Interactive Music Science Collaborative Activities

Team Teaching for STEAM Education

Deliverable 5.13
Final music activities based on mathematical equations and geometric curves

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Description:	This deliverable reports on the final implementation of the music activities based on mathematical equations and geometric curves.

Executive Summary

This deliverable reports on the final implementation of the music activities based on mathematical equations and geometric curves. Users can hand draw strokes that are converted into the most suitable mathematical equation. Moreover, users are able to sonify (play) those functions, as the tool assigns a particular frequency (or intensity) to each point of each function depending on its y-value. The demonstrator is accessible at https://workbench.imuscica.eu by clicking the Sonification button.

Version Log			
Date	**Version No.**	**Author**	**Change**
24/04/2019	1.0	Daniel Martín-Albo (WIRIS)	Version ready for reviews
10/06/2019	1.0	Daniel Martín-Albo (WIRIS)	Integration reviewers comments
21/06/2019	1.0	Vassilis Katsouros (ATHENA)	Submission to EU

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TABLE OF CONTENTS

LIST OF ABBREVIATIONS

Abbreviation	Description
URL	UNIFORM RESOURCE LOCATOR
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
GUI	GRAPHIC USER INTERFACE
HTTPS	HYPERTEXT TRANSFER PROTOCOL SECURE

1. Introduction

In this deliverable we will describe the updates performed in the tool since D5.8 (Intermediate Music Activities Based on Mathematical Equations and Geometric Curves) .

2. Description of new features and user manual

2.1. Sonification

The demonstrator is accessible at https://workbench.imuscica.eu by clicking the Sonification button.
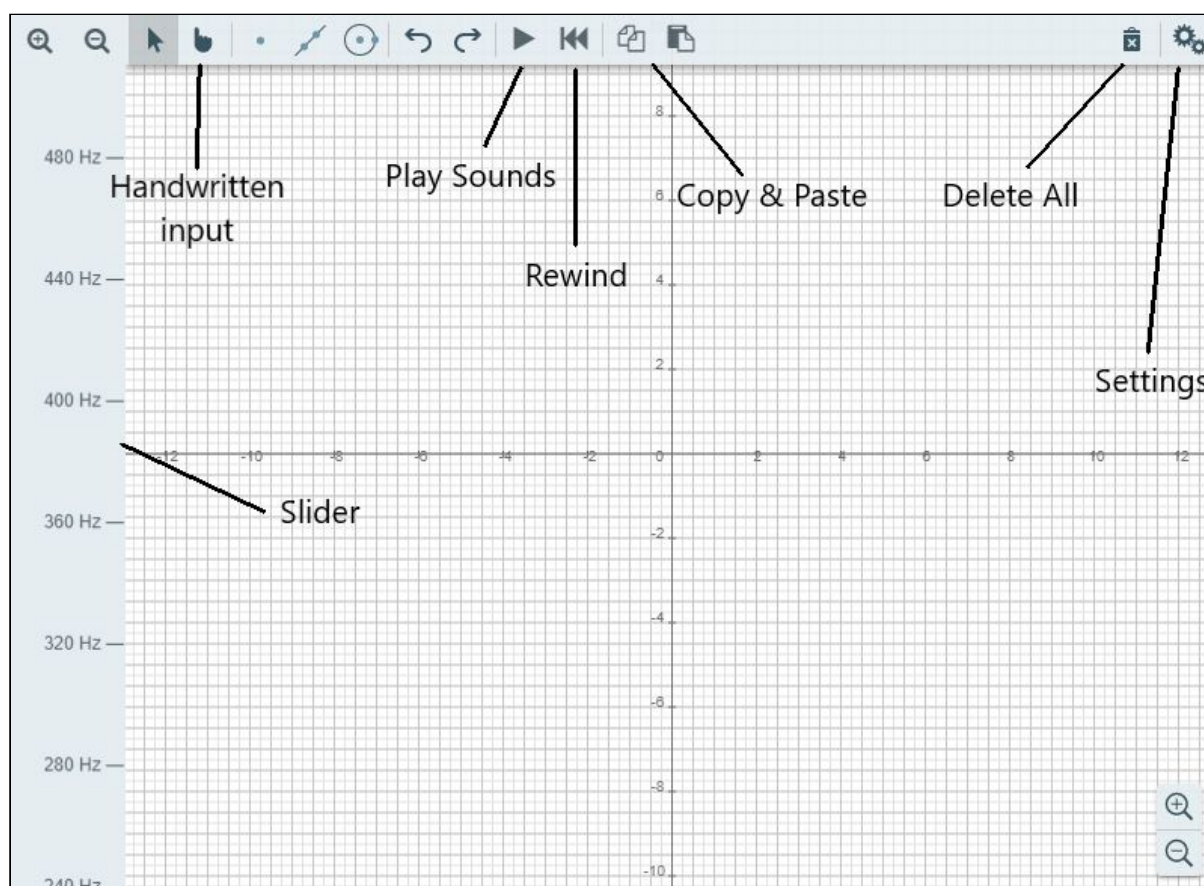

