Presentation on Quiet Urban Areas in Florence

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QUADMAP – Pilot areas

A first draft methodology to select, analyse and manage QUAs has been proposed in the beginning of 2013 .

In order to test its validity, the methodology has been applied in several pilot areas selected in Bilbao, Rotterdam and Florence and, consequently, updated.

The aim of this presentation is to introduce the pilot areas selected in Florence. In addition, the main acoustical, general criticalities of each area and the interventions will be detailed.

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QUADMAP – Pilot areas selected in FLORENCE

In Florence it has been decided to apply the methodology in 6 schoolyards (De Filippo, Uccello, Manzoni, Dionisi, Vamba, Fedi) selected according to:

-the Action Plan of the city of Florence which recognises schoolyards as Quiet Areas

-the P.C.R.A. (Noise Reduction Plan) of the city of Florence which recognises the six schools as critical

-selecton criteria defined by the QUADMAP methodology (noise map/use and function)

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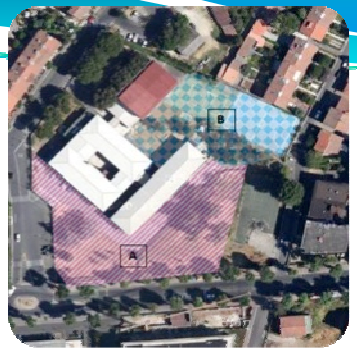
PA # 1

"E. De Filippo" School

Bassi Street, **Florence – ITALY**

Affected by road noise:
Argingrosso Street and Bassi Street
Users: 201

PA # 2

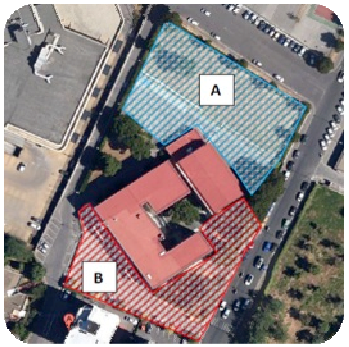


"P. Uccello" School

Golubovich Street, **Florence - ITALY**

Affected by aircraft noise and road noise: Pistoiese Street and Golubovich Street
Users: 287

PA # 3



"A. Manzoni" School

Sgambati Street, **Florence - ITALY**

Affected by road noise:
Gemignani Street and Sgambati Street
Users: 291

PA # 4

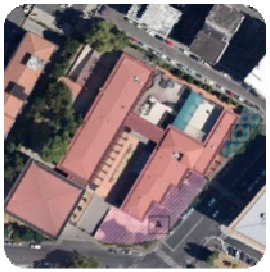
"F. Dionisi" School

Aretina Street, **Florence – ITALY**

Affected by road noise: Aretina Street

Users: 54

PA # 5



"Vamba-Montessori" School

Giardini della Bizzarria Street, **Florence – ITALY**

Affected by road noise:
Torre degli Agli Street and Giardini della Bizzarria Street
Users: 460

PA # 6

"P. Fedi" School

Pio Fedi Street, **Florence - ITALY**

Affected by road noise:
Pio Fedi Street and Argingrosso Street

Users: 100

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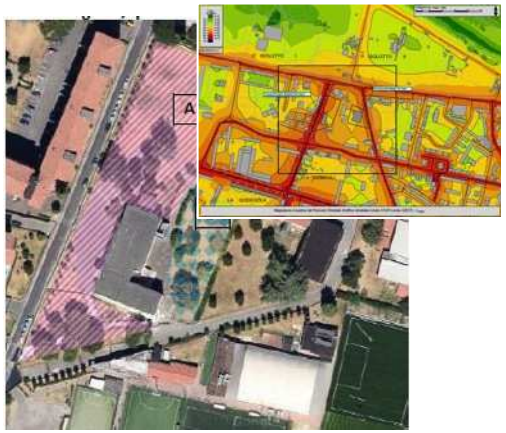
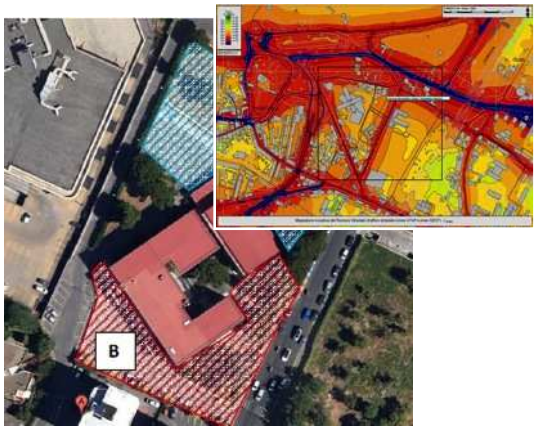
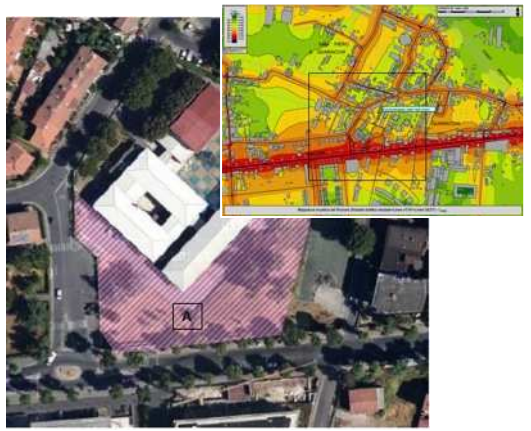
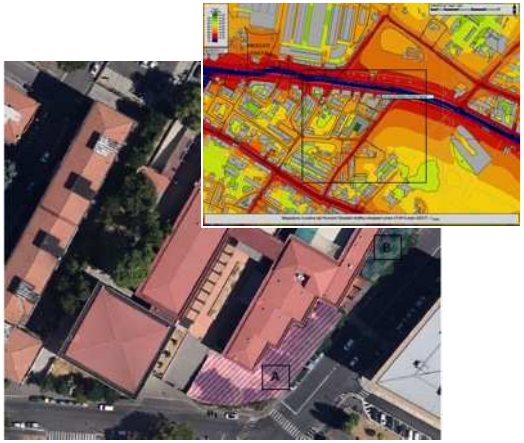
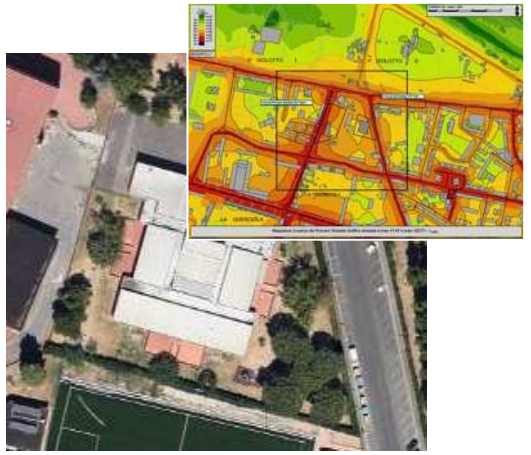
All the pilot areas are mainly affected by traffic noise, P. Uccello schoolyard is also affected by noise produced by aircrafts.











