

# ■ ■ THE MUSIC ROOM

A PERMANENT INSTALLATION  
MILENA CORBELLINI

## NAME OF CH

The project involves a music collection taken from Medieval Manuscripts, in the Medieval Museum of Bologna. The idea of intangibility is connected to the intention of playing the music scripts in the Manuscripts. This is in order to interact and recreate the ancient music of the Medieval period.

## LOCATION

The collection is located in the Medieval Museum in Bologna. It is a temporary exhibition and it occupies a whole room in the Museum.

## SHORT DESCRIPTION OF THE PROJECT

The project is principally divided in two parts: the first is organizative, in order to collect the material, the second part is more practical, for creating the Multimedia installations. The first step is the digitalization of the Manuscripts themselves, and then the creation of an archive or better a relational database. After that we could define the Multimedia applications. My principal idea is quite easy: the execution in audio files of the music scripts in the original texture with voices and instruments. That would be inserted in the relational database, with the reconstruction of the original text, a simple transcription that would reproduce it with different translations, and maybe a little explication of the meaning and the context of the text would be added. It would be nice to reserve a particular attention to the 'miniature' in the texts.

After that I would like to create a series of little explicative videos with a narrative line, that would describe the music, the manuscript, and the cultural context of Medieval Period. Another successive and interesting idea could be a transcription of the music in modern terms, the 3D-printing of some Medieval instruments, and a guideline to sing or play the music- sheets of the Manuscripts, but knowing the music level of this time I think it could be a waste of time/money, as only a little part of the visitors would be able

to read and play, so maybe the presence of real musicians who would play 'dal vivo' in the room would be better.

Keywords for this project are low-cost, economy and fast creation, in order to help the Museum with its budget possibilities, but a great characteristic of this idea is that it could be reused after a little bit of changes (also in terms of costs and so in terms of prestations) to be applied to other similar expositions in other contexts.

## PROJECT JUSTIFICATION

The idea is to create a Medieval music room, in which each element is connected and described, following a narrative line, in order to define a consequential system and to make the visitors feel involved and interested. This project was born in order to help the whole Museum to attract more visitors, and after a checking visit we defined the main problems of the institution, for example the disorganisation and the misdescription of the artifacts, and we tried to define a model that could modify the actual lacknees of tourism. I decided to focus on the temporary exhibition of Medieval Music Manuscripts that is potentially rich and interesting, because of the good state of preservation and the unique nature of the artifacts themselves in respect of the other ones in the Museum.

## GOALS AND REQUIREMENTS

The idea is to create a permanent music room in which the visitor could find the digitized version of the manuscripts, play music and interact with Multimedia applications. So the goals and the requirements are:

- The digitalization of the whole collection and the construction of digital archive or database;
- The definition of a system and a support that could make available the archive itself and could allow the visitors to select a piece and play the recorded versions (instrumental version, one voice version, multivoice version/polyphonic one), to see and have the translation of the original text, with descriptions of context, and to focus the 'miniatures';
- The configuration of at least two Multimedia Applications: a series of video and maybe an interactive application which involved the ancient medieval music tools and transcription technique.

## ... SCRIPT

My idea is to create a digital archive/database in which I could insert the digitized version of the Manuscript, sheet for sheet, using maybe a simple CCD scanner, because of the good preservation of the Manuscripts. If the quality of the pages is not as good as it seems maybe we could consider a virtual reconstruction of the pages in a 3D virtual model. With this we would be able to solve the problem of the temporary disponibility of the exhibition, in order to have a permanent set of material to work with. After that we could manage this material , we could study, order and transcribe the text, translating them in different languages and contestualizing the words; then we could pay a little bit of attention to the miniature if it is possible, but the main goal is to execute the pieces of music and record them in file audio format, in both instrumental and voice versions. The idea is to create simple file formats like pdf for the texts and pieces of music and file audio like mp3 or mp4.

After that I would like to create a narrative line, with some videos that could describe different aspects of the medieval Music, like technical skills and writing, and in particular of Medieval Religious Music. We have to consider that my idea has to be a low budget one because of the economic possibility of the Museum itself, but another interesting Multimedia tool could be the preparation of a separate room with the 3D printing of ancient music instruments, the transcription in modern music of some music sheets and the possibility to learn to play and sing them. It could be also really interesting the presence of real musicians, dressed in Medieval costumes, that could teach visitors how to play instruments and how to sing in a Gregorian context. This part of the project would refer not only to the 'Lodi' presented in the collection, but to a more general idea of Medieval Music, that would be also presented in the explicative videos.

