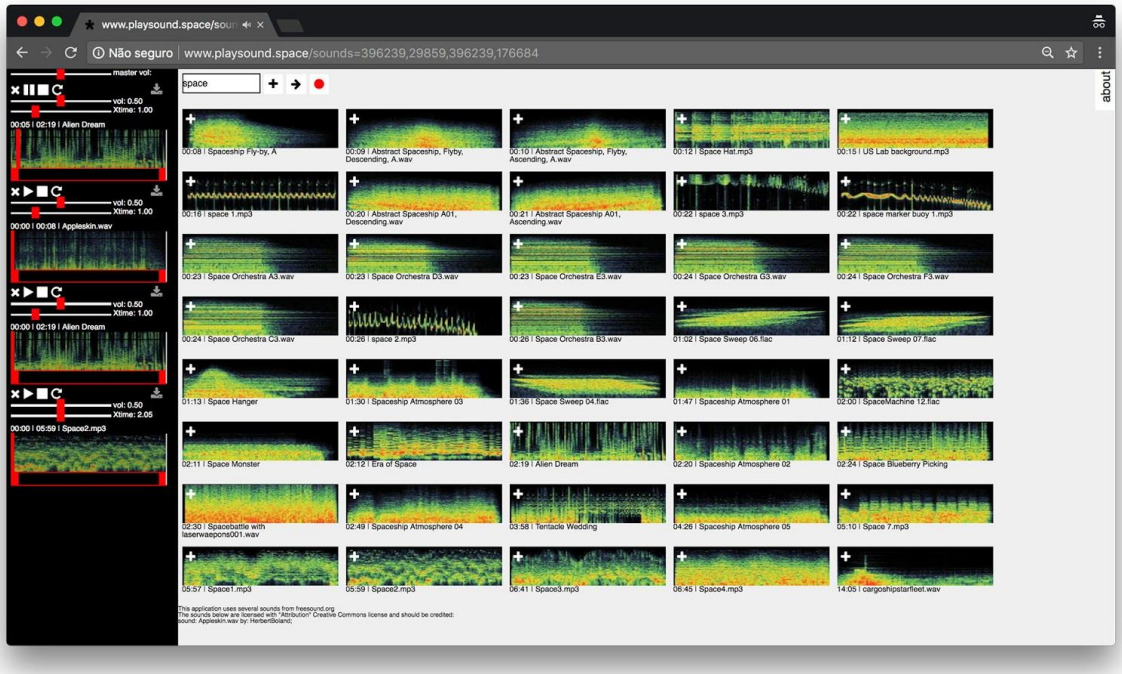

Figure 5: Graphical User Interface from the Playsound.space web application.

[4] http://www.playsound.space

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The Playsound system was assessed in two different music making contexts with a total of 18 participants having various musical skills: three participants belonged to an ensemble mixing participants using Playsound and other musicians; 15 participants used Playsound in trios. We collected data from logs, focus group discussions and self-reported questionnaires.

With this process, we tested how the tool could be used as an "instrument" to improvise, how expressive it was, and how other musicians responded to the music produced with it. Discussions held with the musicians after the sessions revealed that both the Playsound users and co-performers were satisfied with the musical improvisations.

Results from the ensemble and trio performances indicated that it was easy for first-time users to play live with others using the tool. The semantic sound search functionality facilitated interaction between musicians and led to interesting musical situations through the use of similar or contrasting materials at different moments, and rich variation of timbres and rhythms. It also allowed users to express sound ideas and emotions even without technical expertise and musical technique.

The analysis of console logs from participants' browser windows helped to understand the creative musical interactions. We found that the number of queries and sounds played were unaffected by experience, participants and pieces. Inductive thematic analysis [Braun and Clarke, 2006] of the group discussions occurring at the end of each trio piece led to a set of themes, including *enjoyment*, *expressiveness*, *monitoring*, *relevance and surprise*, *expressive control*, *identification*, *creativity support and narrative*, and *spectrogram usefulness*. We also applied thematic analysis to the survey questions. The main themes included *musical creativity support*, *audio query*, *limitation*, *emotional engagement*, *playing technique and creative agency*, *improvement*, *usability*, and *contexts of use*. As discussed in the deliverable D6.4, the evaluations helped to gain insights into how to improve the prototype but also led to recommendations for the wider project.

2.5 Wearable sound generator using e-textile

We presented our work-in-progress paper "Embodied interactions with e-textiles and the Internet of sounds for performing arts" [Skach et al., 2018] as a demonstration in the Tangible, Embedded, and Embodied Interaction conference (Figure 4). For this showcase, we turned textiles into soft and wearable musical interfaces using the Bela platform [McPherson and Zappi, 2015]. Gestural movements or touch interactions allowed the wearer to explore an "Internet of Sounds" with different sonic features, ranging from drumming bellies to whistling sleeves. A hoodie with snapped-on fabric sensors served as an interactive sound playground for its wearers. Stretch sensors on elbows and a pressure sensor on the hood each had a special audio effect assigned. So by moving, stretching, bending, and hitting, wearers could apply reverb, delay and a frequency shifter to modify the garment's sound base. The sound itself could be downloaded and even self composed through a specifically developed network app, that was linked with the micro controller deployed on the hoodie.