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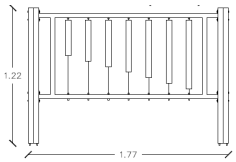
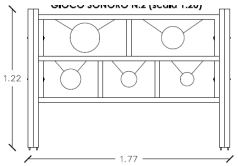
"E. DE FILIPPO" SCHOOL: PROJECT

The results of the acoustic measurements and simulations showed the need to protect the school garden from the noise from the nearby road infrastructure. This need has been confirmed by the non-acoustic investigation. For this reason, the intervention chosen for the noise reduction in the school garden is a noise barrier (3 m height and 50 m length).

The results of the non-acoustic investigation showed the need to design areas more accessible by children by creation of shaded areas with seats and games. To do this other non-acoustic interventions have been designed:
-planting of n. 4 trees (species "robinia pseudoacacia");
-n. 20 concret cube seats;
-n. 2 sound games;

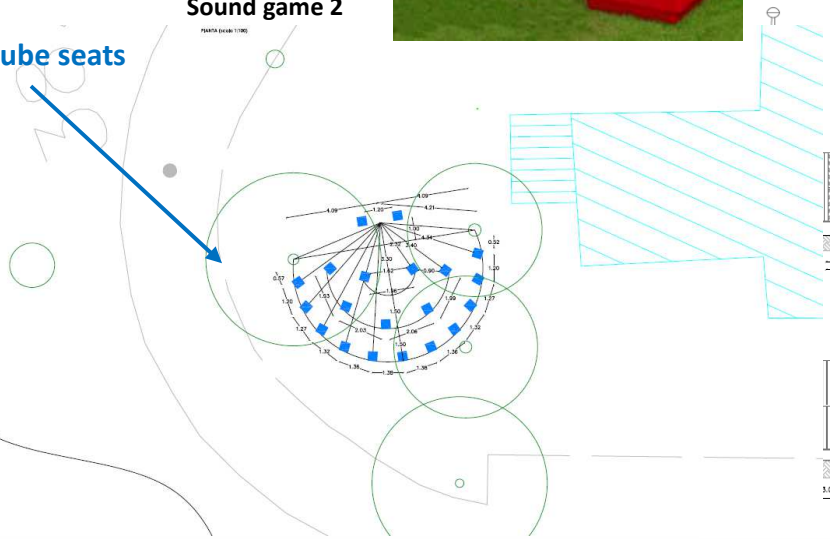
Sound game 1



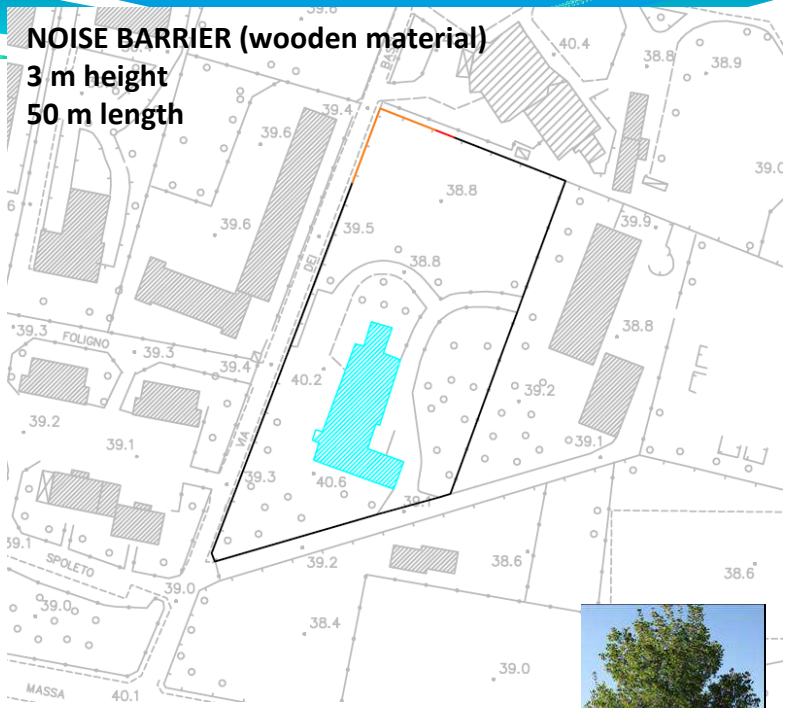


Sound game 2

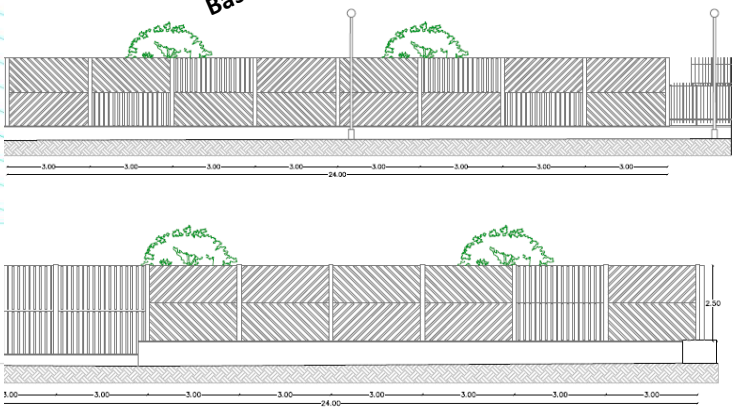
Concrete cube seats



NOISE BARRIER (wooden material)
3 m height
50 m length



Bassi Street side



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" A. MANZONI" SCHOOL: PROJECT

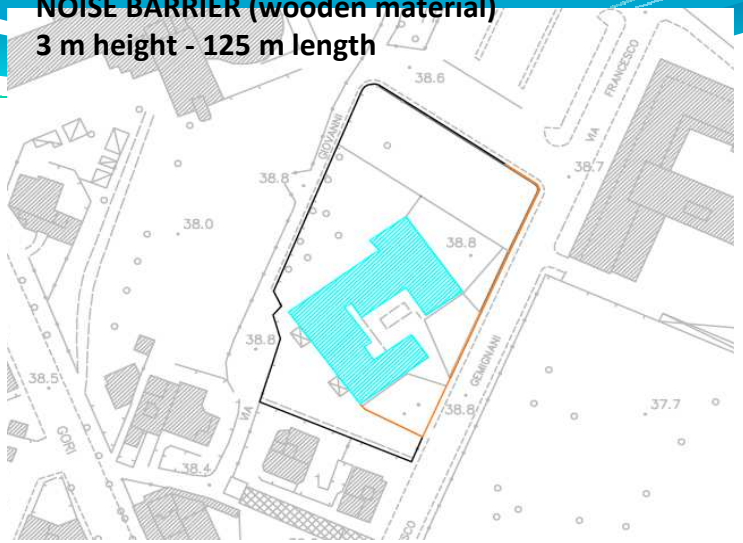
The results of the acoustic measurements and simulations showed the need to protect the school garden from the noise from the nearby road infrastructure. This need has been confirmed by the non-acoustic investigation. For this reason, the intervention chosen for the noise reduction in the school garden is a **noise barrier (3 m height and 125 m length**).

The results of the non-acoustic investigation showed the need to design areas more accessible by children by creation of shaded areas with benches and games. To do this other non-acoustic interventions have been designed:

-planting of n. 5 trees (species "robinia pseudoacacia");

-n. 30 concret cube seats.

