

Enrico Pietrocola

Consortium  
**GARR**

THE ITALIAN  
EDUCATION  
& RESEARCH  
NETWORK



# **Prassi e strumenti nell'apprendimento musicale a distanza in supporto a sistemi di videoconferenza**

GIORNATA DI INCONTRO  
BORSE DI STUDIO GARR  
"ORIO CARLINI"  
ROMA

Roma, 27/06/2019

Borsisti Day 2018



# GIORNATA DI INCONTRO BORSE DI STUDIO GARR “ORIO CARLINI” BORSISTI DAY 2019

## L'app

Prelude and Fugue in C Major [BWV 846]

**Prelude and Fugue in C**  
From the Well Tempered Clavier  
Johann Sebastian Bach

Public Domain  
Music: UntracedRoad.com  
free-scores.com

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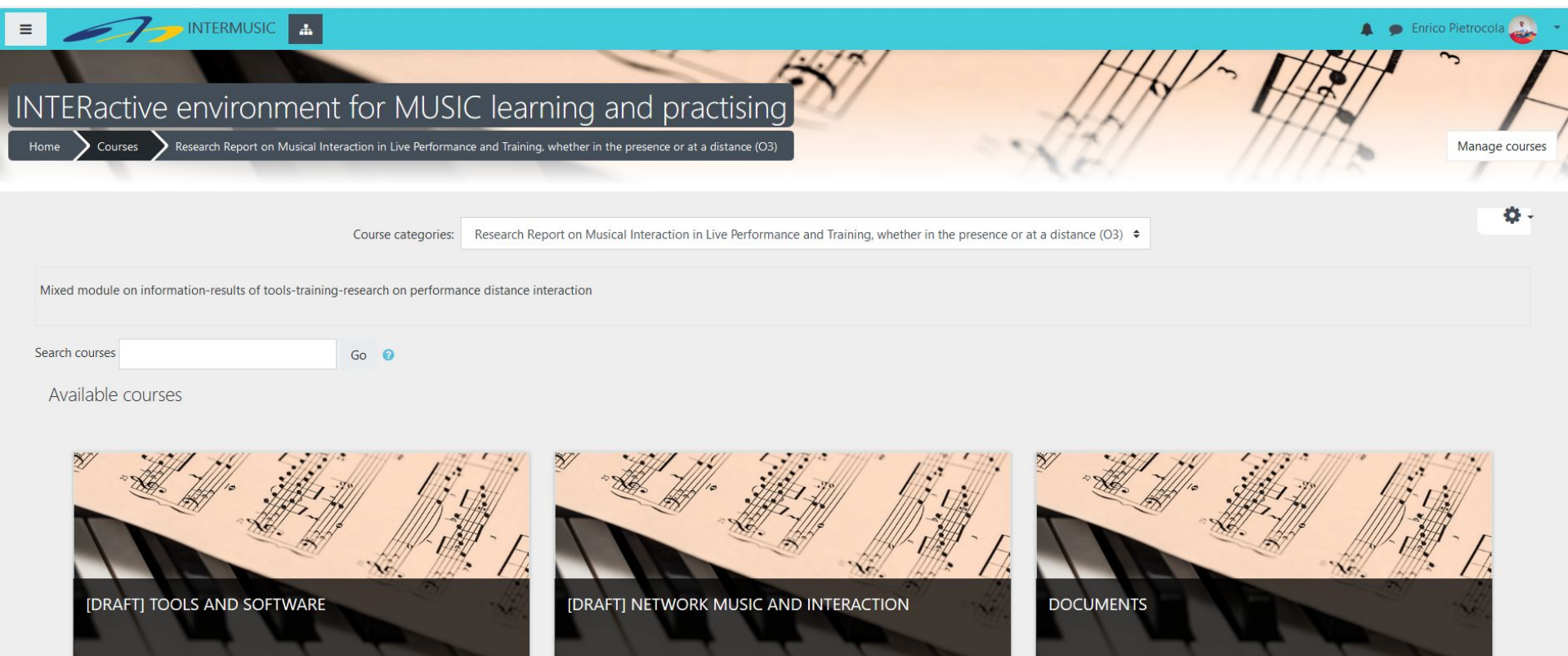
Public Domain  
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# Moodle - Complementari



