Metabolic City Soundscape

PLAM CREATIVE STUDIO

SINTETICO

LUCA VENTURINI

METABOLIC CITY SOUNDSCAPE (MCS) is the result of a study on **air** and **noise pollution** in the context of the city of Ferrara.

Foto della performance a cura dei partecipanti del workshop del 7 ottobre 2023

The **Metabolic City Soundscape (MCS)** project, conceived and realised by **Plam Creative Studio, Sintetico and Luca Venturini**, is the **result of a performative visual and acoustic translation of the city's air pollution in relation to noise pollution.**

Project commissioned by Festa dell'Aria 2023, financed by UIA Air-Break ferrara and the Municipality of Ferrara. Curated by Basso Profilo (Leonardo Delmonte) and Politecnico di Milano - DAStU (Farah Makki) as part of the Engagement (Sound) Design Lab: Suonare l'Aria.
Hosted and co-produced by the Consorzio Wunderkammer.

The project

MCS is the **result of a study on air and noise pollution in the context of the city of Ferrara.** The **research**, carried out in the months preceding the workshop, **identified and documented the sources responsible for the emission of pollutants** and recorded the **associated environmental acoustic impact** in a defined area of the city.

The **collected material** was transformed into an **interactive instrument** consisting of **four controllers.** The controllers are linked to a **musical composition** specifically created on the basis of the **air pollution data**, collected on that particular day and geographical area. The designed interaction involves the simultaneous use of the controllers, in order to "play the air" by interpreting the collected scientific data in a performative key.

1.

2.

1. Frame from the video recording of one of the performances.

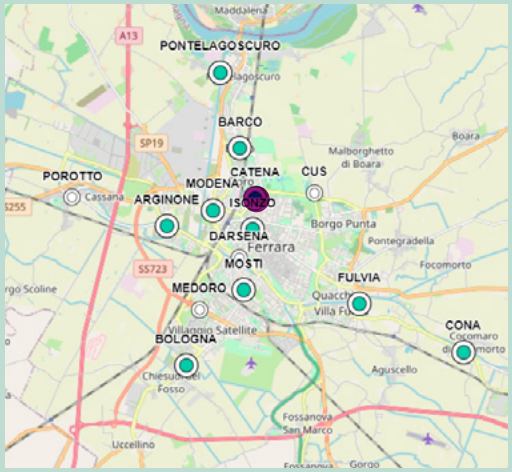
2. Photo of the 'interactive instrument' consisting of four controllers.

The data

The **data used in the analysis** was obtained by reading the **graph from the Corso Isonzo monitor,** one of 14 air quality stations installed in the city as **part of the Air Break project,** in **Ferrara.**
Each **station monitors and measures the air quality in the area,** calculates a quality index and displays its evolution during the day in the form of a graph.
The **Air Break index** is a numerical value from 0 to 100 and takes into account the hourly concentration levels of **five different pollutants: PM2.5, PM10, NO2, O3 and CO.**
https://airbreakferrara.net/che-aria-tira/

For the MCS project, 4 pollutants were analysed, combining PM2.5 and PM10 into a single pollutant.

1.



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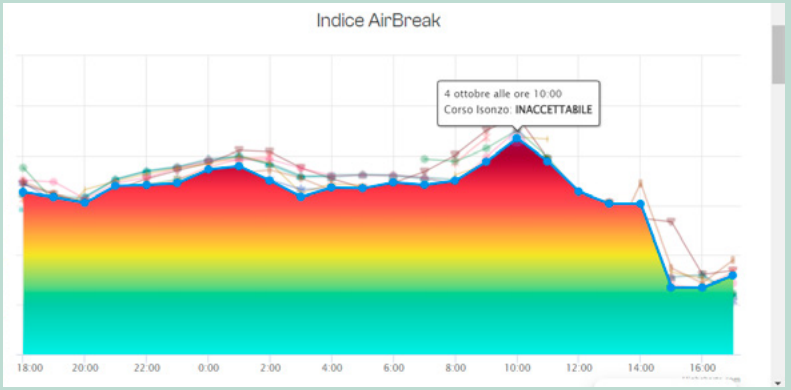


1. Map of the distribution of the 14 Airbreak control units in the city of Ferrara
2. Graph of the Central Unit in Corso Isonzo. Capture of 4 October 2023, h 10.00 a.m.
3. Photos of the Air-break control unit in Corso Isonzo (Ferrara)

