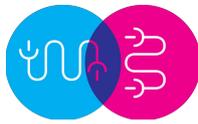


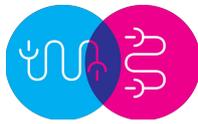
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D2.4 Exploitation Plan - Final

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Authors: **Michela Magas (STROMATOLITE); Andrew Dubber (STROMATOLITE); Jordi Janer (UPF); Frederic Bevilacqua (Ircam); Steffen Holly (IDMT); Thomas Lidy (TUWien)**



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The #MusicBricks project consortium is composed of:

SO	Sigma Orionis (until Month 15)	France
STROMATOLITE	Stromatolite Ltd	UK
IRCAM	Institut de Recherche et de Coordination Acoustique Musique	France
UPF	Universitat Pompeu Fabra - Music technology Group	Spain
Fraunhofer	Fraunhofer-Gesellschaft zur Foerderung der Angewandten Forschung E.V	Germany
TU WIEN	Technische Universitaet Wien	Austria

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Revision Control

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3	ANDREW DUBBER (STROMATOLITE)	27 June 2016	v.0.3
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5	ANDREW DUBBER (STROMATOLITE)	28 June 2016	v.0.5
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8	STEFFEN HOLLY (FRAUNHOFER)	29 June 2016	Final Review
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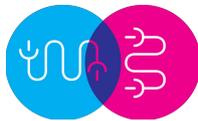
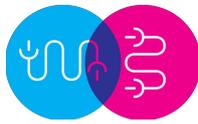


Table of Contents

1. Introduction	7
2. Exploitable elements	8
2.1. Research knowledge	9
2.2. APIs, GUIs and TUIs	10
2.3. Third party tools	11
2.4. Toolkit as Innovation Ecosystem	13
2.5. Innovative startup ideas	14
2.6. Product as Platform	16
2.7. Exploitation of Creative Content	16
3. Partners' Individual Exploitation Plans	17
3.1. Sigma Orionis (until Month 15)	17
3.2. Stromatolite	18
3.3. TU Wien	20
3.4. IRCAM	22
3.5. UPF	23
3.6. Fraunhofer IDMT	24
4. Collaborative exploitation plans of the #MusicBricks consortium	26
4.1. The #MusicBricks company	26
4.2. Collaborating with key industry actors	26
4.3. Distilling methodologies and case studies to support innovation in H2020	26
4. Conclusions	30



Executive summary

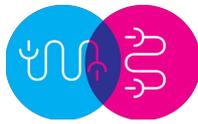
The present document is a deliverable of the MusicBricks project, funded by the European Commission's Directorate-General for Communications Networks, Content & Technology (DG CONNECT), under its Horizon 2020 research and innovation programme.

The #MusicBricks Innovation Action provided effective routes for exploiting European technology research and channeling innovative ideas towards the market. As in the previous version of this report, we distinguish between exploitation at the level of the consortium (as a whole and as individual partners), which is reported in this document, and exploitation of the ideas conceived in the projects supported, which is explained in greater detail in the WP6 and WP7 reports. This document outlines further exploitation opportunities for the project's initial technology research, updates and introduces new exploitable elements to the ones presented in D2.1.

Over the course of the project, the consortium has discovered more exploitation opportunities than originally anticipated. In all, the #MusicBricks team has identified seven distinct business models: exploitation of the knowledge generated within European research institutions; exploitation of the #MusicBricks tools themselves; the addition of new bricks to the toolkit from external third parties; exploitation of the toolkit as a commercially exploitable innovation ecosystem; exploitation of the 11 innovative startup product ideas; the implementation of those products as platforms in themselves; and exploitation of the Creative Content generated for those platforms.

Significantly, the consortium has come to a deeper understanding about the nature of innovation and its relationship with creativity. That understanding forms the underpinning of a series of new activities for coordinating partner Stromatolite, as well as the other consortium partners who intend to extend the working relationship of the #MusicBricks partnership beyond the life of the project. The individual partners have experienced their part in the development, dissemination and feedback into the #MusicBricks process and have expanded their network, created and exchanged new knowledge and have both sought and been presented with opportunities as a result of their individual involvement with #MusicBricks. In addition, the consortium as a whole has come together as something greater than the sum of its parts to create a platform that through the combination of components can contribute to genuinely disruptive innovation that has implication beyond the realms of music and creativity, extending right across industry sectors.

The addition of third party tools, the strategic partnership with a champion European SME audio cloud platform, and the roadmap for development of #MusicBricks as a commercial venture innovation ecosystem extend the project outside the boundaries of the H2020 framework and into the industry as both a commercial product in itself and as a methodology for creating new products and startups.



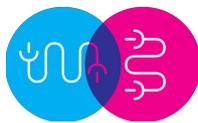
1. Introduction

The #MusicBricks exploitation plan outlines next steps for the #MusicBricks innovation ecosystem and for the 11 innovative startup ideas supported in the framework of the project, as well as further exploiting the project tools and acquired knowledge. The first exploitation plan was drafted at M9 and is updated here at the end of the project (M18), detailing how each project partner and the consortium as a whole intend to make use of technology results and take advantage of their activities in the project after the conclusion of the European funding for this initiative.

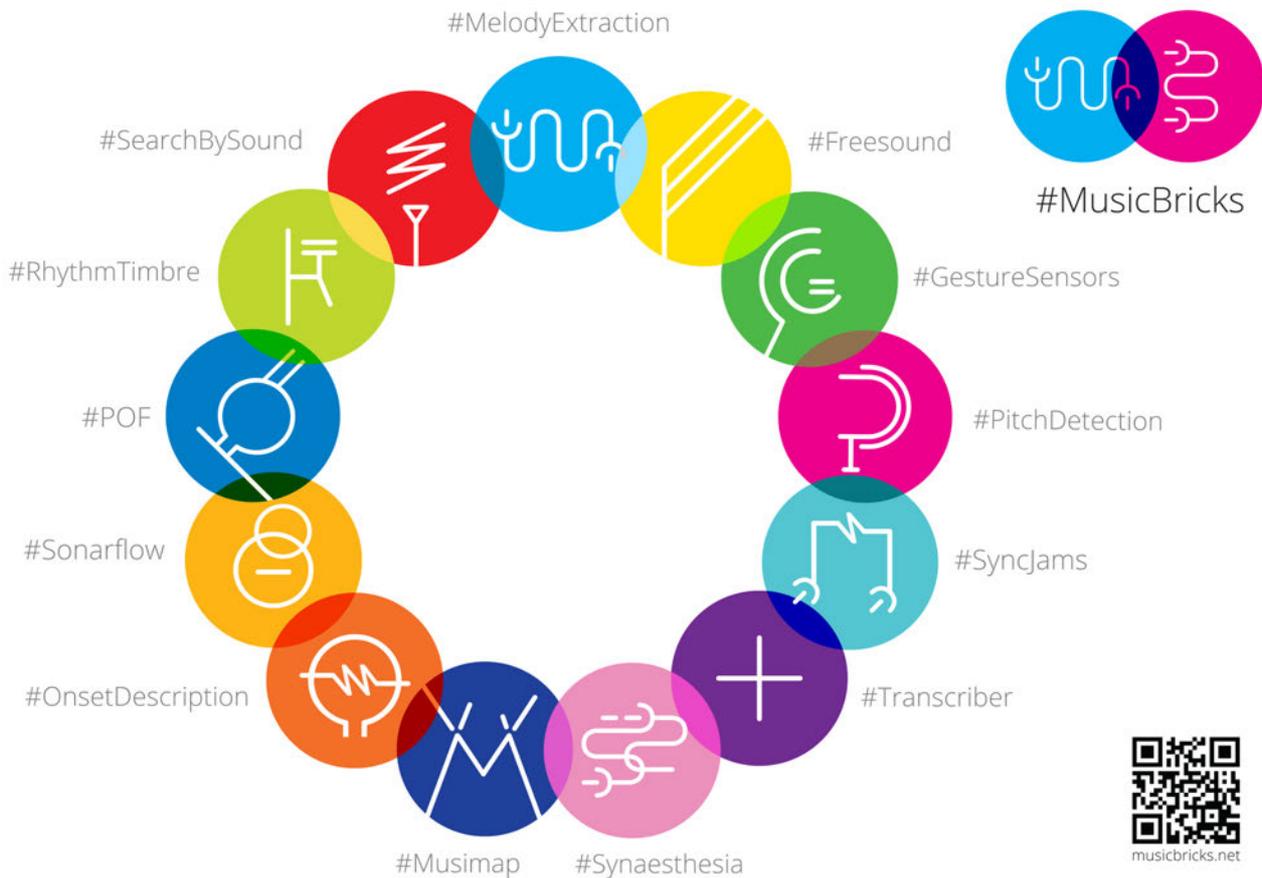
This report outlines the status of the #MusicBricks consortium's current exploitation activities as well as plans for the future. It also explains the ways in which partners plan to benefit from their participation in the project. Exploitation presented here includes the increase of partners' expertise, knowledge acquisition, network enhancement, commercial opportunities, as well as scientific & technological advances.