NOISE BARRIER (wooden material)
3 m height - 125 m length



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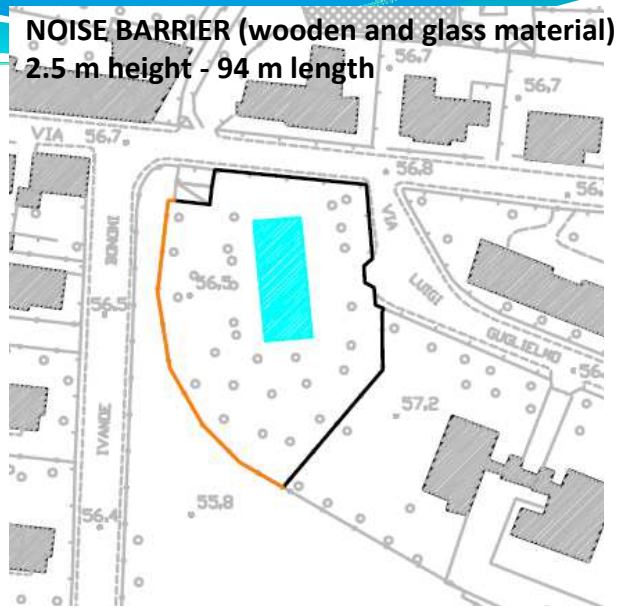
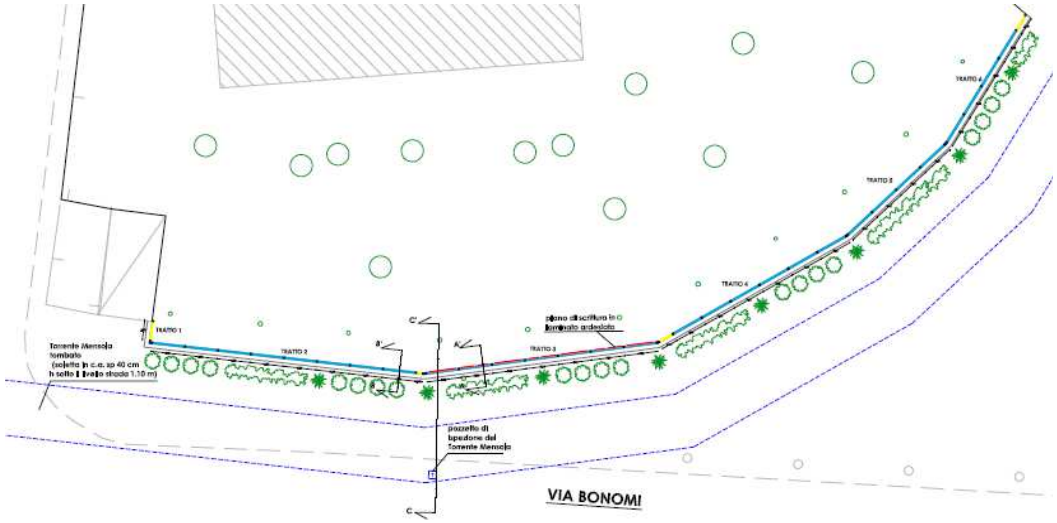
" F. DIONISI" SCHOOL: PROJECT

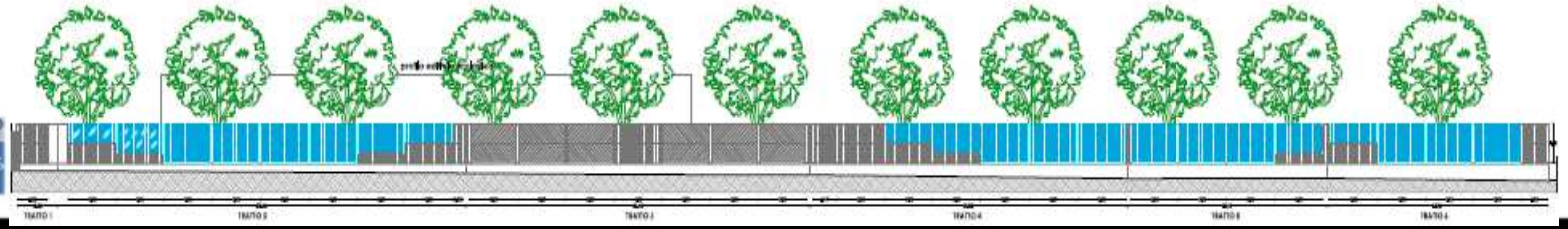
The results of the acoustic measurements and simulations showed the need to protect the school garden from the noise from the nearby road infrastructure. For this reason, the intervention chosen for the noise reduction in the school garden is a **noise barrier (2.5 m height and 94 m length) with integration of coloured elements of play** for children (blackboards).

This screen, in addition to the acoustic purpose, has been specifically requested by users in order to discourage people from outside the area to approach and call the children.

NOISE BARRIER (wooden and glass material)
2.5 m height - 94 m length







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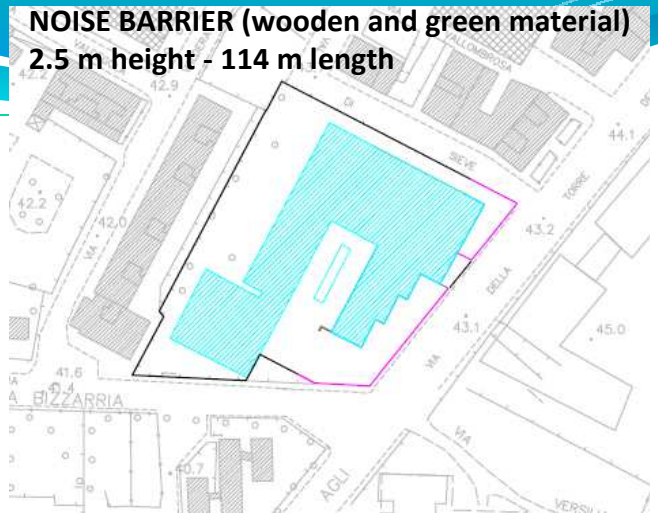
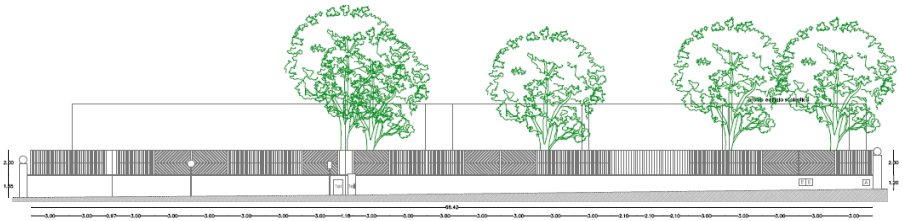
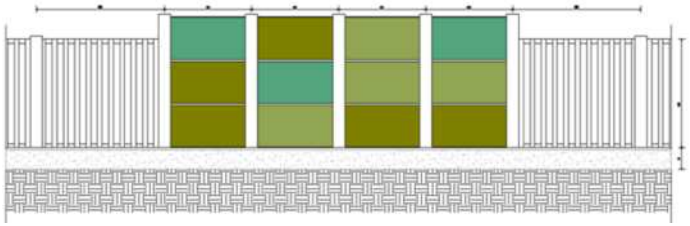
" VAMBA-MONTESSORI" SCHOOL: PROJECT