1.
PM 2.5 e PM10
Particulate matter

2.
CO
Carbon Monoxide

3.
NO2
Nitrogen dioxide

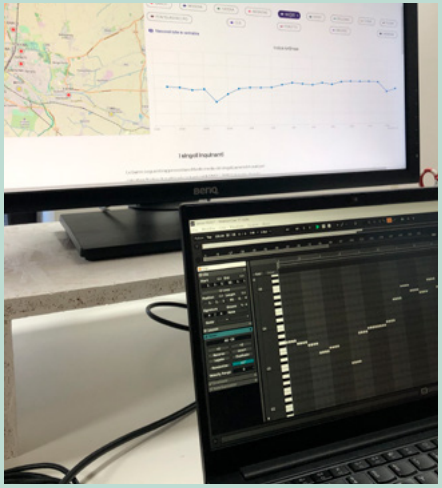
4.
O3
Ozone

The realisation of the MCS project can be divided into **three main operational phases.**

1. COLLECTION

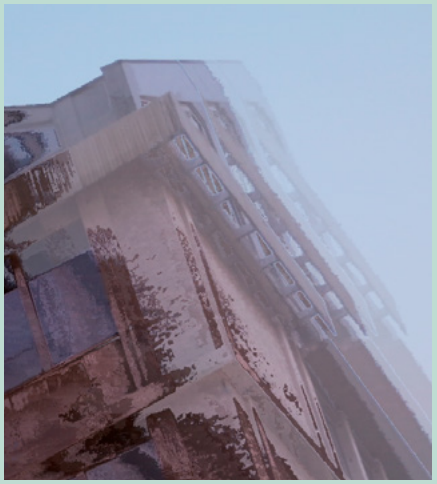
A first collection phase aimed at **creating an audio-visual archive.**

2. TRANSLATION



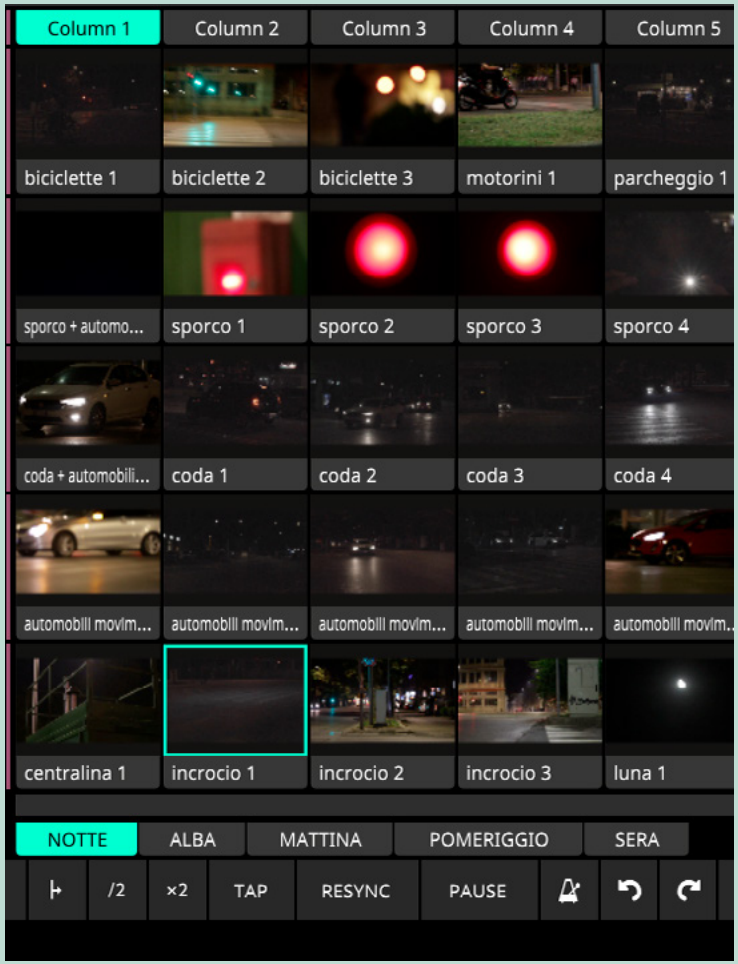
A second phase of translation of the audio material for the **construction of the soundscape.**