The commercialisation of the innovative ideas incubated by the #MusicBricks project is explained more fully within WP7 deliverables, which include both the structure of business models towards the commercialisation of the innovative ideas incubated by #MusicBricks, as well as related barriers. This 'exploitation long tail' and the success of these projects complete thus the plan outlined in the present document.

The Exploitation Plan presents exploitation avenues and results for each of the individual partners, as well as at the whole consortium level.



2. Exploitable elements



As the #MusicBricks project concludes, it has become clear that the methodology has borne more routes to market and exploitation opportunities than were originally anticipated. By M18, the consortium has identified seven layers or avenues of exploitation.

2.1) The first layer is the **exploitation of the knowledge generated within European research institutions**, and the ways in which that knowledge is exchanged with and built upon by external stakeholders.

2.2) The second is the **exploitation of the tools themselves: the APIs, GUIs and TUIs** created from those research outputs that form the basis of the #MusicBricks toolkit from which new innovative products have been developed.

2.3) Third is the **addition of new bricks to the toolkit from external third parties** who are not only keen to see their own products developed upon, but also incorporated into an innovation ecosystem that allow creative developers to make new products and processes from a combination of technologies that includes their own.

2.4) Fourth is **exploitation of the toolkit as a commercially exploitable innovation ecosystem in and of itself**.



2.5) Fifth is the market **exploitation of the 11 innovative startup product ideas** that emerged from the creative testbeds at which the tools were deployed and fed back upon.

2.6) The sixth is the **product as platform**.

2.7) The seventh layer of an Innovation Ecosystem is **exploitation of the Creative Content**.

2.1. Research knowledge

2.1.1. Feedback on the tools

Technology partners attending the Creative Testbed as well as the Market Testbed events (Music Tech Fest Scandi; Music Hack Day Barcelona; Music Tech Fest Central; Waves Festival and Music Tech Fest Berlin) not only played a proactive role introducing the tools they developed to the participants of the hackathons hosted by each event, but they also remained at the disposal of the creatives for any questions and elucidations. The interactions with the participants and the novel way they employed the tools proved extremely valuable for the #MusicBricks providers, giving them inputs for improving the tools (in some cases directly on site) and to think of possible integration with other tools and programming languages.

2.1.2. Methodologies replicable as pedagogical approach

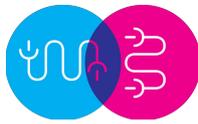
Use of the tools in the creative testbeds provided a environment for rapid transfer of knowledge both between the researchers and creative developers and among the participants from a wide range of disciplines and backgrounds. The feedback from the testbed participants not only informed those tools' ongoing development (as in 2.1.1 above) but also fed directly back into research and teaching within the academic institutions. The methodology created a loop between innovation and pedagogical practice, research and market development.

2.1.3. Network enhancement

The creative testbeds saw the participation of important industry players, such as element14, Soundcloud, Philips and Warner Music, and the project has been communicated to industry stakeholders at key events such as SXSW in Austin, Texas (17 March 2015); TEDx Umeå (23 April 2015); Re:publica Berlin (5-7 May 2015); Open Innovation 2.0 in Espoo, Finland (8-10 June 2015); Net Futures, Brussels (8 May 2016); and Open Innovation 2.0, Amsterdam (23-24 May 2016) (see D2.3 for the full list). Not only #MusicBricks, but also the partners clearly benefit from such exposure.

2.1.4. Methodologies tested and validated in the incubation process

The residency placement system employed in #MusicBricks is the evolution of the one pioneered in the FET-ART Coordination and Support Action (2013-2014, coordinated by Sigma Orionis and including Stromatolite as key consortium member). In the #MusicBricks framework it allows the mentoring of the teams selected during the creative testbed events (remote or F2F, on a case by case basis). This methodology facilitates interdisciplinary, productive and fast collaborations, and is being adopted as a requirement by the European Commission in the Industrial Leadership Pillar of the H2020 Work Programme for 2016 and 2017. More precisely, the STARTS (Science, Technology and the Arts) call for Coordination and Support Actions, identifies ICT & Art residencies as one out of the three core activities to be coordinated by applicants.



The methodology is clearly of interest to the industry as well, as it demonstrates the possibility of fast progresses from simple ideas developed in a 24-hour hackathon, and testifies how routes to market can be focused on shorter ideation/development cycles, alongside with a constant feedback loop. In a moment that sees the crisis of classic music industry big players sources of revenue, as well as the global success of SMEs such as Spotify, it is not surprising that #MusicBricks has attracted for instance the interest of Joshua Saunders, Head of Technical and Creative (Digital) at Warner Music UK, who was following closely the development of one of the incubated projects (Interactive Cube).

Finally, the increasing pace of change concerns all phases of product development, and a lifecycle of a few months is already reality for a variety of technological products. #MusicBricks proposes a solution to cope with fast-changing markets that can be applied beyond the music sector including proactive users in the exploitation of technology, producing thus a creative fruitful collision of different expertise and uses, opening new avenues that the technology provider alone would not have considered.

2.1.5. Solutions replicable in future European funded projects

Besides the residency methodology cited above, some administrative items required a strong collective effort, and the way the consortium tackled these challenges can open the way for an easier implication of new actors in European funded frameworks. These items are namely:

- Handling the Intellectual Property in the Consortium Agreement
- Elaborating a residency contract valid across Europe

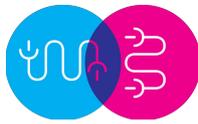
The above contracts were given special attention and focus because the partners considered them extremely important for securing the successful exploitation of the project (see Section 3).

2.2. APIs, GUIs and TUIs

In addition to the research knowledge that created the technologies behind the tools, the #MusicBricks tools themselves are exploitable both as individual technological components and as a suite of complementary tools that can be used in any combination to create new projects, prototypes and products. This has been demonstrated within the creative testbeds over the life of the project and has been the subject of a great deal of interest from third parties: some of whom wish to have their own tools incorporated into the toolkit; some who wish to use the tools as part of their own commercial R&D and innovation process; and others who have requested the toolkit to be available to makers and creative developers at their own hackathon events.

Each of the tools (or 'bricks') are outlined in their final project iteration in D7.3:

- Gesture Sensors for Music Performance
- Freesound API
- Rhythm and Timbre Analysis
- Search by Sound Music Similarity



- Real-time Pitch Detection
- Melody Extraction
- Real-time Onset description
- Transcriber
- Goatify
- Real-Time Pitch-Shifting and Time-Stretching

2.3. Third party tools

A new exploitation route was revealed when third party industry stakeholders requested to integrate their IP into the #MusicBricks toolkit. The motivation for this was the popularity of #MusicBricks and the Innovation Ecosystem which the tools were embedded in and helped grow, particularly at Music Tech Fest events (third party tools were added at Music Tech Fest Scandi, Central and Berlin).

Third party industry stakeholders expressed that by embedding their tools into the #MusicBricks toolkit their IP becomes has a wider reach, and through much higher numbers of Early Adopters becomes more powerful and opens further exploitation channels for their companies (see testimony below).