Figure 2.1-1: Sonification tool interface

New features in this version:
- Updated visual assets.
- Implemented pasting functions in the form of *y=f(x)*. Before functions only could be pasted if they were provided as *f(x).*
- Implemented Hotjar tracking support for pilot testing.

- Implemented iMuSciCA tracking.
- Updated copy and paste and save and load messaging to match D3.6 specification.
- Implemented improvements related to exportable objects. Now main exported element children have the erasable parameter set to allow the user to edit it.
- Improvements to internationalization. Now musical notes are correctly written in greek.
- Deployed latest WIRIS Graph version.
- Implemented a Loading asset. This asset was finally included in the GUI toolkit to make it available to all tools.

Bug fixes in this version:
- Fixed an issue that left orphaned audio nodes in the AudioContext.
- Fixed various issues that caused sound issues with some elements (especially asymptotic functions).
- Fixed various issues that prevented the tool from correctly snapshotting[1].

2.2. Math Editor

The demonstrator is accessible at https://workbench.imuscica.eu by clicking the Math Editor button.
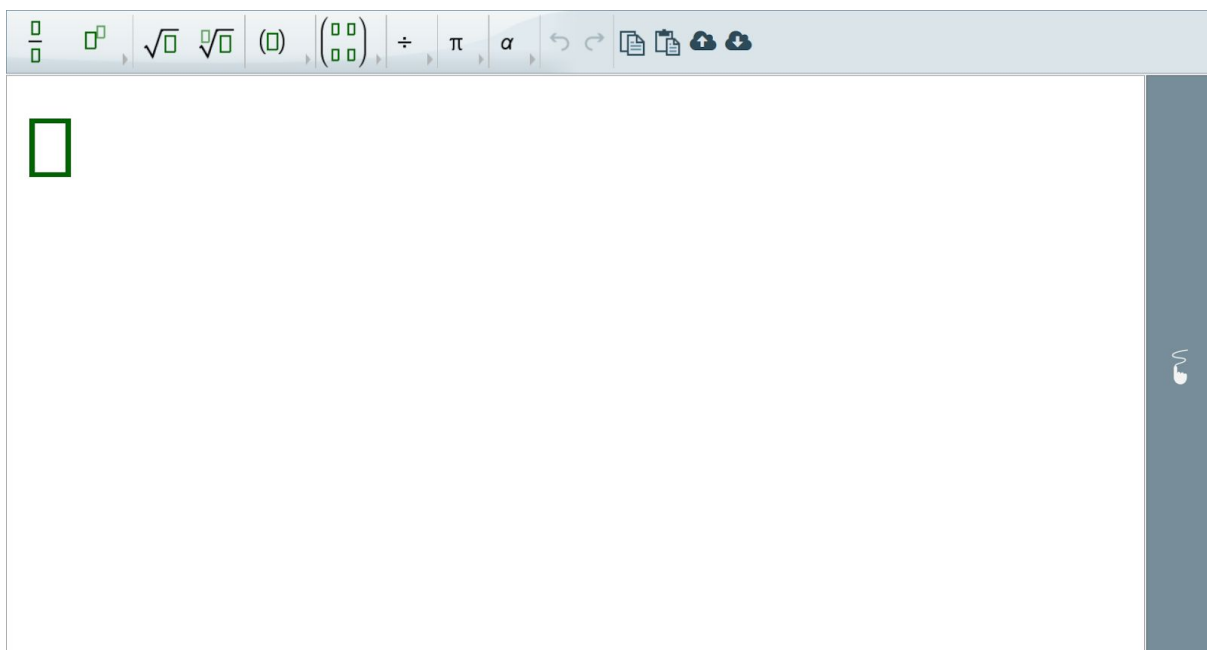

