

Playing (with) Mobile Devices and Web Standards ... Together

Norbert Schnell
UMR STMS IRCAM-CNRS-UPMC
Paris, France
norbert.schnell@ircam.fr

Benjamin Matuszewski
CICM/musidance EA1572, Université Paris 8,
UMR STMS IRCAM-CNRS-UPMC
Paris, France
benjamin.matuszewski@ircam.fr

ABSTRACT

In this talk, we present an overview of the experiences we conducted with developers, artists, pedagogues, and many different audiences over the past three years in the framework of the *CoSiMa* research project. The hypothesis of our research was that people would more or less spontaneously take their mobile device out of their pocket to join others around them in making music together. Our methodology basically consisted in trying everything we could and taking on any collaboration that fitted this hypothesis while carefully observing various design aspects. We have focussed in this work on the exploration of affordances of mobile devices and web standards which we consider to be strong ecological factors in the development of communication, entertainment, and poetry.

The talk includes a panorama of the applications and scenarios (i.e. participative concerts, installations, and workshops) we have developed over the past three years as well as an overview of the most important findings we have been able to formulate so far.

The presentation concludes with a collective improvisation in which we invite the audience to participate.

CCS Concepts

•Information systems → Multimedia and multimodal retrieval; •Software and its engineering → *Real-time systems software*;

Keywords

HTML5, WebAudio API, Collective Performances, Interaction Design

1. INTRODUCTION

The *CoSiMa* research has been an opportunity for us to experiment with application scenarios in which arbitrary audiences are invited to make music together using the mobile devices they carry with them. The project started end of 2013 and ended in summer 2017.



Licensed under a Creative Commons Attribution 4.0 International License (CC BY 4.0). **Attribution:** owner/author(s).

© 2017 Copyright held by the owner/author(s).

The formats we explored include:

- *collective improvisations in workshops and performances*, where the participants create sound environments and play music together
- *participative concerts*, where the audience interacts with a featured performer
- *interactive installations*, with which and through which visitors interact collectively and collaboratively
- *soundwalks*, where participants explore interactive virtual and augmented sound environments while interacting with each other
- *mobile web applications*, people can use to create their own events and situations, whether they play alone or with others to create music and sound environments

Some aspects of this research already have been published as papers, posters, and demos at WAC and TEI conferences [1, 4, 2, 3]. While these publications contain an overview of related works and in depth discussions of some of our research, this talk focusses on delivering an overview of our explorations with a summary of the underlying concepts and the findings we are able to formulate so far. The presentation includes short video documentations of a selection of projects.

Mobile Devices and Web Standards

From a technical point of view, our research has focussed on the affordances of mobile devices and web standards. These technologies are truly ubiquitous in the sense that virtually everybody constantly carries around a smartphone or tablet that has a recent web browser installed. In this sense, these technologies are also an important ecological factor of the presented work.

In fact, mobile devices are powerful computers that come with a large set of sensors (i.e. camera, microphone, accelerometer, gyroscope, compass, GPS, touchscreen) inbuilt. Web standards give access to most of these capabilities and provide a rich platform for experimenting with interactive audiovisual rendering and networking.

Experiences and Cultural Context

As mentioned above, the experiences we could experiment with cover very different formats. Beyond their association to different categories as those mentioned above (i.e. workshops, concerts, installations, etc.), in all of these experiences groups of a few to a few hundred people have engaged in making music together using their mobile devices. They have taken place in the framework of workshops, concerts,

exhibitions, conferences, and small gatherings with very different levels of preparation and anticipation.