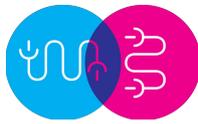
The project partners received several requests from global companies wishing to embed their tools into #MusicBricks, including companies from US and China, but partners had to insist that the terms under which the tools were deployed remained open to the #MusicBricks Innovation Ecosystem, and that licenses for commercialisation were set under fair and reasonable conditions. For this reason only the following companies' IP has been integrated:

2.3.1. *Ninja Tune: SyncJams and POF*

The SyncJams and POF projects are led by Matt Black - industry pioneer, DJ, VJ, Ninja Tune founder and manager, one half of sampling legends Coldcut and godfather to the Music Tech Fest.

After 300,000 downloads of their iOS app, Coldcut and NinjaTune launched their [NinjaJamm Android app](#), which allows users to cut, glitch, mash and mix to make their own music, featuring loops and samples by the likes of Amon Tobin, Bonobo and Roots Manuva. As part of his continued effort to enable mass use of creative music tools, Matt Black teamed up with established developers Chris McCormick and Antoine Rousseau, to develop Open Source applications SyncJams and POF.

"Really happy to be joining the awesome #MusicBricks project. The whole concept of making tools freely available, providing space for makers and hackers and then supporting what's made with them is just brilliant. This is a new cooperative Win strategy. Looking forward to see what comes out of our #MusicBricks offerings. Onwards!" — **Matt Black, Coldcut / Ninja Tune**



2.3.2. Spectralmind: Sonarflow

Spectralmind was a startup-company co-founded 2008 by four music enthusiasts and semantic audio analysis experts in Vienna, Austria: Thomas Lidy, Ewald Peiszer, Johann Waldherr and Wolfgang Jochum.

They created industry-grade audio analysis software based on prior research at Vienna University of Technology. Based on this audio analysis core, they built music search and recommendation products for professionals and music discovery apps for consumers on the Web and using iOS and Android smartphones.

The company ramped down in 2013 and closed in 2015 as it did not achieve its internationalisation goals. Throughout more than 5 years, a team of 12 engineers, researchers, UI-specialists and product & business development built an asset of a full software stack from fast industry-level audio analysis to fully-fledged interfaces for music search and recommendation.

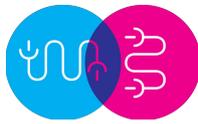
The Spectralmind board decided to provide this software as #MusicBricks tools as there is a high potential of other people using part of this large software stack in various other projects. The software is very modular and can easily be used as building blocks for other, even bigger software projects around music and media search and recommendation. The entire software stack has been published on <https://github.com/spectralmind> under the MIT license, which not only provides the code open source, but also enables usage in commercial projects.

The Spectralmind board explicitly wished for the software to live on and evolve and be potentially used in other innovative projects, be it free as open source or also commercially. Publishing it as part of MusicBricks brings the stack into a community of hackers, creative people and SMEs - the ones that benefit the most of such a software package. In turn, Spectralmind benefits from the visibility in donating their entire software to the public community, which might be beneficial to its owners acting as advisors for these building blocks. Thomas Lidy, former CEO of Spectralmind, is available to advise people throughout the #MusicBricks incubation program and also Ewald Peiszer, former CTO of Spectralmind, joined #MusicBricks for #MTFCentral in Ljubljana to advise people on how to use the software.

2.3.3. Musimap

Musimap is one of the most powerful independent Music APIs worldwide – particularly significant since The Echo Nest closed access to its API on May 31st 2016. The granular and proprietary database includes over 3B data points, 2B relations, and soon counting 50M songs. Its neural music network is the result of a unique combination of in-depth human curation and the latest AI technologies to engineer a multi-layered system of crossed influences, where 55 weighted parameters are applied to each music unit. The API uses the world's leading graph database Neo4j, which has recently played a crucial role in the discovery of the Panama Papers.

In addition to BPM annotations and hundreds of genres, the API comprehends nuances of emotions (400+ complex moods), understands them in contexts (100+ situations), and interprets their complexity through its extensive lexicology (11K+ keywords) - an unmatched level of semantic clustering. It allows semi-automated and self-learning real-time personalized recommendation,



search engine (including song-based search by soundalikes), curation at scale, intuitive navigation and discovery tools, and is next to mastering user profiling (socio-psychological and musicological).

Musimap joined in the Creative Testbed at Music Tech Fest Central Europe in September 2015 and has worked to become a part of the #MusicBricks toolkit in order to integrate its own powerful tools with those of others so that creative developers and makers would be able to use the algorithm in combination with a range of technologies, opening the platform to the potential for new and unanticipated opportunities for disruptive innovation.

2.3.4. Partner Stromatolite: Synaesthesia

Even though not one of the partner academic research centres, and originally unplanned in the DoA, partner Stromatolite decided to contribute an open API version of its Synaesthesia IP, which was originally created for the Music Tech Fest in 2012.

The original application, created for the iPhone and Android platforms was the winner of the NEM Art Prize for “Art Meets Science” (Istanbul, 2012), and had thousands of downloads. Rather than update the application to another closed version for the mobile platforms, the partner decided to open the tool to innovators, release it on Github as open innovation, and integrate it into the #MusicBricks toolkit.

2.3.5. SoundCloud

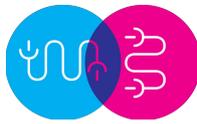
The audio platform and champion European creative SME SoundCloud plans for the service to function as the host and repository for musical creativity created by anyone using #MusicBricks products or projects. Through integration with SoundCloud’s own API, music created using products built with #MusicBricks will be automatically uploaded to SoundCloud, allowing products and tools to integrate with the hosting platform.

2.4. Toolkit as Innovation Ecosystem

A major discovery of this Innovation Action has been the commercial potential of the #MusicBricks Toolkit of APIs, GUIs and TUIs as a growing Innovation Ecosystem comprising both tools and communities of innovators, Early Adopters, Research and Industry Partners.

The value of this new business model was highlighted early on by external industry partners Abbey Road Red, Warner Music UK, Native Instruments and SoundCloud, and later by other major global tool manufacturers such as element14 / Premier Farnell. All these industry stakeholders advocated building the toolkit exponentially with further tools and expanding the Innovation Ecosystem as a model to monetise on the multiple value sets embedded within such a platform.

Following market advice and upon demand by the above stakeholders, partner Stromatolite shifted focus from the one-size-fits-all solution of a Music Tech Fund supporting individual projects and products, to registering #MusicBricks as a Limited Company and a vehicle to capture multiple partnerships on offer by interested industry parties.



2.5. Innovative startup ideas

One of the key objectives of the #MusicBricks project is to ensure that the tools and technologies developed by academic partners and described above are integrated into products that can be exploited commercially. This is central to the process leading from WP5 to WP7.

The exploitation of the suite by third parties is completed by the benefits that each partner and the consortium as a whole will be able to draw from their participation in this innovation. Exploitation for these projects primarily takes the form of the presentation to industry and investors at the market testbed at Music Tech Fest Berlin at the end of May 2016, which included pitches to investors as well as performance-based presentations and stands within the festival area where early adopters and music technology professionals could interact with the developers, try the products and ask questions. This is described in greater detail in deliverable D7.3, and more comprehensive explanations of the projects and products themselves as well as an evaluation of the market potential of each project can be found in D7.1.

The projects range from new gesture-driven musical instrument interfaces to interactive performance concepts using brainwaves to control visuals and sound.

2.5.1. *Airstrument*



Airstrument is a gesture-driven instrument that works “in the air” through a wristband with motion and gesture sensors. The software flow allows the user to ‘upload’ a song / audio file, process it using the #MusicBricks tools (detect chords, progression, scale, scale shifts) and play along always in tune with the harmony, rhythm and melody of the original piece. It uses the #MusicBricks R-IoT sensor to track movements and also comprise a new, intuitive musical UX.

2.5.2. *Dolphin*

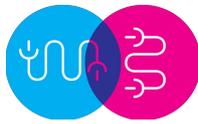
Dolphin is a gesture-sensing headphone interface. It uses the R-IoT board and allows the user to navigate menus completely hands-free through head movement. The framework is adapted from some available open source libraries, and comprises a set of tools and libraries, which can load and run special applications written for Dolphin.