We obtained positive and encouraging feedback from the visitors: *"Very cool! I love how natural it is to move and generate sound!", "So much fun! I could really feel the performative potential when wearing it. Cool!", "I like the design of the cloth. Would like to see real performance,", "Let me see an actual performance with this! love it!", "Would love to have some more varied sounds -> to see or experience what matches to what! But fun project!", "Great experience! I'm not so much of an audio guy but this is great. I want this to be collaborative!".* In a nutshell, visitors had fun and expect to see a follow up of

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the garments in a performance setting. It made a difference that they could wear it and experience it, as opposed to walking by and seeing a demo from a screen.

Figure 4: Demo of the work-in-progress wearable project at TEI 2018 (Stockholm, Sweden).

2.6 Live coding using reflective practice and users' feedback

Musical live coding is a music improvisation practice that is based on generating code in real time [Collins et al., 2003]. This can be done with several live coding environments, such as SuperCollider [McCartney, 2002], a platform for audio synthesis and algorithmic composition. In live coding, the integration of music information retrieval (MIR) techniques for sound retrieval and the use of Audio Commons content have been little explored. MIRLC (see Figure 6) is a library designed to repurpose audio samples from Freesound, which can also be applied to local databases, by providing human-like queries and real-time performance capabilities [Xambó et al., 2018a]. The system is built within the SuperCollider environment by leveraging the Freesound API.

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Figure 6: The MIRLC library shown in a Raspberry Pi during the workshop "Collaborative Network Music" led by Alo Allik and Anna Xambó at the Rewire Festival / Music Hackspace (April 2018).

We explored the potential of the tool through (i) reflective practice based on autoethnography [Magnusson, 2011], (ii) asking four expert live coders to compose with the tool and fill in a post-survey, and (iii) public presentations such as a workshop on collaborative network music or a poster presentation with demo.

Reflective practice was helpful to develop the tool during the course of 16 months. Throughout this process, rehearsals with the tool informed its development as well as the choice of descriptors suitable for live coding. During a first round of development, which ended with a test-bed performance, the tool was used to query looping sounds from Freesound using tags and similarity. In a second round of development, the way of retrieving by content was simplified for live coding (e.g., shorter commands for sound queries and content-based filters). Finding the suitable combinations was an important part of the rehearsals. With this approach, there was more control over subspaces of the crowdsourced database without a priori knowing the sounds, while still retrieving new sounds with each rehearsal.

The four invited users tried the system with either a personal database or a crowdsourced database and reported its potential in facilitating tailorability of the tool to their own creative workflows. In general, the content-based queries were preferred. The users reported how this tool could fit in their music creative workflow: The two users less interested in live coding envisioned to use the tool *"both for exploring freeform corpora (like I have been today), and combining more beat driven stuff"* as well

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as opening *"a huge potential for sound design ideas for now (more than live coding)"*. The practitioners did adapt the tool or manifested interest in doing it to their workflows (e.g., *"I made some adjustments to the class"*; *"I am seriously considering using this library, it allows randomness and chance which are essential components of my aesthetic, it is really fun"*).

We also presented the tool during the workshop "Collaborative Network Music" at the Rewire Festival / Music Hackspace and as a poster with demo during the New Interfaces for Musical Expression (NIME) conference. Workshop attendees and visitors enjoyed trying the system and provided encouraging feedback for future steps to take: *"Looks like a quick and easy way to make music on the fly"*, *"I think this is a great idea for making completely unique soundtracks for games/media on the fly. Great work!"*, *"Love the 'similar' function…. especially in building rhythmic patterns, seems like it could be a cool way to 'progress' through a piece by transferring the pattern through new similar sounds, maybe a way to end/drop off the first sounds could be cool so that it can travel"*. In summary, the system raised interest among the visitors that came to see us. Several visitors expressed interest in using the system in their different domains (e.g., games, multichannel audio, soundscape design). Potential next steps of the project, including soundscape generation and the addition of filtering and patterning using SuperCollider facilities, were also discussed.

2.7 Music chord learning using agile user studies

We developed a web app prototype that allows novice and expert musicians to discover songs in Jamendo's music collection by specifying a set of chords, Jam with Jamendo [Pauwels et al. 2018, Xambó et al. 2018b]. Jam with Jamendo is a web app prototype of query-by-chord that helps the music learner to play songs with a musical instrument (Figure 7). The system suggests a curated lists of songs from the online music database Jamendo. In this way, the music learner can adapt the music content to her or his knowledge and own learning pace. The web app is aimed at music practitioners from beginners to experts who already practice an instrument (e.g. guitar, piano, bass).