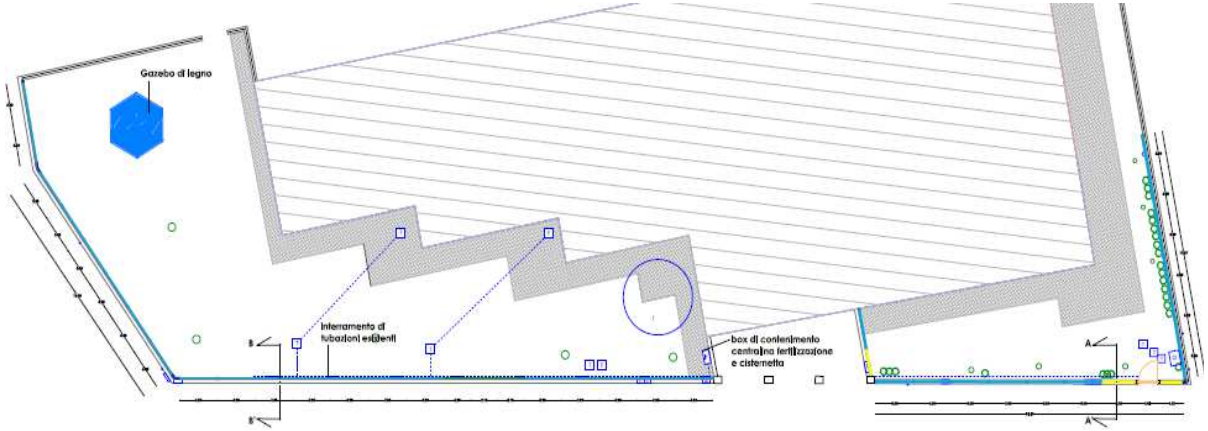
The results of the acoustic measurements and simulations showed the need to protect the school garden from the noise from the nearby road infrastructure. For this reason, the intervention chosen for the noise reduction in the school garden is a **wooden noise barrier** (2.5 m height and 114 m length). A part of this barrier is **green type** (2,5 m height and 6 m length).
The results of non-acoustic investigation showed the need to design a **space for teaching in external**. To do this **a wooden gazebo** in the garden area protected by the barrier has been designed. This element can be used for the external teaching and is shaded, as required by end-users.

NOISE BARRIER (wooden and green material)
2.5 m height - 114 m length









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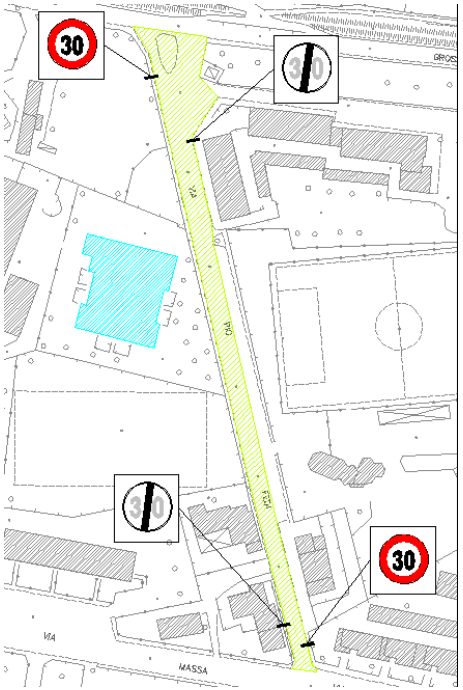
" PIO FEDI" SCHOOL: PROJECT

The results of the acoustic measurements and simulations showed no need to protect the school garden from the noise from the nearby road infrastructure. We evaluated the opportunity to replace that intervention with an alternative of similar acoustic efficiency by reducing the average speed with road signs.

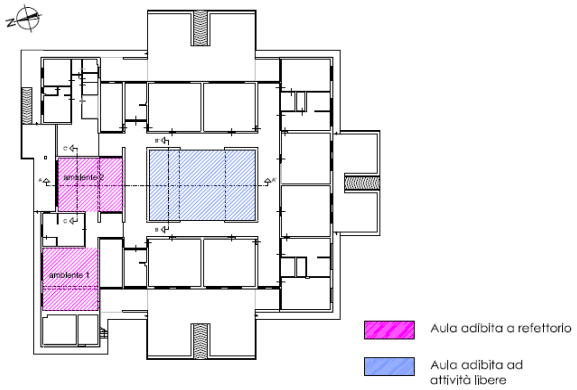
Road signs (limit of 30 km/h)