3. MAPPING E PROCESSING



A third phase of **mapping and processing to realise the visuals.**

1. Collection



Resolume Arena programme screen

project

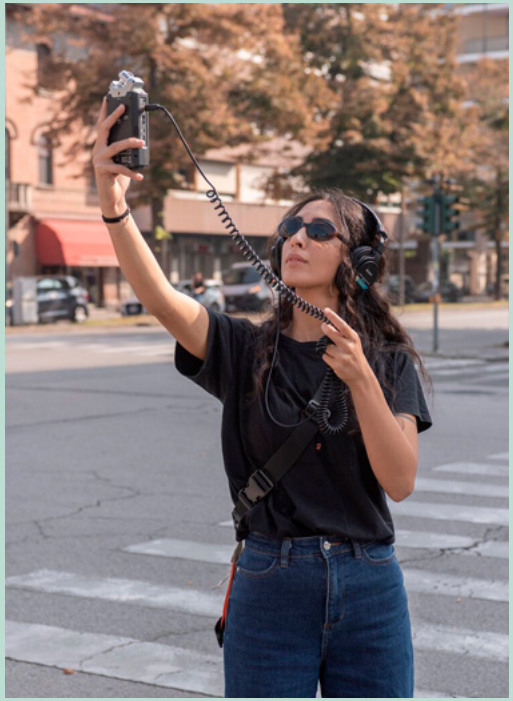
In the first phase of collection, **audio-video recordings were made at 5 different times of the day** that could reflect:

NIGHT – DAWN – MORNING – AFTERNOON – EVENING

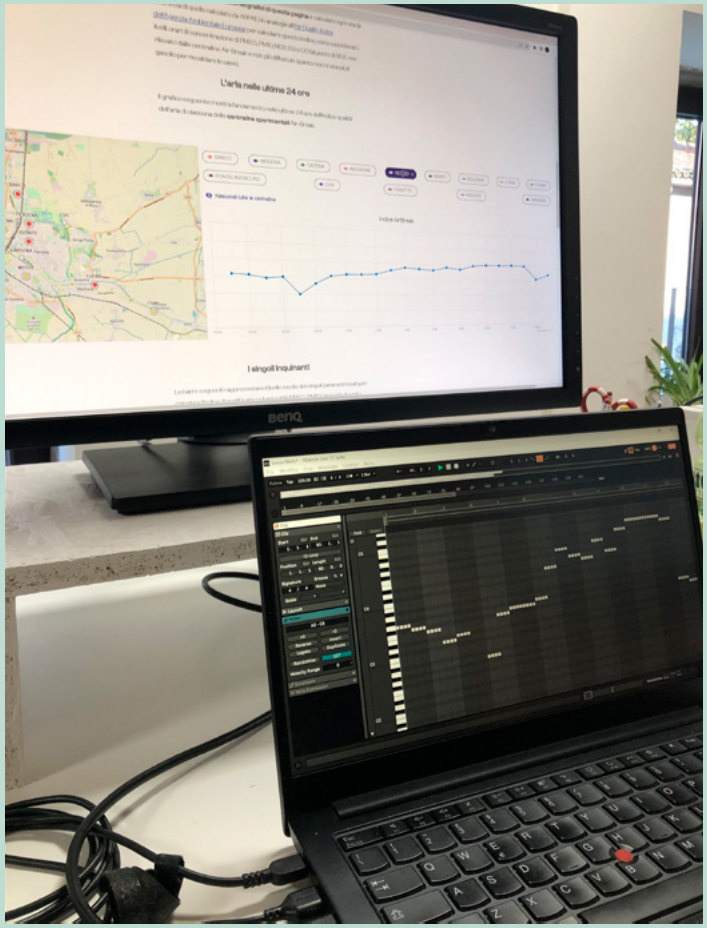
Material was subsequently **catalogued according to pollutant sources and time of recording.**

workhop

During the workshop held on 7 October 2023, the participants, following an **introduction of the project**, were involved in **the collection phase** of one of the five moments of the day: the morning registration, which took place at 11.30 a.m. that day.