2.5.3. *FindingSomething BondingSounding*

FindingSomething BondingSounding is an audiovisual performance involving movement sensors and neurofeedback from brainwave sensors (brain-computer-interfaces). It represents the duality between the mind and the body and the conflict that exists between them. The mind controls audio and video samples organized in a mental playlist according to its activation or relaxation and the body controls the effects according to its position, acceleration and angle.

2.5.4. *Hi Note*

Hi Note is a hands-free wireless accessible musical instrument that uses breath control, head movements and other gestures to control music via a MIDI interface. The project aim was to design and develop a device allowing the chance of a profession in music to someone who can't access tools that fit the user's physical ability.



2.5.5. LightBeat

LightBeat is a platform for a universal music visualization solution based on the idea of Collaborative Playlisting in a bar or at a party at home. LightBeat adds an immersive light environment by analyzing the sound for beats. By incorporating music analysis technology, pre-analyzed music is visualized on a range of connected devices and integrates the #MusicBricks Transcriber with the Philips Hue wireless LED light system.

2.5.6. Snitch

The Snitch is a mobile tool that allows musicians to play musical and visual samples that are in tune and in keeping with an existing musical ambience. The application analyses the music being performed and estimates the chord as well as other useful features such as the spectral profile. It also exports the analysed information to be used as real time data to animate visuals.

2.5.7. Enboard

Enboard is an audiovisual project that maps the specific physical expressions of skateboarding to generate a unique audio-visual live experience. The project uses a R-IoT sensor to map different skateboarding states, as well as a microphone to input live skating sounds, which can be used as live sound assets and to create compelling visuals from the movements of the skateboarder.



2.5.8. Interactive Cube

This project is a handheld interactive cube display and interface for manipulating audio. The cube's orientation is tracked using the R-IoT device. The orientation also defines the mix of five audio loops. Moreover, the movement of the cube drives a stereo panning effect. The colour and size of the sphere, as well as the VU audio meters, are regulated by the audio signal.

2.5.9. GIRD: Gesture-based Interactive Remix Dancefloor

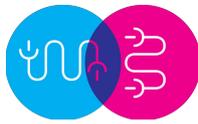
GIRD is a gesture-based interactive dance floor experience that allows a performer or audience members to interact with music in an immersive environment. The lighting in the environment plays a vital role. Using individually programmable LED “neo pixels”, the project creates individual lighting fixtures. Each fixture will be a standalone hardware device driven by PD on a Raspberry Pi and enabled via wireless signal or its internal microphone.

2.5.10. Manuphonia

Manuphonia is a product that combines hardware sensors, machine learning techniques and software to maps sounds to gestures. An Android application implements a library for effective gesture recognition combined with samples for different instruments and a library of predefined sounds. In addition, it plans to give the user the ability to record custom gestures and bind them to existing samples for each connected sensor.

2.5.11. Sound in Translation

Sound in Translation is a tool that creates music loops from a user's music collection to fit an initial musical idea for live performance or in the generation of ideas by studio composers. Loops are arranged in a grid of buttons using automatically computed musical information. The tool also helps the musician by providing visual feedback on the process, either at the computer or controller interface, if the controller supports it.



2.6. Product as Platform

Aside from the #MusicBricks Toolkit becoming a platform for the development of a multi-stakeholder Innovation Ecosystem, several product prototypes which emerged from the #MusicBricks testbeds have proven to have the potential to be developed into content platforms.

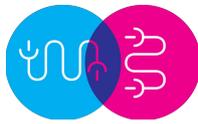
In the case of headphone-based or skateboard-based gesture-activated systems, it was clear to the Innovation Coordinator that these products have themselves the potential to release APIs which would enable other Creative Developers to build content that would unleash further modes of interaction with these products. In true spirit of Open Innovation, these products have the ability to grow further Innovation Ecosystems around their specific capabilities.

Please refer to D7.3 for concrete examples of these business models and routes to market, in particular the iterations of the Dolphin product. From an exploitation perspective, Dolphin represents multiple layers of the seven business models for exploitation discussed here.

2.7. Exploitation of Creative Content

Products with the ability to become open platforms generate their own Innovation Ecosystems of Content Creators. At least one product from the 11 created confirms to have the creation of this layer in its future development roadmap.

With the creation of open APIs for #MusicBricks products, Content Creators will be able to monetise on the content generated for these platforms.



3. Partners' Individual Exploitation Plans

The elements cited in Section 2 have fed each partner's expertise (technological, legal, industrial) into the project, and have contributed to the consortium's competitiveness, their strategic positioning in the music industry, in the H2020 framework and beyond.

The exploitation plans of the individual project partners as at M18 of the project have developed and expanded upon the answers given to the Exploitation questionnaire introduced in D2.2. Many of the original plans and objectives for further development have remained largely unchanged since M9 as the strategies were part of a longer term game plan and not merely responsive to the results of the market testbed. However, over time, further opportunities for exploitation have arisen and these are noted below, incorporated into each project partner's individual dissemination plan.

Q 1: Expectations / Motivation. What is the main reason why your organisation got involved in the #MusicBricks initiative? What did your organisation expect to achieve in joining the #MB consortium? (Increase of your expertise, knowledge acquisition, network enhancement, commercial opportunities, scientific/ technological advances, etc.)

Q 2. Current exploitation. How the participation to #MusicBricks is currently being used/ exploited by your organisation, and in which measure is it influencing your strategy and activities? (Feedback, knowledge acquisition, network enhancement, scientific/ technological advances, etc.)

Q 3. Future exploitation. How does your organisation plan to exploit #MusicBricks outcomes after the project?

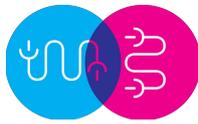
3.1. Sigma Orionis (until Month 15)

3.1.1. Initial expectations and motivation to join to consortium

Sigma Orionis is specialised in bringing research to innovation and markets, and has a long-standing expertise (31 years) in European funded projects. The company considers #MusicBricks a strategic project to be part of as it is pioneering new routes to market for technology research. The project ambition resonates with Sigma Orionis' Creative and Civic Innovation Unit (CCI) one, which experiments creative and interdisciplinary models for bridging technology research to innovation and to civic society. Empowering citizens through collective intelligence and unleashing the power of European creative excellence are its two major areas of action.

If a collaboration with the Innovation Coordinator and contacts with the other partners were already established, the project provides Sigma Orionis the opportunity to strengthen its links with the top European research centres for music technology, and to lay the foundation of future collaborations.

By coordinating the #Musicbricks project Sigma Orionis expects not only to add a relevant experience to its portfolio, but also to enhance its network in the music industry and to consolidate methodologies and processes it has contributed to launch.



3.1.2. Current exploitation of #MusicBricks

As any pioneer project, #MusicBricks presented so far challenges that had to be solved at the coordinator's level (e.g. framing IP rights in the consortium agreement) and provided Sigma Orionis with use cases and solutions suitable to be exploited in further projects. The company is at present collecting and analysing best practices and methods (this same report is partly a distillation of this knowledge), and plans to utilise them outside the boundaries of the CCI Unit and of the #MusicBricks project.

Presenting the project in external events, as well as taking part to the project testbeds, enhanced the company visibility and positioning, thus enlarging its network.

3.1.3. Plans for the exploitation after the grant end

Sigma Orionis involvement in the #MusicBricks project will increase the overall potential of the company as far as its four core services are concerned: technology and market research, promotion and exploitation of research projects, organisation of cooperation and business events, support to the involvement in EU-funded programmes.

Sigma Orionis plans to further collaborate with the consortium members and to exploit the knowledge acquired thanks to #MusicBricks in future projects and publications and in the CCI Unit development strategy.

