# Creating and Developing Distributed Music Application Using the Soundworks Framework

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## ABSTRACT

This workshop will give participants the opportunity to learn the basics of `soundworks`, a full-stack JavaScript framework for developing distributed and synchronized web-audio applications both in the browser or on embedded hardware. After a short presentation of the framework possibilities, architecture and ecosystem, the workshop will propose a hands-on session around the implementation of a simple application. The proposed application will be designed to focus on a number of key features proposed by the framework, such as the distributed state management and the plug-in systems, in particular through the implementation and usage of a synchronised scheduling system. The workshop will conclude on a discussion and Q&A session.

## 1. WORKSHOP NOTES

The recent developments of the Application Programming Interfaces such as the Web Audio API or WebSockets has permitted to envision the Web platform as a viable technical platform for artistic creation and experimental music practices [4]. Additionally, the recent developments of ubiquitous and pervasive computing, with the democratization of smartphones and large spread of nanocomputers, led to consider Web technologies as a possible solution for recurring integration and interoperability issues. These two complementary movement authorize to consider the Web platform as an interesting environment in the development of Networked Music Systems.

In this context, the `soundworks` framework, initiated by S. Robaszkiewicz and N. Schnell in 2015, is a framework dedicated to simplifying the development of distributed multimedia applications on the web. The framework has known three major revisions and has been used in numerous artistic and research projects (e.g. concerts, installations, workshops, pedagogical or experimental setups) [2]. The framework is developed in *JavaScript* and follows a client-server architecture centered around a *Node.js* server. It also aims at creating hybrid architectures by supporting both browser based clients and *Node.js* clients for embedded platforms [3].

This workshop will introduce the global architecture and main features of the framework. This short presentation will be followed by a hands-on session allowing attendees to familiarize with the shared state management system and the synchronization possibilities [1] offered by the framework.

## 2. BIOGRAPHY

Benjamin Matuszewski, PhD in Aesthetics, Sciences and Technologies of the Arts, studied music and musicology before working several years as a developer in the media industry. Since 2014, he is a researcher and developer in the Sound Music Movement Interaction Team at Ircam, where he conducts a transdisciplinary research between engineering, music, design and HCI on distributed and interactive music systems based on Web technologies. He also regularly collaborates on artistic projects such as *Future Perfect* by Garth Paine, *Constella(c)tions* by Michelle-Agnès Magalhaes or *Biotope* by Jean-Luc Hervé.

## 4. REFERENCES

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