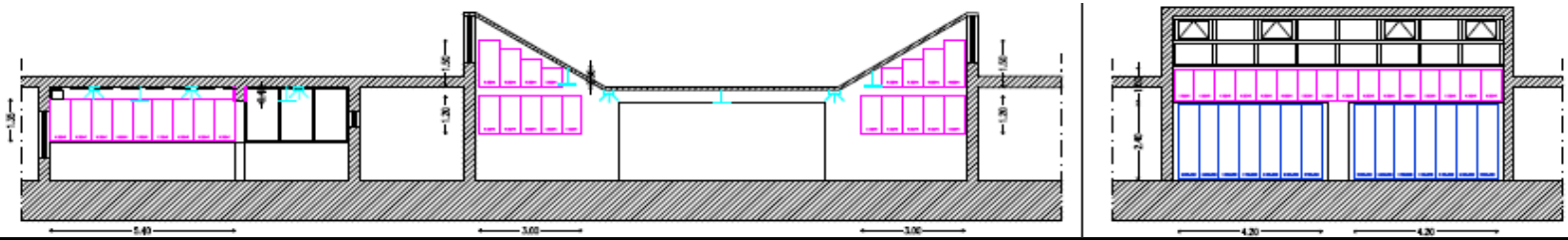


The designed intervention consists of the **installation of road signs containing the prescribed speed limit of 30 km/h** (Pio Fedi street between Argingrosso street and Massa street).

The results of acoustic surveys have demonstrated the need to make an indoor acoustic study.

In particular, the reverberation time has been measured in the two most critical rooms: “free activities” room and refectory. In these rooms the reverberation time is very high, so the acoustic project consists of **installation of sound-absorbing panels**.





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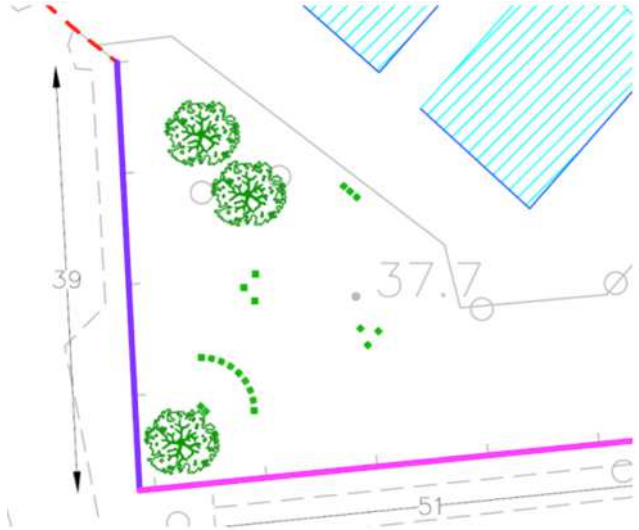
" PAOLO UCCELLO" SCHOOL: PROJECT

The results of the acoustic measurements and simulations showed the need to protect the school garden from the noise from the nearby road infrastructure. This need has been confirmed by the non-acoustic investigation. For this reason, the intervention chosen for the noise reduction in the school garden is a noise barrier (3 m height and 39 m length on Fra' Golubovich street and 4 m height and 75 m length on Pistoiese street).

The results of the non-acoustic investigation showed the garden area in front of Pistoiese street is a little bit used, for noise problems and for the lack of equipment such elements for the seat. The garden project involved the construction of chairs placed in the most protected part of the garden from the road noise according to various aggregation schemes such that they can be used for any teaching outside. The type chosen for the seats is made up of concrete cubes of size 45x45x45 cm with anti-graffiti treatment.



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PILOT AREAS

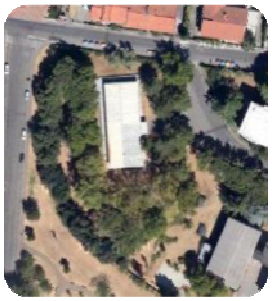
In four *Pilot Areas (PA)* main interventions took place.