2. Translation



Ableton screenshot associated with Airbreak graph:
Air-break index number values transposed into MIDI notes

project

In the second translation step, **the trend of the air-break graph was translated into sound.**
Taking the graph of the day analysed, **the numerical values of the air-break index were translated into MIDI** (Musical Instrument Digital Interface) **notes.**
The air-break values, now translated into notes, became the basis for the soundscape of the project, tracing the course of the graph and obtaining a **melodic rhythmic texture.**

the musical composition

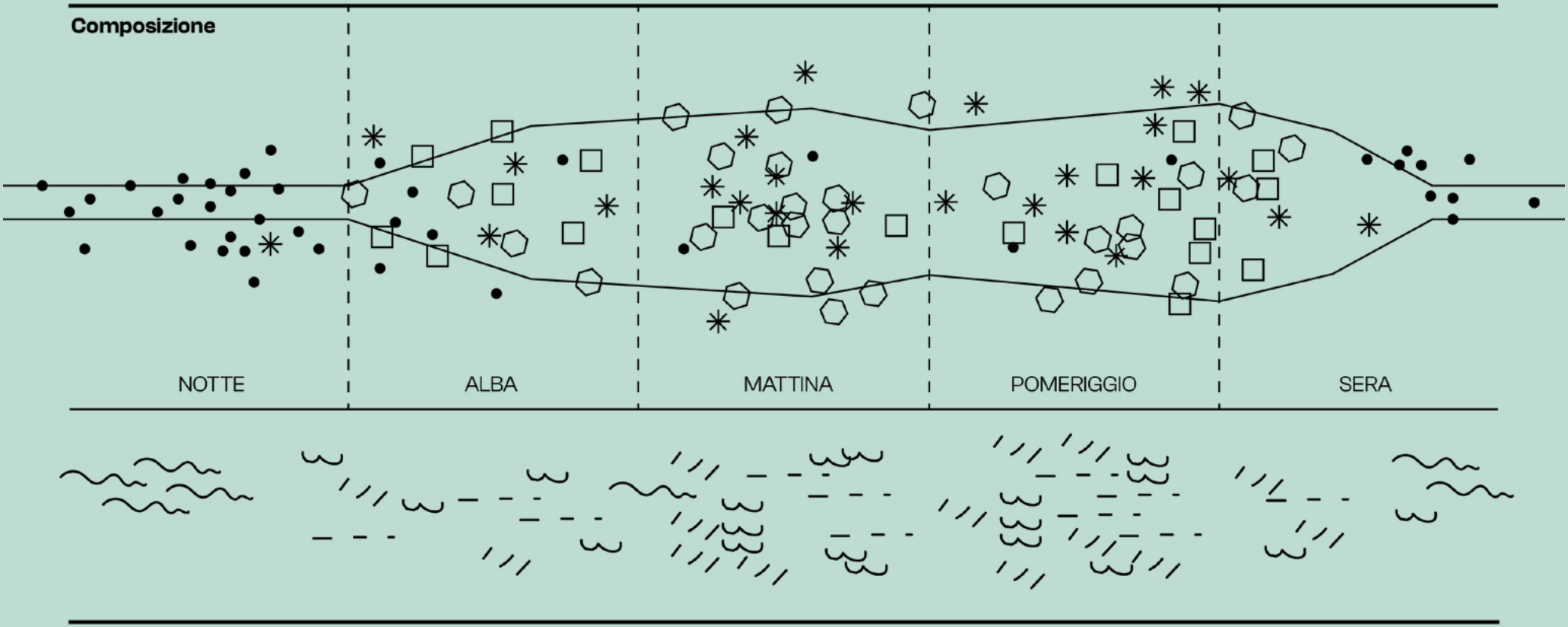
At this stage, **a composition was graphically designed to reflect the trend of the graph, identifying the concentration of pollutants released over the course of the day and inviting reproduction.**

The composition follows the **7-minute soundscape track** and is divided into 5 macro moments (night-dawn-morning-afternoon-evening).

The **pollutants** were represented by simple **graphic signs** in a legend and distributed according to emission concentration.

The composition was given to the workshop participants to interact with the instrument.

Photos of the printed musical composition taken during the workshop on 7 October 2023



LEGENDA

CONTROLLER	O3	CO	NO2	PM
pad trigger	●	□	⬡	✳
encodere texture	~	- - -	///	~

The composition covers the 7-minute soundscape track and is divided into five macro moments (night-dawn-morning-afternoon-evening).

3. Mapping e Processing

1. 

2. 