We conducted two small group user studies of seven users each to assess (i) the validity of the confidence ranked system and (ii) two types of visualisation modes (circular and linear) that help the learner to read the present and forthcoming chords in real time (Figure 8). From this agile empirical studies, we were able to draw on the findings and identify some design recommendations for future applications of music learning and music search engines focusing on the user experience when interacting with sound.

In the first study, we discovered that having the prototype as an experimental playground was helpful to iteratively refine the algorithm computing a confidence rank. In the second study, we identified the benefits and challenges of each visualisation and a set of issues and potential solutions for the next design iteration of the web application.

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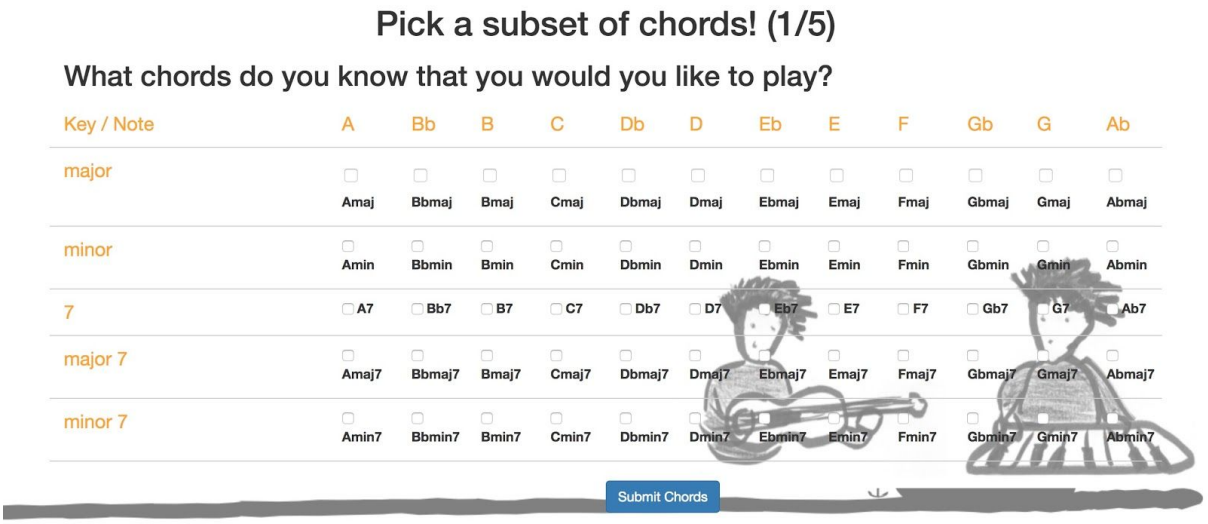

Figure 7: Screenshot of the query-by-chords functionality in Jam with Jamendo.