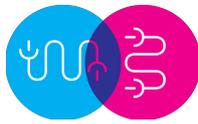
3.2. Stromatolite

3.2.1. Initial expectations and motivation to join to consortium

Stromatolite believes that building a wider ecosystem around the creative industry of music technology brings more awareness to this sector and more demands for its goods and services, which in turn benefits all stakeholders involved. Proof of this has been seen in the successful #MusicBricks campaign, which highlighted the benefits of the #MusicBricks music technology ecosystem, and prompted external industry stakeholders to invest their tools into the project, thus adding more value to the toolkit. Partnerships forged through such collaborations and alliances are expected to bring long-term benefits to all stakeholders involved. Stromatolite is interested in creating the conditions for genuinely disruptive innovation, not just in the creative sector - but using creativity as a platform for innovation across industry verticals.

3.2.2. Current exploitation of Musicbricks

As a toolkit which stimulates the seeding of creative ideas and the generation of new markets and business models, #MusicBricks forms a valuable part of the Music Tech Fest ecosystem, which has built a community of highly engaged contributors across multiple geographies, across industry and academia, across age groups and across multiple disciplines from the finest arts to the most advanced technologies. At its core, Music Tech Fest is a festival of ideas, a melting pot for the ideas and creativity of all of these contributors. As a community-led event, it functions best with a minimum of formality and structure, eschewing the agenda-driven format of a traditional conference, while maintaining a thematic consistency, and importantly striving to avoid prohibitive costs to contributors to ensure that it is open to all, and maximally beneficial to its community.



For third party stakeholders in the music technology landscape, seeding ideas with #MusicBricks at the Music Tech Fest Creative Testbeds may represent either pure blue sky R&D - simply watching for ideas or applications that may fit their requirements - or more directed R&D where their requirements, technology, applications, data, etc. are seeded into the community. This interest has been harnessed in the form of match funding and equipment in kind, by major brands in both the music and technology landscapes (e.g. Soundcloud, Philips, Ableton, Warner Music, etc. - see the full list in the footer of <http://www.musictechfest.net/>). As Music Tech Fest has grown in scale and profile there is a strong argument that the interest of these and other new stakeholders in the music tech value chain can be harnessed in a more meaningful fashion.

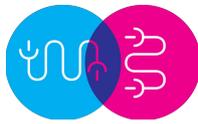
In conjunction with Music Tech Fest and Par Equity, Stromatolite planned to establish a Music Tech Fund, in order to engage a large number and variety of commercial industry players e.g.: music services, record companies, music publishers, performing rights organisations, music tech companies, music device and equipment manufacturers, mobile carriers, music and sound production and post-production, sound engineering, creative marketing, mobile apps, gaming, live events, etc. (as noted in the “MIReS Roadmap”, the FP7 CSA from which the festival evolved). In terms of novel business models, an interesting reference point are those corporates involved in the Project Music accelerator investment programme in Nashville <http://www.ec.co/projectmusic/> (e.g. Digital Entertainment Ventures, Google, Creative Artists Agency, Universal Music, Red Light Management and Galante Entertainment).

3.2.3. Plans for the exploitation after the grant end

#MusicBricks has demonstrated that the project’s Open Innovation approach has successfully enabled rapidly evolving layers of innovation, supported by the creative seeding of ideas and strong marketing and business direction and support. In addition, as the project has matured, the #MusicBricks methodology and trajectory has revealed insights about the potential for exploitation through the building of an Innovation Ecosystem. See Stromatolite CEO and #MusicBricks Innovation Coordinator Michela Magas’s article **7 ingredients to build a successful innovation ecosystem** (<http://www.elasticengine.com/7-ingredients-to-build-a-successful-innovation-ecosystem>).

The ecosystem has been built on the following pillars:

1. Creating a **#MusicBricks Components Toolkit** for the sector of music technology (at first derived from academic research results, but now with the addition of industry tools) which ports knowledge from academic research centres directly over to the innovator communities, and can be combined with another sector’s toolkit for experimentation.
2. **#MusicBricks Product Prototypes** have been developed from seed ideas using the #MusicBricks toolkit following the principle of Open Innovation (a range of 11 projects - from data-enhanced product and hardware to SaaS), and have successfully addressed a wide spectrum of industry verticals.
3. **#MusicBricks Product as a Platform** - some of the above #MusicBricks product prototypes allow applications to be built on top. E.g. the #MusicBricks project Dolphin (gesture-driven



spacial audio headphones) and Enboard (motion-driven music playlisting skateboard) are both potential platforms enabling gaming developers to build applications for these products.

4. **#MusicBricks Creative Content** can be built for the above by engaging platform content creators (e.g. creative developers, media content and product makers)

Rather than establishing a Music Tech Fund to emulate existing models of investor funding and accelerator / incubator structures in the attempt to yield a ‘unicorn’ business opportunity and exit exclusively for high net worth individuals and companies, Stromatolite is interested in facilitating a sustainable platform for successful businesses built on a platform of Open Innovation, with major industry partnerships to provide routes to both markets and resources. The company has been encouraged to register a separate spin-off LTD company by major partners who wish to have a vehicle for the toolkit and are looking to further develop both the toolkit and the products and projects that have emerged from it. For instance, Stromatolite has partnered with the newly established #MusicBricks startup Sojaner to combine the newly patented ‘Dolphin’ technologies with its own Sonaris Systems because of the complementarity between the two. Sojaner and Stromatolite are jointly in talks with major industry partners about further commercial development.

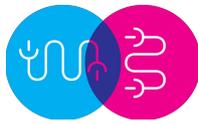
4.3. TU Wien

4.3.1. *Initial expectations and motivation to join to consortium*

TU Wien was successfully involved in European research networks already in FP5, 6 and 7, e.g. in the Digital Library initiative DELOS, the MUSCLE project on multimedia understanding and the CHORUS+ multimedia benchmarking initiative. The consortium of MusicBricks is particularly interesting, as it comprises top European institutions in Audio and Music Analysis: UPF Barcelona, IRCAM Paris, Fraunhofer Germany and companies Stromatolite in UK and Sigma Orionis in France. While there existed loose collaborations with nearly all of them prior to the project, joining this initiative will certainly strengthen partnerships among these institutions and lay the foundation for future collaborations. These collaborations might include academic publications, integration of software, research partnerships and exchanges as well as overall a positive visibility in the research community and beyond. Moreover, the provision of software tools as outcome of prior research as a common pool of “bricks” to a larger audience of creators, SMEs and industry will certainly have a positive effect, both on improving the tools towards industrial applications and on the integration level. Communication-wise this will also have a large effect on our institution. On top of that, a major benefit is to get in touch with industry players in this sector, such as Soundcloud or Philips, which also may be potential future partners.

4.3.2. *Current exploitation of Musicbricks*

In the first phase of MusicBricks, the main benefit of the project is to gather a lot of feedback from the creators (hackers) who are working with the MusicBricks tools. Already after the first 2 events organized by MusicBricks, there was a reasonably large number of feedback from applying the music analysis tools in both live performance, experimental but also industrial settings which turned out to be really valuable to improve the tools towards this respect both in terms of stability and various additional features that were not primarily addressed by the research earlier. Additional



feedback is gathered from the partners within MusicBricks, where an exchange of ideas and feedback takes place, which also benefits the tools themselves. The entire consortium learns from the manifold applications of the tools devised in the “hacker events” co-organized by MusicBricks and the manifold use cases therein.

In particular the combination of various tools as shown by different creators makes this initiative very interesting and the partners in the project can learn from applying each others tools jointly and aim for making integration more simple. This includes knowledge exchange and exchange of competencies which were not in the focus of each institution prior to this project: As the “Institute of Software Technology’s Information & Software Engineering Group“ of TU Wien, we are not primarily focused on physical and tangible devices and have learned a lot about the use of (e.g. gesture) sensors in real-time environments together with software. Also, the collaboration with other partners with similar research areas makes a lot of sense to mutually strengthen the research outcome and aspects of stability and integration. TU Wien and UPF-MTG established 2 research visits in the course of the MusicBricks project; another one with IRCAM is being discussed.

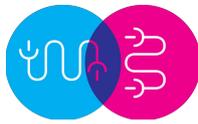
4.3.3. Plans for the exploitation after the grant end

The feedback gathered during the project about the tools will certainly stimulate future research, which can already incorporate use-cases, requirements and issues of “real-world” scenarios early on. Knowing the tools from MusicBricks very well will also largely benefit university teaching as several of these tools can be employed in both lectures and teaching assignments. This in turn will again gather valuable feedback for all of the tools. The tools themselves can be integrated and used in larger systems in future research projects.