1. Controller in action, mapped buttons and encoders are highlighted by a pink perimeter
2. Frame of one of the performances: the visuals are the result of simultaneous interaction with the four controllers

project

For the third sound and video mapping phase, **the collected clips were linked to the sound samples via MIDI protocol and mapped to the four controllers. Each controller represents a single pollutant:**

PM2.5 and PM10-particulate matter,

NO2-nitrogen dioxide,

O3-ozone,

CO-carbon monoxide.

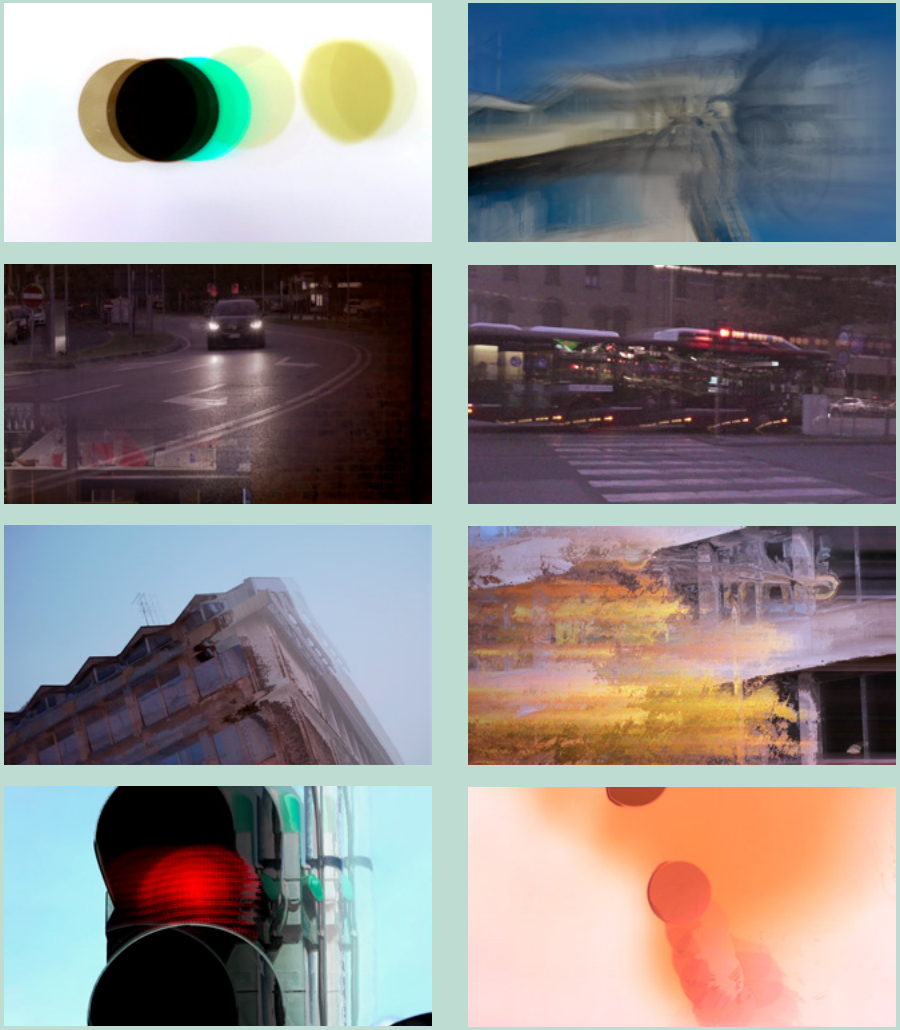
The performance is the result of the simultaneous interaction of the four controllers.

The controllers

The controllers used consist of **buttons and encoders** that have been given **two different functions.**

From an auditory point of view, the buttons on the controllers are associated with **the recorded sounds of the sources responsible for the emission of that pollutant. Visually,** each **button** plays **a few random frames of the video clip** associated with the sound.

The **encoders,** on the other hand, add **audio-visual effects** to interpret the pollutant.



Frame of one of the performances: the visuals are the result of simultaneous interaction with the four controllers

workhop

During the workshop, **participants were involved in the second and third phases.** The collected audios and videos were catalogued and added to the MCS archive and **participants were guided in the use of the programmes and devices.**
After setting up the interactive tool, **the participants realised a collective audio-visual performance.**

Full video perfomance Metabolic City Soundscape

Video trailer perfomance Metabolic City Soundscape

METABOLIC CITY SOUNDSCAPE

PLAM CREATIVE STUDIO + SINTETICO + LUCA VENTURINI

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