The screenshot shows the Moodle interface for the INTERMUSIC course. The header is teal with the INTERMUSIC logo and a user profile for Enrico Pietrocola. The main banner features musical notation and the text "INTERactive environment for MUSIC learning and practising". Below the banner is a breadcrumb trail: Home > Courses > Research Report on Musical Interaction in Live Performance and Training, whether in the presence or at a distance (O3). A "Manage courses" button is on the right. The "Course categories" dropdown is set to the same course name. A description box contains the text: "Mixed module on information-results of tools-training-research on performance distance interaction". A search bar with the text "Search courses" and a "Go" button is present. Below the search bar, the text "Available courses" is displayed. Three course cards are shown, each with a musical notation background and a dark bottom bar with white text: "[DRAFT] TOOLS AND SOFTWARE", "[DRAFT] NETWORK MUSIC AND INTERACTION", and "DOCUMENTS".

INTERMUSIC

INTERactive environment for MUSIC learning and practising

Home > Courses > Research Report on Musical Interaction in Live Performance and Training, whether in the presence or at a distance (O3)

Manage courses

Course categories: Research Report on Musical Interaction in Live Performance and Training, whether in the presence or at a distance (O3)

Mixed module on information-results of tools-training-research on performance distance interaction

Search courses  Go ?

Available courses

[DRAFT] TOOLS AND SOFTWARE

[DRAFT] NETWORK MUSIC AND INTERACTION

DOCUMENTS

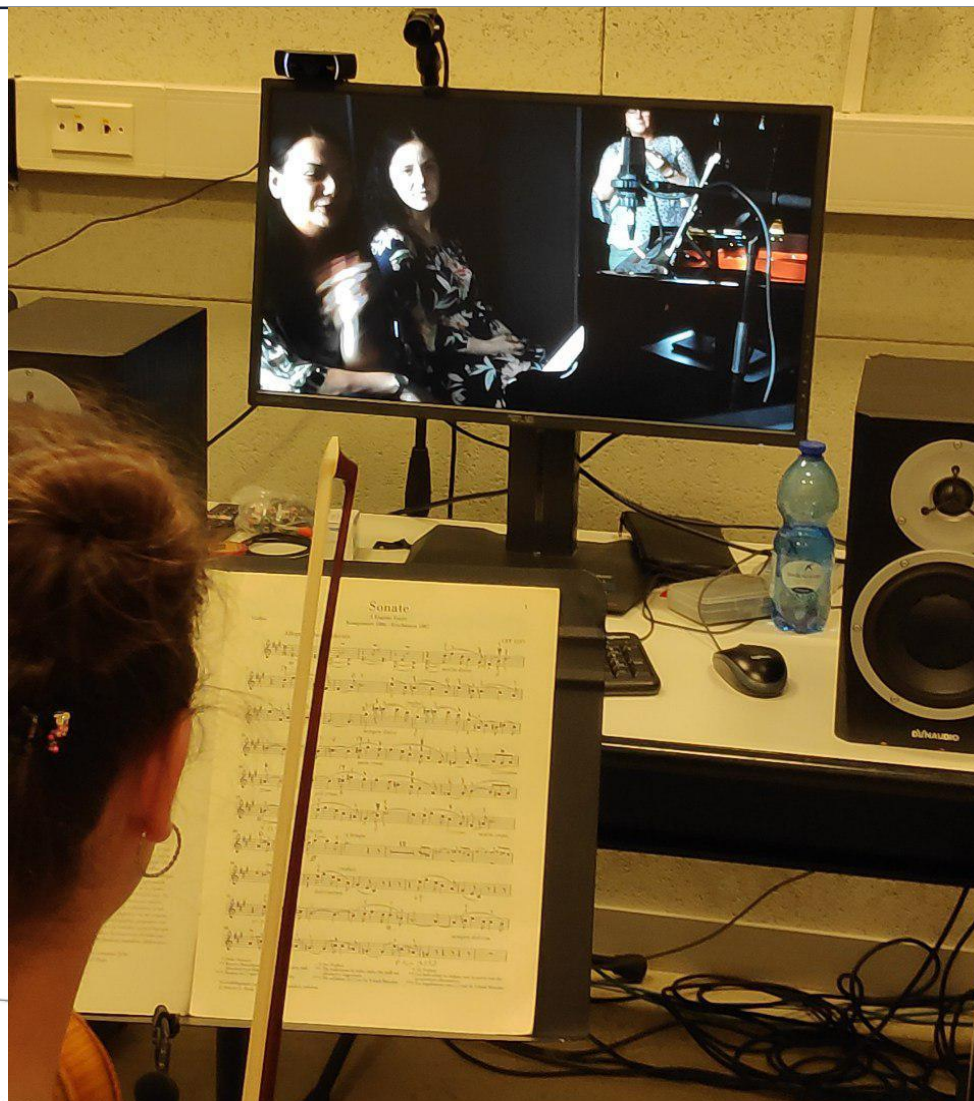


## Test: Milano





# Test: Vilnius





# Sviluppo

PARTENZE				
TRENO	DESTINAZIONE	ORARIO	RIT	BIN
EXP 900	TORINO P.N.	03:25	310'	.
EXP 1616	MILANO P.GAR	03:43	245'	7
IC 780	MILANO C.LE	04:12	250'	.
IC 784	MILANO C.LE	05:45	160'	.
EXP 906	TORINO P.N.	06:18	200'	.
EXP 1646	MILANO C.LE	06:33	135'	.
EXP 926	MILANO C.LE	07:00	225'	.
EXP 1576	MESTRE	07:05	120'	.
REG 11520	S.PIETRO C.	07:21	25'	11
GENT. NONCHE? MODIFICAZIONI O INTERRUZIONI IN DERIVA				



# Problemi



memegenerator.net



Ma!





# Articoli

## Connecting document interaction to support music distance learning environments: development of a multipurpose, collaborative PDF reader for real-time sharing of navigation and annotations on sheet music

Enrico Pietrocola  
Conservatory of Music G.Verdi of Milano  
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### ABSTRACT