Far more than that, MusicBricks implicitly initiates a large network of people across many disciplines, with backgrounds as researchers, creators, artists, entrepreneurs, etc. This network provokes exchange of ideas far beyond the traditionally technology-centred aspects that a technical university usually focuses on and therefore opens up inter-disciplinary research aspects that were not considered before. Potential partnerships with companies that were involved with MusicBricks are an additional benefit for future exploitation.

For instance, a collaboration is explored with Brussels based company MusiMap, which is on the way to become also a provider of a #MusicBricks tool. Also, Vienna based company Sofasession became aware about the TU Wien efforts in #MusicBricks and wishes to establish a research collaboration.

With #MusicBricks, the first Waves Central Europe Music Hackday was realised in Vienna in October 2015. As the event was very successful, it will now be continued and established on a regular basis. Thanks to the first initial support through MusicBricks and its professional organisation and dissemination, the event sparked wider interest and enabled to get further sponsors on board for 2016 such as the SAE audio education schools and Red Bull Music Academy.



Moreover, for the 2016 edition of the Waves Music Hackday a consortium involving 3 Austrian universities, the Waves organisation, Red Bull Music Academy and Europeana was created, which is a tremendous success in connecting multiple partners from different domains together to organise an interdisciplinary event. Therefore the exploitation arising from #MusicBricks already happens to a much larger extent than anticipated.

4.4. IRCAM

4.4.1. Initial expectations and motivation to join to consortium

#MusicBricks represents for us the opportunity to reach a broader community interested in our gestural and tangible interfaces developments. While we are used to deal with artists, academic communities (such as the audio technology and computer human interactions communities), specialised industries, #MusicBricks bring us the possibility to reach towards larger communities of “Makers” who are playing an increasing role for innovation in Europe. It is then particularly interesting to evaluate the readiness of our tools in this context, since this type of technology is evolving very fast. This implies gauging our technology and improving it in order to facilitate the take up by potential industrial partners and start-ups.

4.4.2. Current exploitation of Musicbricks

The participation in #MusicBricks allowed us to clearly confirm the large demand in wireless motion sensing technologies. In particular, #MusicBricks gave us the opportunity to improve and duplicate our current hardware, called R-IoT, which opens new opportunity for both research, artistic endeavours and transmission through hackathons and workshops. #MusicBricks gave the momentum needed to duplicate our tools and disseminate our movement interaction approach. Importantly, #MusicBricks also allows us to improve the interface of our gesture analysis software (API), to be used in different platforms (embedded microcontrollers, desktop and mobiles)

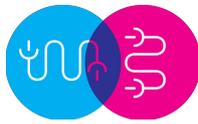
4.4.3. Plans for the exploitation after the grant end

The #MusicBricks outcome is twofold. First, the project gives us the opportunity to broadly disseminate a number of basic tools to a large community of researchers, designers, makers and artists interested in non-commercial applications. This will be continued after the project. Second, it gives us the opportunity to further seek new industrial partners (startups and other industries) interested in licensing IRCAM technologies.

IRCAM will exploit the RIoT technology, both the wireless motion sensor and the associated software for movement analysis, in projects such as CoSiMa (<https://cosima.ircam.fr/>, funded by the French National Research Agency) and the EU projects RapidMix (H2020, <http://rapidmix.goldsmithsdigital.com/>) and SKAT-VG (FET project FP7 <http://skatvg.iuav.it/>)

The RiOT technology is also being used in artistic production projects at IRCAM. The first ongoing productions featuring it are the following :

- The Light Princess, opera by Violetta Cruz, premiered in February 2017 at Opéra Comique, Paris. Director : Jos Houben.
- Mockumentary of a contemporary saviour, by Wim Vandekeybus, premiered in KVS Brussels in April 2017 and performed for French Premiere at IRCAM's ManiFeste Festival - June 2017..



Commercial applications in music, gaming and rehabilitation are actively considered with various partners. In the context of the RapidMix project, a collaboration is pursued to develop a new version of the RiOT for the company PLUX. Discussions with other companies for the manufacturing and distribution of a commercial version of the RiOT board are also ongoing. The distribution of the board and its related software are also foreseen as part of the evolution of IRCAM's forumnet (forumnet.ircam.fr, 5000+ registered users).

4.5. UPF

4.5.1. *Initial expectations and motivation to join to consortium*

The Music Technology Group is internationally recognised for its track record in TechTransfer (regular collaborations with companies, licensing of technologies, establishment of 3 spin-off companies) as well as for investing important efforts in producing impact at socio-economic level, in form of concerts through the [Phonos project](#), organising [workshops in schools](#) to foster interest in sound and sound technologies and the [Music Hack Day in Barcelona](#) amongst others.

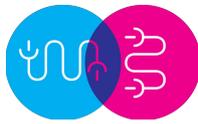
The reason why we yearly organise the Music Hack Day is because it represents not only the perfect environment for us to get feedback about our technologies directly from end users but also a way to discover new use cases and understanding the needs that our technologies must fulfil in order to prove to be useful for the creative community. This valuable information directly feeds our development roadmap in order to optimise our technological assets, making them more appealing for the market and thus more likely to be transferred.

It is then natural for us to be interested in participating to #MusicBricks, which promotes a number of values that are really aligned with our current strategy. In addition, thanks to this project we can host creators and help them incubating their projects empowered by our technologies and thus helping them taking the most of our technologies (and developing better use case integrating our technologies). Moreover, it constitutes a good showroom of our technologies not only for hackers and the makers community but also a great number of stakeholders at European level. At last, it also helps us spreading our academic network at European level and strengthening our links with the #MusicBricks partners IRCAM, TUWien, Fraunhofer, and of course Stromatolite and Sigma Orionis acting as innovation catalysts.

4.5.2. *Current exploitation of #MusicBricks*

As introduced above, #MusicBricks helps us to better understand the real market needs and thus the knowledge we are gaining through the hackathons and incubations are feeding into our development roadmap.

In conclusion, we can figure out and try strategies to enable additional pathways for sophisticated technologies to get to market in a way that is coherent to us as a research centre. It is also interesting to see how other European research centres are dealing with innovation processes and TechTransfer.



4.5.3. Plans for the exploitation after the grant end

The ‘Bricks’ that we have provided to #MusicBricks (Essentia and Freesound.org) are technologies released under open source licenses and thus it is crucial for us to engage developers and find ways to make their communities sustainable. We have other ongoing (private and publicly funded) projects that are allowing the pure technological development of those technologies, while projects like #MusicBricks and initiatives like the Music Hack Day help us to maximise their exposure to potential clients and users, gaining more knowledge about how to improve them and making them more useful for the developers.

The two main technologies provided by UPF in the context of the MusicBricks project (Freesound and Essentia) are continuously further extended. For example, in the context of a new H2020 funded project Audio Commons project (www.audiocommons.org), researchers at UPF will implement new functionalities to the FreeSound API in the coming months. 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.

4.6. Fraunhofer IDMT

4.6.1. Initial expectations and motivation to join to consortium

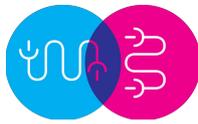
Even if we’re doing applied research and the brand name Fraunhofer is well established worldwide, we do need more feedback from the market and especially from the creative people for our developed tools and our ideas. Taking some very useful tools from our portfolio which are offering basic functionality and bringing them to the creative environment will hopefully prove to be valuable and informative. Even if an idea receives negative feedback when taken to market, this is very valuable information for us. Usually an institute presents papers at conferences to a lot of like-minded people with the same high-level background, though that often lacks real substantial feedback. On the other hand, software created for commercial applications and offered to IT services of potential customers may not return helpful evaluations.

Joining the #Musicbricks consortium means for us: presenting a set of tools to people with a very creative mindset without any specified previous knowledge, so that they will be able to use our technology with a flick of a finger. With the creative thinking “outside the box” and the experience of the creator’s activity with our tools, we hope to improve not only the quality of our software but also the commercial potential when it comes to new licensing or product opportunities, beside additional contacts and a broader network to a great new community of creative people.