Having been committed to designing experiences that meet the expectations of their audience, our work did not primarily consist in or depend on a reflection concerning its articulation with the cultural context. Nevertheless, we can report on challenges and findings that concern exactly this articulation. In fact, many of our projects aimed at introducing smartphone-based interactions in contexts where the audience usually does not participate in the presentation of performers or artworks beyond watching and listening collectively. Even though it remains unfamiliar — and sometimes challenging — to ask an audience to connect to a Wi-Fi network and to a web URL to participate with their smartphones in such contexts, we have found that the venues are usually compatible with the kind of experiences we proposed in terms of their cultural offer, core audience, and technical environment (i.e. acoustics, spaces, equipment, staff). Nevertheless, we have noticed — without being surprised — that generally the audiences we worked with have not been well prepared to participate in the sense they were asked. Evidently, there are no codes of behavior (i.e. an implicit set of rules) established for participatory concerts or installations as they exist for audiences at events of different genres taking place in the same galleries and concert halls. The talk will critically discuss different approaches that we have developed to meet these challenges.

Another domain of applications that we have started to investigate is music pedagogy. After our first explorations that will be briefly summarized in this talk, we have gained the impression that the work with collective/collaborative interactive audio applications has a great potential in this domain.

Through many iterations of creating different experiences, we have forged an idea of *participation design*¹ being very much about how *the other* participants, as individuals as well as a group or even a mass, appear in the consciousness of the participating subject. In fact, many of the experiences we created over the past years are first of all *listening* experiences, in spite of the fact that they could easily claim to allow the audience a richer interaction than *just listening*. However, unlike most of the other events proposed to larger audiences in our current cultural environment, in these experiences the participants' attention is turned towards the other participants instead of being collectively turned towards the presentation of featured performers and artworks.

In our collaborations with many artists we have encountered a certain level of resistance towards the idea that the audience would pay more attention to itself (i.e. the participants to each other) than to a featured performance or artwork, as well as towards the idea of a performer paying carefully attention to the audience's participation. Probably the — relative — novelty of participative approaches to collective aesthetic experiences lies in exactly these aspects. And even if there are certainly many other means besides mobile devices and web standards, we have found that many properties of these technologies particularly afford the production of such experiences.

2. LINKS

Most of the experiences we created are documented at <http://cosima.ircam.fr/>.

A small selection of the test and prototype applications we developed in the framework of the project are accessible at <http://apps.cosima.ircam.fr/>.

The *Soundworks* framework, we incrementally created to support the development of our experiences, is published under an open-source *BSD 3-Clause License* at <https://github.com/collective-soundworks/soundworks>.

The source code of many applications presented in this talk is available at <https://github.com/ircam-cosima> and <https://github.com/collective-soundworks-workshops>.

3. ACKNOWLEDGMENTS

The presented work has been developed in the framework of the *CoSiMa* research project coordinated by IRCAM and supported by the French National Research Agency (ANR-13-CORD-0010). We would like to thank our *CoSiMa* project partners and our colleagues at IRCAM for their precious contributions to the project, especially Jean-Philippe Lambert, Sébastien Robaszkiewicz, David Poirier-Quinot, Frédéric Bevilacqua, Joseph Larralde, and Victor Audouze.

4. REFERENCES

- [1] S. Robaszkiewicz and N. Schnell. Soundworks – A Playground for Artists and Developers to Create Collaborative Mobile Web Performances. In *1st Web Audio Conference*, WAC '15, Paris, France, 2015.
- [2] N. Schnell, J.-P. Lambert, and S. G. B. Matuszewski. Soundworks Tutorial. In *2nd Web Audio Conference*, WAC '15, Atlanta, Georgia, USA, 2016.
- [3] N. Schnell, B. Matuszewski, J.-P. Lambert, S. Robaszkiewicz, O. Mubarak, D. Cunin, S. Bianchini, X. Boissarie, and G. Cieslik. Collective Loops: Multimodal Interactions Through Co-located Mobile Devices and Synchronized Audiovisual Rendering Based on Web Standards. In *Proceedings of the Conference on Tangible, Embedded and Embodied Interaction*, TEI '17, 2017.
- [4] N. Schnell, S. Robaszkiewicz, D. Schwarz, and F. Bevilacqua. Collective Sound Checks – Exploring Intertwined Sonic and Social Affordances of Mobile Web Applications. In *Proceedings of the Conference on Tangible, Embedded and Embodied Interaction*, TEI '15, Stanford, California, USA, 2015.

¹ The notion of *participation design* or *design for participation* should not be confused with *participatory design*.