This paper presents the project of a **real-time cooperative application for sharing and visualizing score or textual material in support of music distance learning and practicing** which will be **open source**, easily accessible and executable thanks to its predisposition to run on common widespread devices and operative systems.

### INDEX TERMS

Interaction, Distance Learning, Music Sheet, PDF, Annotations.

### I. INTRODUCTION

**Networked Music Performance (NMP)** and overall Music making in cooperative environments is spreading quickly and during the last years we have seen many institutions adopting hardware and software technologies enabling musicians to play music in an almost seamless experience in terms of audio and video. A dimension that is usually missing from this environment is the complementary dimension of interaction on the score, which is in fact, usually physically shared in a traditional learning context, as for example during a piano lesson when studying side by side with a teacher. Developing an application able to display music scores and providing interaction tools shared between the participants to act as if the musical document is a single physical entity is surely a possible solution to the issue and might prove more effective than expected in improving the feeling of presence between the distance learners. Features range from brushes to synchronized page turning, layers for orchestras to stack scores in a single document and allow a director to have a single view in which annotations can be set on different

research and providing the needed material and musicians to test and evaluate the development and design of the app's first version.

### *Intermusic*

In particular Intermusic is the place in which the idea for this project was born. Named after the concept of "Interactive Environment for Music Learning and Practicing" (Erasmus+ funded 2017 - 2020), aims to create an online shared Platform for that branch of distance learning dedicated to music teaching and practice that will enable modelling and sharing the best training practices for musicians as well as joint courses and online projects.

The two main objectives of Intermusic are:

- support online synchronous singing, instrumental solo performance and chamber groups classes where teachers and students interact in real time in an audio-video communication environment of the highest quality
- use and integrate methodologies and technologies of Blended Learning and Virtual Learning Environments in music higher education<sup>3</sup>

Therefore, the nature of this project is strongly related with Intermusic and its intellectual outputs.