4.6.2. Current exploitation of #MusicBricks

In the discussion with our existing licence partners #MusicBricks have often been part of our discussion in a developing cooperation, as well as part of the talks about partnering with organisations like Audiolabs in Erlangen or other specified institutes. Everybody has been very interested in this kind of incubation and the possible outcome. On the other hand potential partners like AxelSpringer SE, Native Instruments and others, who are interested in products and projects based on the used topics, have also been very interested to see how #MusicBricks is bringing

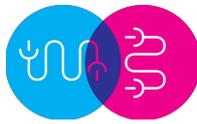
Page 24 of 30



together new ideas and a new way of incubation with the help of leading research institutes. The evolving connections in this project have played an active role in our public relations and we are getting back benefits which we are finding have positive marketing effects for our licensing business and applied research.

4.6.3. Plans for the exploitation after the grant end

At the moment we are working together with our #MusicBricks partners to estimate the efforts and the possible success of the ideas which are already incubated. Some of the candidates for the next stage have chosen our tools and merged their ideas into new products. We are also gathering feedback that will lead to a more easy access to our SDKs and therefore we are planning not only new documentation but also some interactive or video tutorial, which will also help us in our communications with existing or new licensing partners. In the way we are communicating with all the stakeholders of these incubated teams and their approaches, we are checking the potential outcome for a partnership or to take an idea to a new level. While some members of our team were involved in the various testbeds, they have decided to organise academic hack events which will use all tools from #MusicBricks together with a department from the Fraunhofer IIS (MP3 inventors), the Audiolabs Erlangen and the Technical University Ilmenau. Our goal would be, to involve more people to think about new and innovative products based on research, because this is a very important repository for new ways of exploiting scientific work. Our favourite scenario is, to bring together one of the incubated teams using our tools with an existing or potential partner, to generate a real product or project as a direct outcome of #MusicBricks. For example, we've connected one of the licensees using our #MusicBricks contributions already (Jamahook AG, SUI) to one of the projects (Sound in Translation) to exchange business opportunities, which also received interest from one of the partners here (Native Instruments) after the final event. That is why we are already mentoring the incubated teams and are planning to intensify our efforts for the consulting tasks in WP7.



5. Collaborative exploitation plans of the #MusicBricks consortium

5.1. The #MusicBricks company

#MusicBricks partners providing technology and Stromatolite will continue collaborating after the end of the European grant under the lead of the newly established #MusicBricks company, which will make the toolkit sustainable and federalise further industry stakeholders. Through partnership with component manufacturers and distributors and by working to further enhance the suite of tools with the integration of additional bricks, the team will build upon the already strong #MusicBricks brand that has been solidly established in the minds and practices of the creative development communities that intersect with the Music Tech Fest and beyond. See deliverable D2.3 for more information about dissemination and the significant public, industry, academic and media interest in the #MusicBricks project.

5.2. Collaborating with key industry actors

Besides individual partners network enhancement, the suite as a whole has proved to be a valuable asset to be exploited with industry players. The creative ways the Philips Hue controllable lighting system was enhanced with the help of the suite at the Music Tech Fest Central testbed, adds a layer to the above-explained cooperative strategy. A big potential suited to be examined relies thus not only in adding new bricks, but also in exploring novel ways to bridge the tools and transversal applications with other technologies and frameworks.

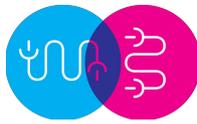
5.3. Distilling methodologies and case studies to support innovation in H2020

5.3.1. *Regulating external innovation parties within the consortium agreement*

The elaboration of the #MusicBricks Consortium Agreement proved extremely challenging as the DESCA template does not provide a clear guidance about cases where Intellectual Property regulation is not just an internal consortium matter but can affect directly the implementation of the action: in the #MusicBricks case the project is based on the principle of letting third parties develop new product ideas based on the technologies developed by the consortium. In order to succeed in this Innovation Action, the consortium needed to secure two types of results. The first set was the result of the WP3&4 (APIs, GUIs and TUIs) generated by the partners in the project. The second set were results generated by Third Party stakeholders following WP5-WP7.

In order to ensure delivery of the second set, consortium members needed to agree in advance on a strategy of deployment and commercialisation of the results of WP3&4. The Innovation Coordinator suggested the introduction of the distinction between:

- Background IP (existing results of partner research, ready for deployment via APIs, GUIs and TUIs)
- Research Foreground IP (results of WP3 and WP4, and any subsequent iterations / fixes following user feedback)
- Innovation Foreground IP (results of WP5, WP6 and WP7)



The following user case scenarios illustrate the Innovation Foreground IP:

Research Results User Case Scenario 1

"Creative Developer X uses an Arduino to build a physical interface which queries a number of APIs to access music data and drive Product Z. This set may be provided by e.g. Spotify API, MusicBrainz, [Freesound.org](https://www.freesound.org/) and the newly available API from WP3.

- a) All of the API stakeholders are happy for the developer to use these APIs during the course of experimentation and prototyping.*
- b) All of the API stakeholders require a commercial licence agreement upon commercialisation (proof of commercial transactions, or commercial agreements guaranteeing such transactions) of the stated product.*
- c) All of the API stakeholders agree that the creative developer owns the IP of the product idea, any originally conceived and designed (e.g. 3-D printed) controller elements, or any innovation in the combination of software and hardware which can be proven to add efficiency to determined workflows on a case-per-case basis.*
- d) IP components which drive the said invention are individually owned by 1) Arduino 2) Spotify 3) MusicBrainz 4) [Freesound.org](https://www.freesound.org/) 5) API resulting from WP3 (subject to consortium Research Foreground IP agreement) and those components listed under attribution, e.g. Open Source / GNU GPL / CERN OHL / OPL."*

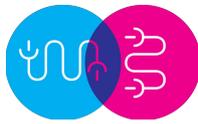
Research Results User Case Scenario 2

"Creative Developer X works closely with PhD Student Y to develop Product Z. PhD Student Y is familiar with the API (or GUI or TUI) Research Background and Foreground. Creative Developer X has industry experience and knowledge of market deployment methods. Following an idea by Creative Developer X of a particular market deployment, PhD Student Y suggests a tweaking of the original Research Results to enable best exploitation. The resulting Product is SaaS which evolves the original Research Results and amplifies the API capabilities.

- a) Innovation Results are jointly owned by Creative Developer X and the Research Partner whose PhD student has contributed to the invention.*
- b) A commercial licence agreement is required upon commercialisation (proof of commercial transactions, or commercial agreements guaranteeing such transactions) of the stated product."*

Research Results User Case Scenario 3

"Creative Developer X attends to a Music Hack Day and develops a Hack Y based on MusicBrainz and Essentia, both available under open licenses. The derivative work (Hack Y) is later on released in GitHub under an open license compatible with the Essentia and MB licenses' for the benefit of all the community. In this case, as long as the creator meets the obligations behind the type of licenses of the Research Results involved in the creation of the Innovation Result, no transfer of ownership nor commercial license of the Research Results is needed for exploiting the derivative work. Moreover, the Innovation Result would be then available for other creators that are interested in further developing it, thus maximising the related impact."



A new Section dealing with Innovation Results was thus added to the CA, as well as sub clauses in the Section dealing with Access Rights. Further definitions have been added as well: for the avoidance of doubt the consortium is distinguishing between the Innovation Party (third party engaged in generating "Needed" Innovation Results) and any other third party engaged in facilitation, dissemination, or subcontracted to conduct research on behalf of individual partners.

Innovation Actions are a new territory for H2020 in legal terms, and the work done for MusicBricks could be exemplary for future projects, especially in providing useful guidelines for dealing with Innovation Parties.

5.3.2. *Regulating the collaboration with external innovation parties*

The collaboration with external Innovation Parties is regulated by the Innovation Agreement, a contract that defines the duration of the incubation and the amount needed for its implementation, and determines the objectives and expected results of the process. The contract can be used as a model for future collaboration with external parties, bearing in mind that the legal framework changes from Country to Country and across institutions. Regulating the collaboration with Innovation Parties can be a key asset in the near future for H2020, but at present this is a rather new territory.