Figure 2.2-1: Math Editor tool traditional interface

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[1] Snapshotting is the availability of a tool to persist its working state when closing without saving.
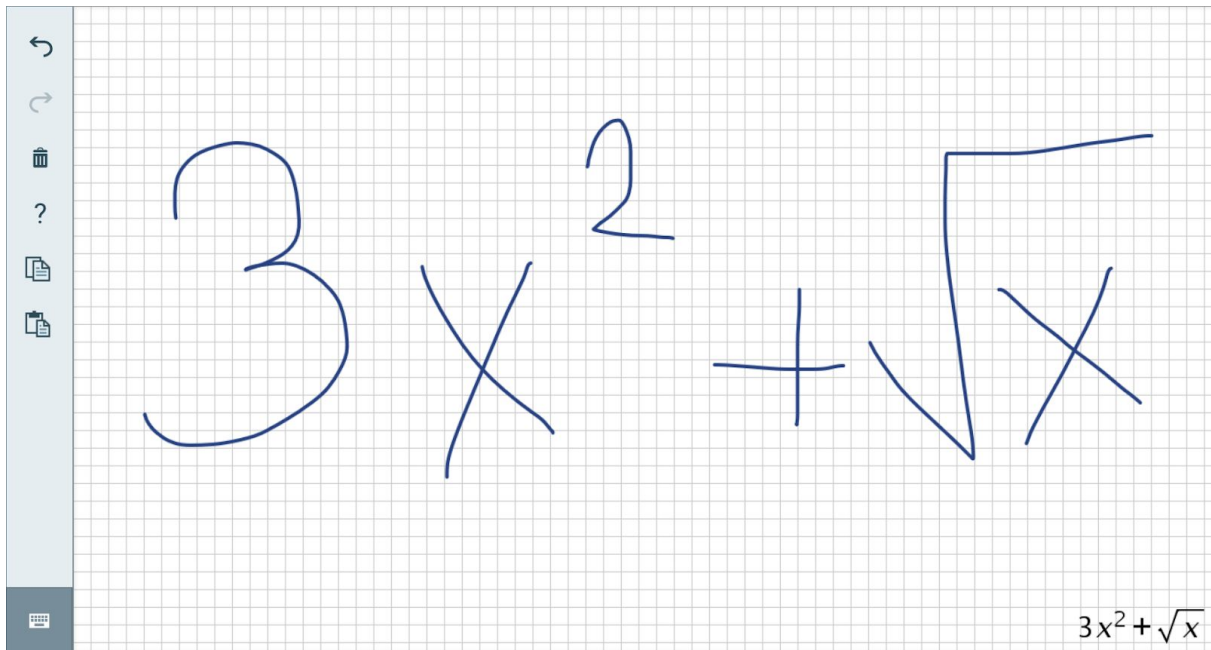
Figure 2.2-2: Math Editor tool handwriting interface

New features in this version:
- Updated visual assets.
- Implemented Hotjar tracking support for pilot testing.
- Implemented iMuSciCA tracking.
- Updated copy and paste and save and load messaging to match D3.6 specification.
- Implemented switching to Handwritten Input mode when pasting handwriting elements.
- Implemented copy/paste of new elements: number, line defined by two points and sine wave.
- Implemented save/load buttons.

Bug fixes in this version:
- Fixed various issues that caused save file corruption.