# THE MUSIC ROOM



A PERMANENT INSTALLATION

MILENA CORBELLINI

*The project aims at involving the visitors through their experience in the Museum, into a space that will let them feel inspired and connected to the past. The experience will be possible thanks to a quite simple series of tools, in particular a relational database in which all the sheets of the 'Lodi per ogni ora' collection (or another collection of Medieval Music) was stored, organized and related with the transcription of the text, the translation and the execution of music sheets, plus an a part section for the 'miniatures'. That would be possible through the use of URLs linked by a qr code, for each of the manuscripts. A scanner reader in the support (tablets or smartphones) would connect to a cloud in which our archive/database is stored. Obviously headphones would be given by the Museum, and a good idea could be to also provide tablets as supports for the application instead of personal phones, to better see the images.*

*Then the project idea is to install a separate room in which the visitors could have the experience to listen and play music, with the support of 3D printed instruments, transcription of*

*music sheets in modern terms, and real musicians that could perform 'dal vivo', or in alternative some videos or a basic tutorial-game (but maybe this second option is too expensive so I focused on the previous ones). The technical material involved a 3D printing technology, another archive and a specific application for music transcription, and some videos.*

### **DEFINE THE USERS / STAKEHOLDERS OF YOUR PROJECT**

*The project is designed specifically for being experienced by everyone but in particular by young people, because of the interactivity of the second part.*

### **SPECIFY THE COMMUNICATION STYLE (DESCRIPTIVE, NARRATIVE,**

### **DRAMATISED) AND WHY YOU HAVE SELECTED IT**

*The project will use a communication approach based on narrative lines in the first part, the videos, and dramatization in the second, the musicians, because people would be more involved.*

### **ADD THE NARRATIVE FRAMEWORK YOU ARE GOING TO USE**

*The project will be built on the following story: in the Church of an Abbey, during a non-defined timeline in Medieval Period, a monk is preparing the music for the celebration of the 'Laudes', looking at some pieces of music from a Manuscript. While he was searching for the most appropriate pieces for the celebration a minstrel/troubadour enters in the church, listening the monk singing. After a little time the monk sees him and starts talking with him, the conversation gradually became a discussion about music from their own words: religious and profane. They start talking about instruments, about chores*

*and voices, about how to modulate the scales in base of arguments, about how to write music in pentagrams, sometimes fighting and joking between themselves supporting their ideas and their background formations.*

# STORYBOARD OF NARRATIVE FRAMEWORK / CONCEPT MM DESIGN

Scene 1. A monk in a Church, in the choir's place.

He is looking at some pieces of music in a manuscript  
At a certain point he started singing a  
piece, but he suddenly interrupts,  
saying 'no, no it's not what I want', and  
started singing another one.

A piece of text describes the manuscripts he is looking

Scene 2. A minstrel/troubadour enters in the church.

He is listening to the monk.  
The monk interrupts himself.  
The two starts talking, presenting themselves and what  
they were doing here.  
The minstrel/troubadour starts singing suggesting his  
kind of music for the Laudes to the monk  
The monk and the minstrel start a little music  
competition.  
The pieces are presented in notes.

Scene 3. A minstrel/troubadour and a monk in a Church.

After a little competition the two start talking and joking  
about their different music worlds, explaining to the other  
one what is different and how to use it: for example the  
monk shows the minstrel the manuscripts and explain to  
him how the music is written, while the minstrel shows  
the monk his instruments and explains the monk their  
attributes.

# ■ ■ THE MUSIC ROOM

A PERMANENT INSTALLATION  
MILENA CORBELLINI

## USE CASE SCENARIO / CONCEPT MM DESIGN

Mario, who is a teenager, enters in the room with his tablet and his headphones.



Image from <https://pxhere.com>.

He finds the first QR code that he could scan and having the first introductive video in which is introduced the first and the second scene of the storyboard.



Images from <https://pxhere.com>.

He looks at the manuscripts in the room and selects his favourite, scanning the QR code, in order to access the archive, from which he could see all the pages of the



manuscript.

He chooses a sheet of music, and he decides to listen it selecting one of the audio files that are in the archive.

He wants to better understand the text and the context so he selects the transcription with translations of the text in Italian, with a little explication. After that he selects a video about the pentagram or the instruments that connect him to a point of the third scene of the storyboard.

He enters the room a part. The system saved automatically the pieces of music he already selected, and a virtual/real musician would suggest how to play/sing them or something easier, with a 3D printed instruments



Image from <https://pxhere.com>.

## PHYSICAL MM DESIGN

The first part of the installation is really low invasive, just a QR code at the beginning of the room and near each manuscript, that each visitor could scan with the tablet. From the tablet now the visitors could access the archives, looking at the .png files obtained through the scanning, and reading the .pdf (that are the transcriptions, context information and so on) , watching videos, or listening to music with headphones.