PA "E. De Filippo" School

Bassi Street,
Florence - ITALY

Affected by road noise

PA "F. Dionisi" School



Aretina Street,
Florence - ITALY

Affected by road noise

PA "A. Manzoni" School

Sgambati Street,
Florence - ITALY

Affected by road noise

PA "Vamba-Montessori" School

Torre degli Agli Street,
Florence - ITALY

Affected by road noise

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PILOT AREAS

- *DE FILIPPO*



- *MANZONI SCHOOL*



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PILOT AREAS

- *VAMBA MONTESSORI*



- *DIONISI SCHOOL*



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PILOT AREAS

De Filippo School

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PILOT AREAS

Manzoni School

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PILOT AREAS

Dionisi School

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PILOT AREAS

Vamba Montessori School





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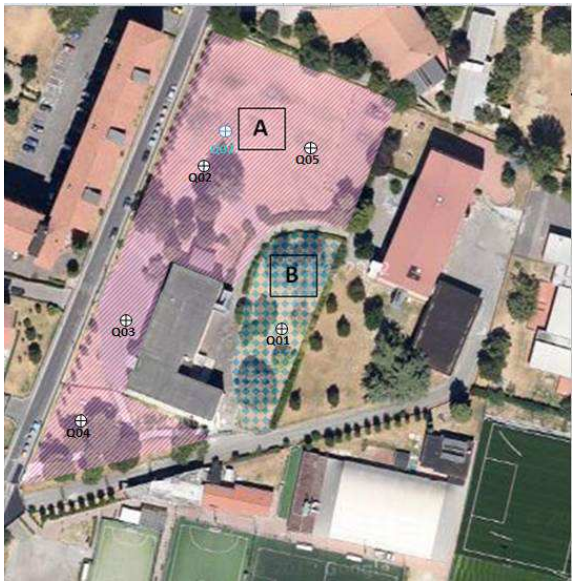
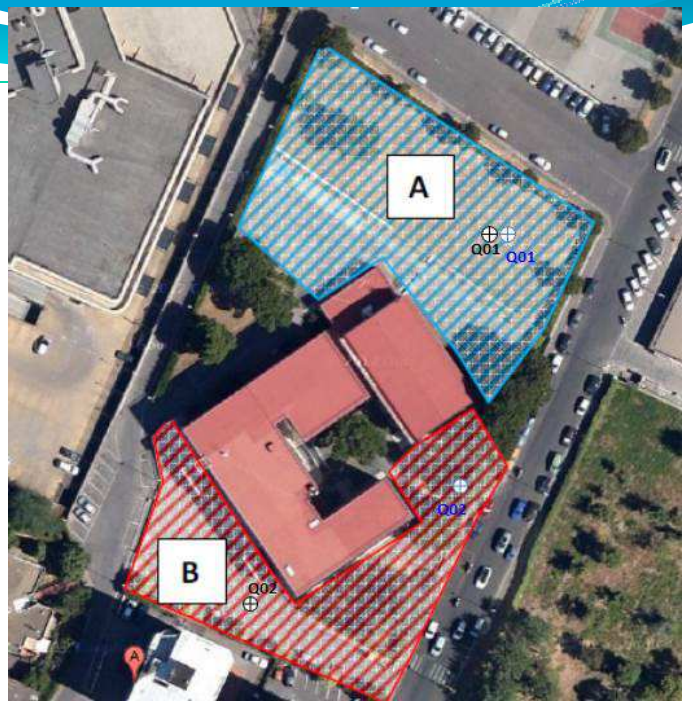
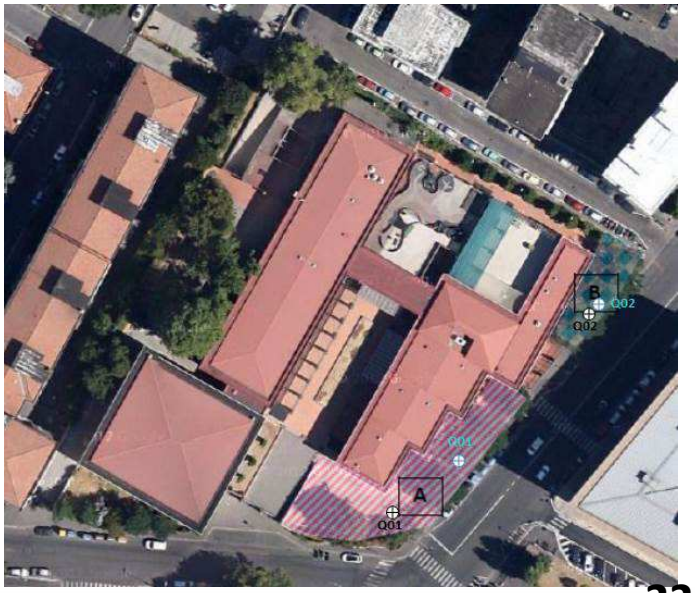
POST-OPERAM MEASUREMENT RESULTS