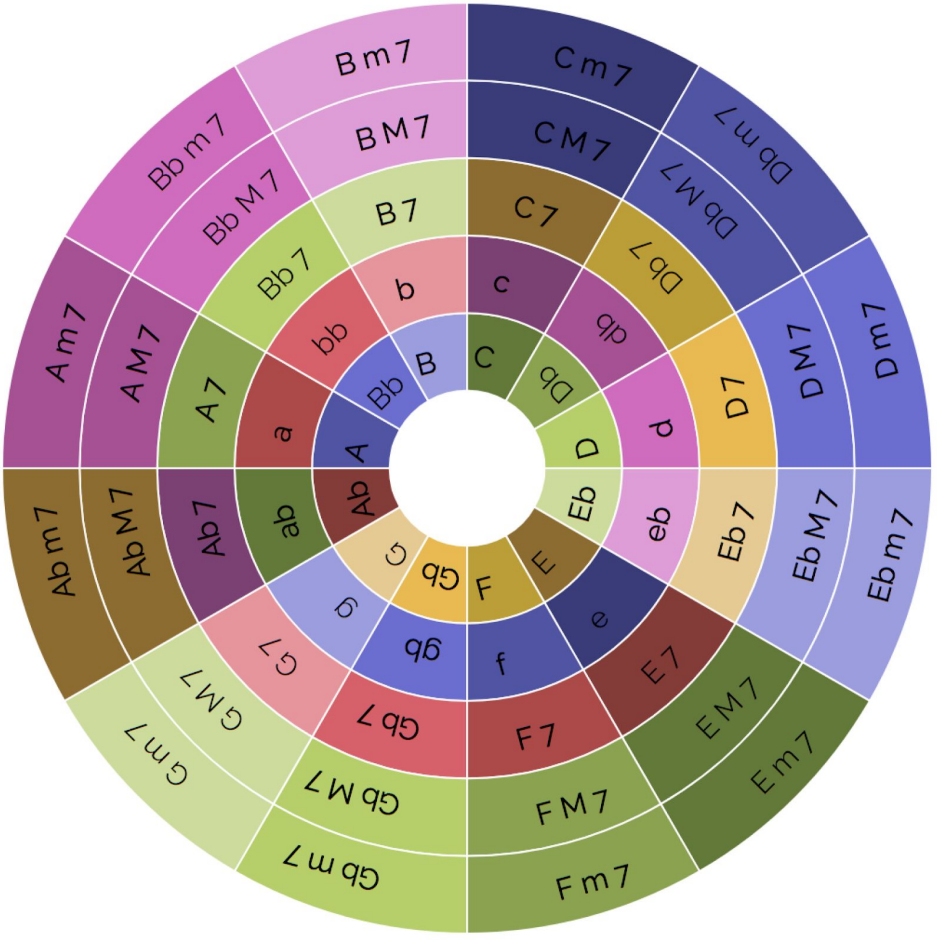

Figure 8: Screenshot of the circular visualisation.

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2.8 An Audio Commons project blog for ongoing reflection

We designed an online project blog to facilitate the publication and dissemination of the multiple Audio Commons activities (e.g. projects, presentations, workshops). This is helpful to build and connect a community of interested users and potential customers around the Audio Commons technologies and services, and reflect on and image about the impact of the new offered tools. To date, the following blog posts have been published:

- AUDIOCOMMONS KICK-OFF MEETING (12 January 2016)
- AUDIOCOMMONS PUBLICATION AT AES 61ST CONFERENCE ON AUDIO FOR GAMES (4 February 2016)
- AUDIO COMMONS SURVEY ON CREATIVE INTERACTIONS WITH AUDIO CONTENT (9 May 2016)
- WE HAVE REACHED OUR FIRST MILESTONE! (8 November 2016)
- SECOND MILESTONE: AUDIO COMMONS ECOSYSTEM PROTOTYPE (5 May 2017)
- AUDIO COMMONS @ SÓNAR +D AND PRIMAVERA PRO (22 May 2017)
- PANEL @ SÓNAR +D: CREATIVE COMMONS FOR THE CREATIVE INDUSTRIES (22 May 2017)
- VIDEOS OF AUDIO COMMONS TALKS @ SÓNAR +D AVAILABLE (30 October 2017)
- SAAM'18: 1ST WORKSHOP ON SEMANTIC APPLICATIONS FOR AUDIO AND MUSIC (13 March 2017)
- TEI '18: PROTOTYPE ON E-TEXTILES AND AUDIO COMMONS (18 May 2018 by Anna Xambó and Sophie Skach)
- SONORITIES SYMPOSIUM: PRESENTATION ON LIVE CODING WITH AUDIO COMMONS (25 May 2018 by Anna Xambó)
- PLAYSOUND @ NIME '18: INCLUSIVE FREE MUSIC IMPROVISATIONS USING AUDIO COMMONS (1 June 2018 by Ariane Stolfi)
- NIME '18: LIVE REPURPOSING OF SOUNDS (8 June 2018 by Anna Xambó)
- WEB OF THINGS IN THE SEMANTIC AUDIO DOMAIN (15 June 2018 by Fabio Viola)
- WALLIFORNIA MUSICTECH 2018: PANEL AND HACKATHON (6 July 2018 by Anna Xambó)
- AUDIO COMMONS AUDIO EXTRACTOR: A HANDS-ON TUTORIAL (15 July 2018 by Frederic Font)

Given the success and impact so far of the blog posts across and beyond the Audio Commons team and community, we will keep publishing regularly any updates on the existing projects until the end of the Audio Commons project.

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3 Conclusion

In this deliverable, we have showcased a range of varied methods, spanning from formal to informal perspectives, to assess creativity support from the user perspective of using a new set of tools based on Audio Commons principles.

It is worth mentioning that the realization of the project vision of creating an Audio Commons ecosystem of users, technologies and services requires an interdisciplinary mindset for developing and evaluating a new collection of concepts and tools for a new community of users (the understanding of new technologies and communities of users that/who still need to be build require an open mindset to explore new pathways). We have successfully explored the adoption of an interdisciplinary approach by borrowing and combining methods from engineering, social sciences and the arts to start exploring this space.

Although some of the research methods used have proved to be useful to assessing creativity support from a holistic perspective (e.g. HCI frameworks applied across the different Audio Commons tools), at the same time, there needs to be room for development and assessment of unfinished products and conceptual prototypes using hybrid methods (e.g., participatory methods from social sciences, reflective practice from the arts, agile prototyping from engineering). This open-ended approach is required to build a new community of potential users who are helping to shape a new way of producing and consuming Creative Commons-licensed audio material.

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