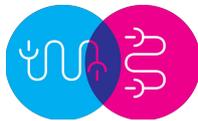
5.3.3. *Proving the efficacy of agile development cycle and impact evaluation*

The preparation of the #MusicBricks proposal led to a reflection on the pertinence of the TRL (Technology Readiness Level) in dynamic sectors such as the creative industries, as the model (conceived in the Eighties by NASA) covers high-risk and expensive technologies, aimed at few end users and obtaining user data only after the final deployment. Creative applications in a competitive and fast-changing market can hardly be represented within the TRL model, as their development requires adequate business models and user engagement, and implies societal aspects.

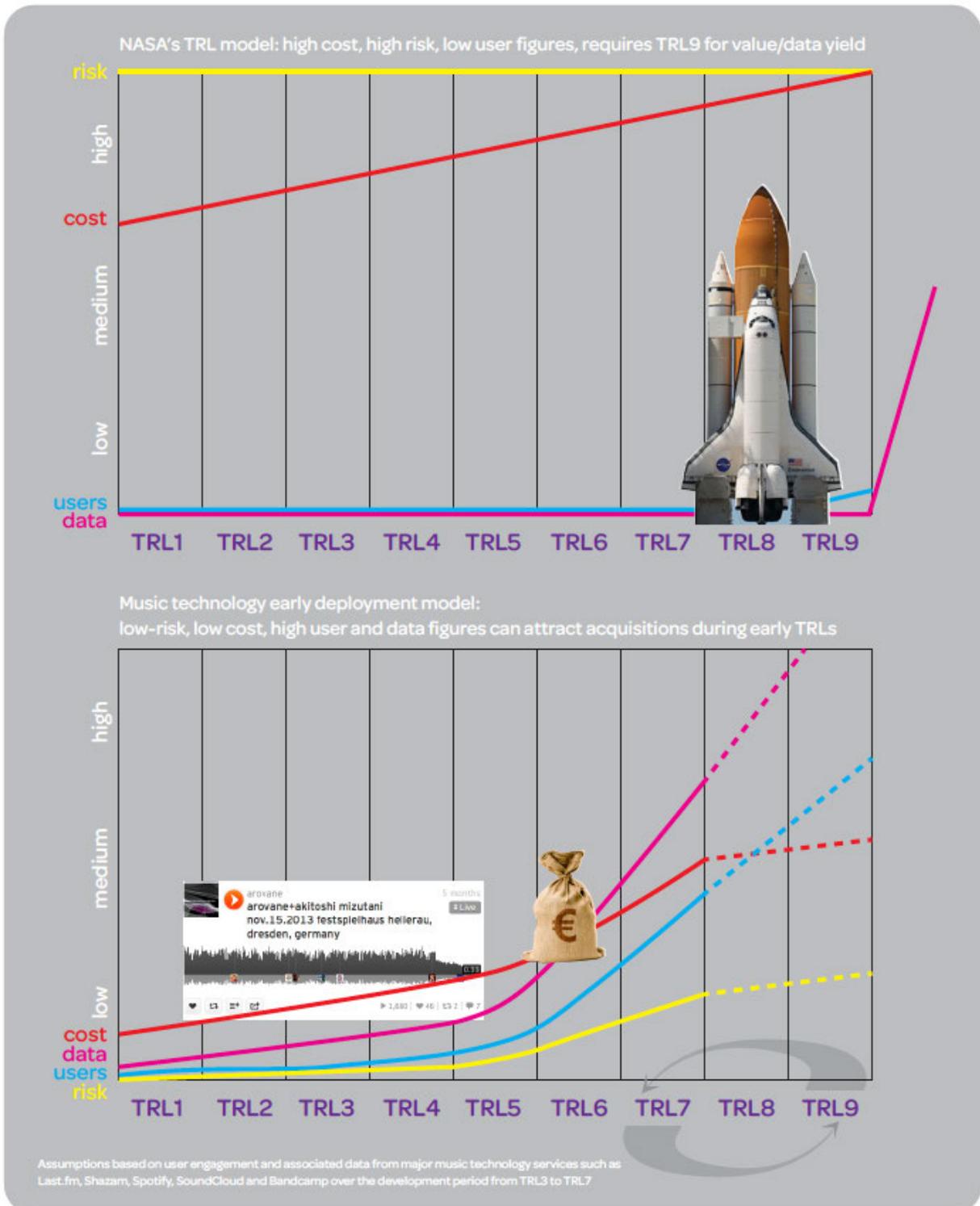
These elements have been included in the proposal and further expanded by the Innovation Coordinator in the Connect Advisory Forum (CAF) context, where an alternative model, the MARLs (Market Adoption Readiness Levels), has been elaborated¹. This model has also been recommended by the Innovation Ecosystems Working Group of the EU Alliance for Internet of Things Innovation (AIOTI) in their advisory paper to the EC in January 2016.

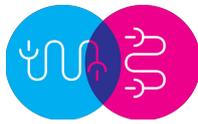
In addition to the **technology readiness** levels parameter, this model requires the assessment of three further value parameters: **users** (numbers of potential early adopters and values associated with feedback loops), **data** (potential quantity and value of data generated by the system and user interactions at each stage of the process) and the **level of risk** (assessment of benefits or adverse impacts of the technology on early adopters in various stages of the process). So far the incubation process proved the importance of such approach, and the documentation the consortium will be able to consolidate will constitute a ground-breaking work in the field.

¹ Connect Advisory Forum (2014): H2020 ICT R&D&I beyond 2015
http://ec.europa.eu/information_society/newsroom/cf/dae/document.cfm?action=display&doc_id=7050.



Work on expanding the concept of MARLs continues in the CAF recommendations for the H2020 programme for 2018-2020, as part of the Innovation Advisory Group, which has unilaterally agreed to include these guidelines in the top three Innovation Recommendations for Commissioner Günther Oettinger.





4. Conclusions

The evolution of the Exploitation Plan in this project reflects the nature of Open Innovation: valuable outcomes often need to be identified en route as further value is built into the Innovation Ecosystem. Prescriptive methods of setting up business models upfront are useful only to underpin initial goals and objectives, but new opportunities are presented throughout the evolution of the project, and strong criteria need to be in place for decision-making processes which assess the potential of new opportunities presented. Much of this work was done by partners with the assessment of business potential for individual products shown in D7.1, but partners could not have anticipated the extent of the popularity of the #MusicBricks Toolkit as a whole, or the demand for it to evolve as the core driver of the music technology Innovation Ecosystem. This brought to partners having to re-assess their business priorities in response to market demand.

It is worth noting that the above discovery of multiple business models would not have been possible without the participation of SMEs in this project. *“SMEs are champions of EU research programmes: they deliver 41% of the high potential innovations generated in ICT-related EU-funded research and innovation projects, despite accounting for a mere 14% of the total funding”*². #MusicBricks has proven the importance of small actors in European Innovation, both at consortium level and at the level of Third Party Innovation IP.

One of the Key Impact Indicators for the Horizon 2020 programme as a whole is a percentage of actors defined as ‘Innovation Parties’ in the #MusicBricks Consortium Agreement: *50% of participating SMEs introducing innovations new to the company or the market (covering the period of the project plus three years)*³. Not only has #MusicBricks played a role in making such indicators concrete, but it is providing valuable documentation of the process. Even though the benefits of being part of #MusicBricks vary slightly from one organisation to another, at consortium level the enlargement of the #MusicBricks Toolkit, the collaboration with key industry players, distilling of best practices and successful methodologies are the pillars of #MusicBricks exploitation.

² European Commission Joint research Centre (2015): Innovation Radar: Identifying Innovations and Innovators with High Potential in ICT FP7, CIP & H2020 Projects

<http://publications.jrc.ec.europa.eu/repository/bitstream/JRC96339/jrc96339.pdf>

³ European Commission (2015): Horizon 2020 indicators. Assessing the results and impact of Horizon
http://ec.europa.eu/newsroom/horizon2020/document.cfm?doc_id=10927