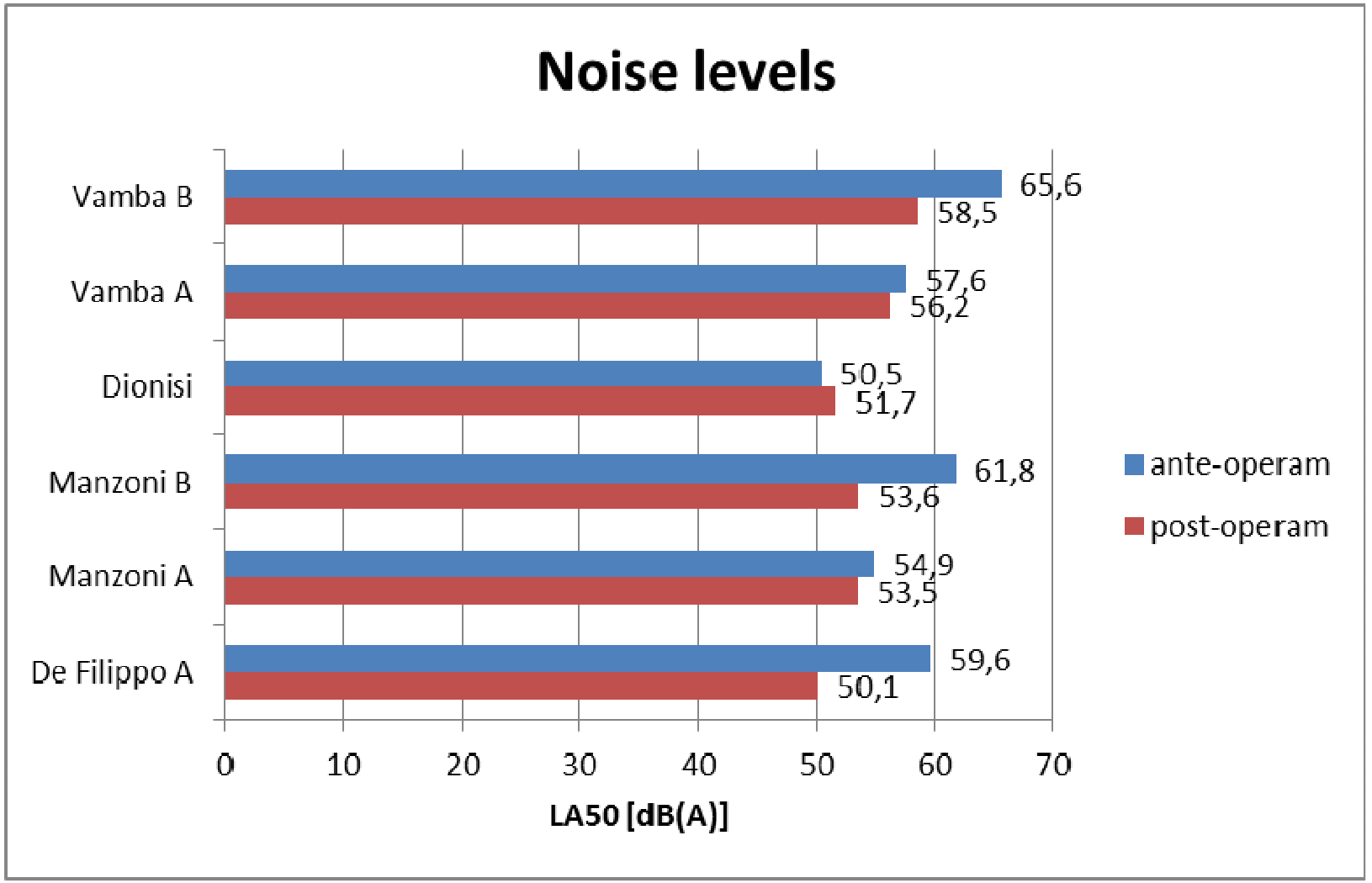


LEGENDA

⊕ QXX postazione di misura post-operam

⊕ QXX postazione di misura ante-operam

POST-OPERAM MEASUREMENT RESULTS



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POSTER

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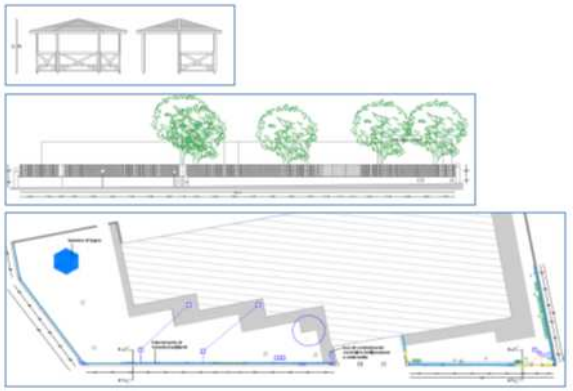
QUADMAP QUIET AREAS DEFINITION & MANAGEMENT IN ACTION PLANS

AREE PILOTA

Scuola "Vamba-Montessori" | Scuola "P. Uccello" | Scuola "A. Manzoni" | Scuola "Dionisi" | Scuola "E. De Filippo" | Scuola "Pio Fedi"

L'intervento progettuale realizzato nell'ambito del Progetto Quadmap per la riqualificazione del giardino scolastico ha previsto la realizzazione di una barriera antirumore di altezza 2,5 m e di lunghezza 117 m, con una porzione di barriera verde di altezza 2 m e lunghezza 6 m. Inoltre l'intervento ha previsto la realizzazione di un'area attrezzata per l'insegnamento in esterno e la riqualificazione del verde attraverso la piantumazione di alberi.