Development planning followed the guidelines below:

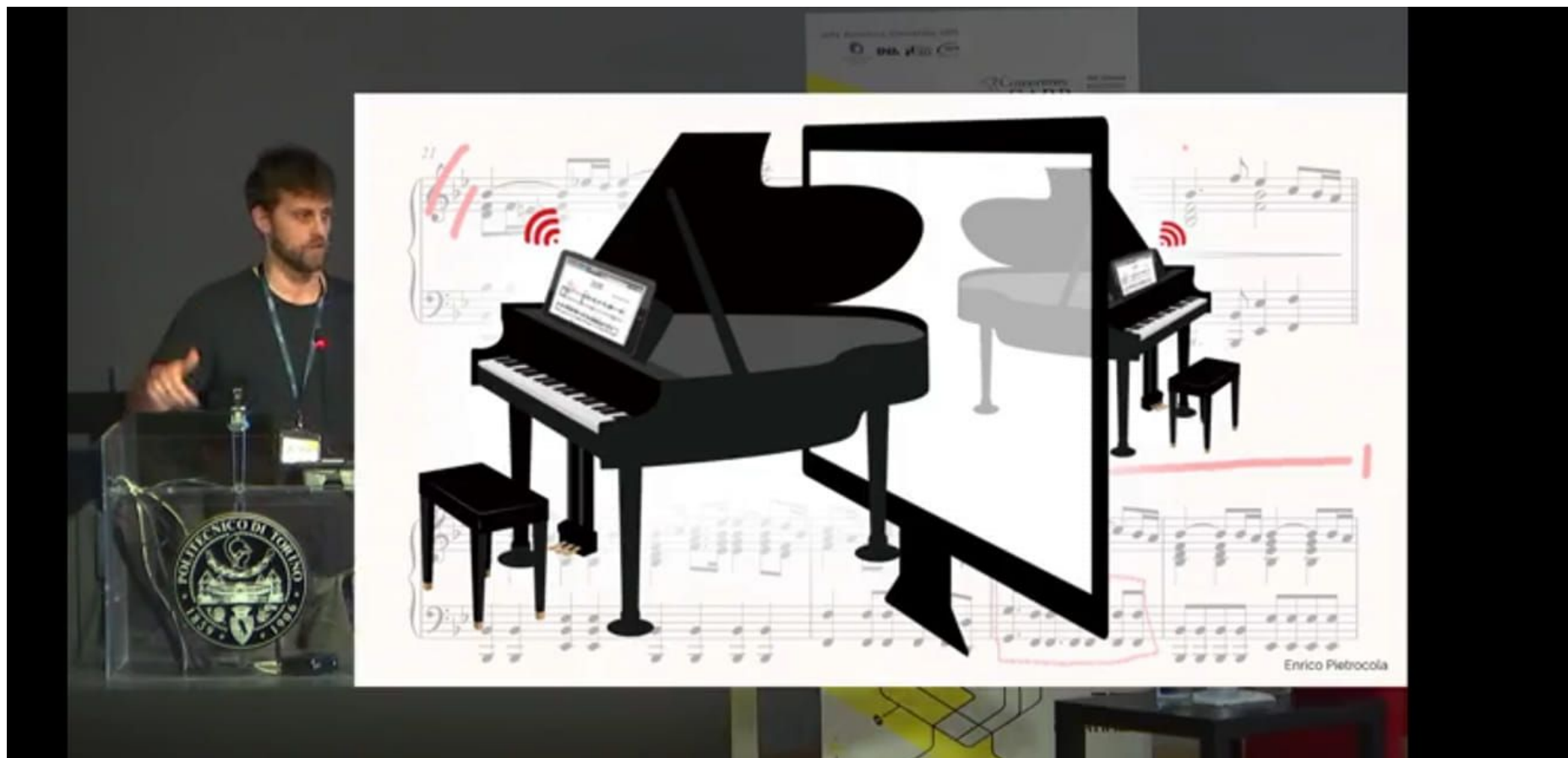
### *Guidelines*

- **Open Source:** further development after Version 1 will be carried and branched freely by anyone who wants to contribute to the project through a public repository system
- **Extendable:** being the application open source will

# LATEX



# Conferenza GARR 2019 Torino





# TNC19





# Sviluppi futuri

1. Ricerca su interazione uomo - macchina/spartito
2. Implementazione funzionalità hole punch UDP
3. Implementazione OSC ed estensibilità
4. Focus Porting Windows
5. Strumenti complementari per l'apprendimento musicale a distanza
6. Doxygen
7. Ulteriore miglioramento generale grafico e di funzionalità dell'applicazione già esistente
8. (Valutazione Porting web)



# Creare un servizio





# Grazie