**Interactive Music Science Collaborative Activities**

Team Teaching for STEAM Education

# Deliverable 5.9
# Intermediate Pen-enabled canvas for music and audio co-creation and interaction

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| Work package | WP5 – Workbench of iMuSciCA prototypes |
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| Description: | This deliverable reports on the intermediate implementation of the pen-enabled canvas for music and audio co-creation and interaction. |

# Executive Summary

This deliverable reports on the new features integrated into the intermediate implementation of the pen-enabled canvas for music and audio co-creation and interaction (DrAwME).
New features includes:
- Internationalization
- Saving and loading to the learning record store (LRS)
- Connection to the workbench shared audio
- Implementation of the Clipboard interface
- Improvement requested by pedagogical partners

This intermediate version of DrAwME is available at the following URL:
https://unifri.imuscica.eu/drawme/v2/canvas.html

Note that the development of the activity environments continues, and the updated stable version

of the pen-enabled canvas for music co-creation can be accessed at

http://platform.imuscica.eu/workbench.html under the left icon of the Music section.

| Version Log | | | |
|---|---|---|---|
| Date | Version No. | Author | Change |
| 04-09-2017 | 0.1 | Marcus Liwicki (UNIFRI) | Initial content |
| 28-03-2018 | 0.2 | Manuel Bouillon (UNIFRI) | More content |
| 23-04-2018 | 1.0 | Vassilis Katsouros (ATHENA) | Finalize and submit to EU |

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**LIST OF ABBREVIATIONS**

| Abbreviation | Description |
| --- | --- |
| DrAwME | Drawing cAnvas for Music crEation |
| ATHENA | ATHENA RESEARCH AND INNOVATION CENTER IN INFORMATION COMMUNICATION & KNOWLEDGE TECHNOLOGIES |
| UCLL | UC LIMBURG |
| EA | ELLINOGERMANIKI AGOGI SCHOLI PANAGEA SAVVA AE |
| IRCAM | INSTITUT DE RECHERCHE ET DE COORDINATION ACOUSTIQUE MUSIQUE |
| LEOPOLY | 3D FOR ALL SZAMITASTECHNIKAI FEJLESZTO KFT |
| CABRI | Cabrilog SAS |
| WIRIS | MATHS FOR MORE SL |
| UNIFRI | UNIVERSITE DE FRIBOURG |

# 1. Introduction

In this deliverable we will describe the updates performed in the tool since D5.3-Initial Pen-enabled canvas for music and audio co-creation and interaction. This intermediate version of DrAwME is available at the following URL: https://unifri.imuscica.eu/drawme/v2/canvas.html

# 2. Installation and technical requirements

UniFri DrAwME is based on JavaScript and runs on any modern browser (Chrome, Firefox, Edge) and operating system (Windows, GNU/Linux, macOS). This tool is intended to be included in the iMuSciCA workbench as an iframe using the following code:

```
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN"
  "http://www.w3.org/TR/xhtml1/DTD/xhtml1-transitional.dtd">
<html lang=en>
<head>
    <meta charset=utf-8>
    <title>UniFri DrAwME</title>
</head>
<body style="margin:0px;padding:0px;overflow:hidden">
        <!-- DAME iframe -->
        <iframe       id="tool"       src="https://unifri.imuscica.eu/drawme/v2/canvas.html"
frameborder="0" height="100%" width="100%"></iframe>
</body>
</html>
```

The tool adapts itself to the size of the container iframe, although a minimum iframe size of 650x400 is required.

# 3. Description of new features

Changes in this version:
- Internationalization: the tool can now be translated into English, French, Dutch and Greek by adding URL parameters (https://unifri.imuscica.eu/drawme/v2/canvas.html?lang=el)
- Saving and loading to/from the learning record store (LRS): when embedded into the workbench, the import and export button trigger the saving and loading to/from the LRS.
- Connection to the workbench audio: sound generated by DrAwME is now passed to the workbench in order to be visualized by any of the workbench visualization tools.

- Implementation of the Clipboard interface: the data structure used by DrAwME has been changed to comply with the Clipboard specification and enable data sharing between the different tools on the workbench that support handwriting.
- Improvement based on the initial feedback of the pedagogical partners:
  - Zoom buttons
  - Time axis in the waveform
  - Frequency axis on the Fourier transform view
  - Time axis on the spectrogram