First of all we need a CCD scanner to produce .png files of manuscripts.

After that we could work with .docs or .pdf files to maintain low costs for additive information about texts and contexts.

To produce .mp3 - .mp4 music files we simply need a recorder system (a microphone), so we don't use formats like MIDI, but we need a LAME codifier with at least 128 or more kbs. A simple reader for .mp3 or .mp4 could be Windows Media Player and VLC media player could be a good substitute.

Then we have to generate QRcodes with a QR code Generator/Scanner for example, but because of the free license there are a lot of free applications that we could use for this purpose. The QR code has to be directly connected to our database or archive with a series of links.

We have to record video in .mp4 formats.

At the end we have to separate the room in two and the second part would be used to play instruments and to have a full immersion in music possibly through real performances of musicians, dressed as Medieval figures. There would be also some music instruments printed with a 3D printer with subtractive technique (Computer Numerical Control) defining the 3D image through passive sensors using IBM (Image Based Modelling).

We also insert another QR code that opens a series of sheet music sheets transcription that could be used to try playing instruments. We could use Musescore to transcribe, and use .pdf files as formats for the database.

- Include **digital data** you are going to use, how you are going to acquire or obtain them and process them.
- Suggest **software** needed while processing data and developing the project and also software needed by final application.

# ■ ■ THE MUSIC ROOM

A PERMANENT INSTALLATION  
MILENA CORBELLINI

- Define **hardware** that users will use to perform the experience:

1. A CCD scanner
2. Tablets for visualisation with scanners for QR codes
3. Headphones for audio files
4. A (subtractive) 3D printer for instruments

- Specify the **competences** and professionals needed :

Required:

1. Digital humanist;
2. Medieval music experts;
3. Computer scientists (a 3D printing expert);
4. Musicians and a Gregorian choir;

Suggested

1. Medieval manuscripts expert;
2. Medieval history and literature expert;

- **Break down the various steps of development** of your project with time needed:

1. Scanning, digitizing and cataloging the manuscripts, with the adding of some metadata and the creation of the archive/database: it would take at least **1 month**, it's a mechanical work but it's quite long. After that the procedures could be done in a non sequential line, but together:

- a. Transcription of text and contextualisation: this part needs some research before so I think **from two to three months**

- b. Execution of the music sheets, recording and insertion in database, **1 month (considering performing musical tests timing)**
- c. Action-Video Making, maybe **1 month**
- d. 3D printing, **1-2 weeks**
- e. Tutorials: **1-2 months**

- Give an approximate idea of the **costs** of the first part of the project taking into consideration:

People needed: a team of specialist (2-3) people, plus a choir and some musicians

Time needed for its development: 3 months more or less

Cost of hardware/software/data: 5000 €

Total 20.000- 25.000€

- Give an approximate idea of the **costs** of the complete of the project taking into consideration:

People needed: a team of specialist (2-3) people, plus a choir and some musicians

Time needed for its development: 3 months more or less

Cost of hardware/software/data: 10.000 €

Total 40.000€

## COMMUNICATION STRATEGY / ATTRACTING AND INVOLVING TARGET USERS

**ATTRACTIVITY:** To attract visitors we could use the court of the Museum, organizing live events with musicians, or simply reproducing some recorded pieces. Moreover the real musicians could go around the city playing and singing and offering leaflets. Moreover we could also insert photos and pieces of music in the site-

**INVOLVEMENT :** The use of explicative videos, 3D printed instrument, and the tutorials on how to play the Medieval music.

## Bibliography

- *IMAGE-BASED 3D MODELLING: A REVIEW*, Fabio Remondino ([fabio@geod.baug.ethz.ch](mailto:fabio@geod.baug.ethz.ch)) - Swiss Federal Institute of Technology (ETH), Zurich; Sabry El-Hakim ([sabry.el-hakim@nrc-cnrc.gc.ca](mailto:sabry.el-hakim@nrc-cnrc.gc.ca)) - National Research Council, Ottawa, Canada.
- *DIGITAL FABRICATION TECHNIQUES FOR CULTURAL HERITAGE: A SURVEY*. R. Scopigno, P. Cignoni, N. Pietroni, M. Callieri and M. Dellepiane, Visual Computing Lab, CNR-ISTI, Pisa, Italy.
- Jarold J., *THE VR BOOK. HUMAN-CENTERED DESIGN FOR VIRTUAL REALITY*, ACM books, 2016, parts I, II, IV, V, VI.
- Ze-Nian Li, Mark S. Drew, Jiangchuan Liu., *FUNDAMENTALS OF MULTIMEDIA*, 2. ed Cham: Springer, 2014, pp. 3-23, 57-77, 81-85, 99-103, 115-135, 139-175