Il principale obiettivo del Progetto QUADMAP, co-finanziato dalla Comunità Europea, è consistito nel definire una metodologia armonizzata per la selezione, la valutazione e la gestione delle zone silenziose indicate dalla Direttiva 2002/49/CE.

Partner del progetto:

Beneficiario incaricato del coordinamento
Università di Firenze, Dipartimento di Ingegneria Industriale (Italia)

Beneficiari associati
DCMR Env. Protection Agency (Olanda)
Ayuntamiento de Bilbao, Obras y Servicios (Spagna)
TECNALIA (Spagna)
VIE EN.RO.SE. Ingegneria S.r.l. (Italia)
Comune di Firenze (Italia)
BRUITPARIF (Francia)

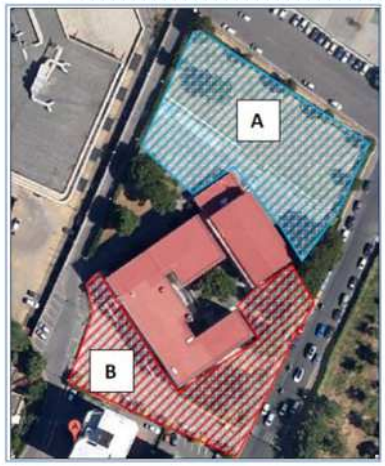
Sostenitori
EUROCITIES Working Group Noise

QUADMAP

QUIET AREAS DEFINITION & MANAGEMENT IN ACTION PLANS

AREE PILOTA

L'intervento progettuale realizzato nell'ambito del Progetto Quadmap per la riqualificazione del giardino scolastico ha previsto la realizzazione di una barriera antirumore di altezza 3 m e di lunghezza 128 m. Inoltre l'intervento ha previsto la realizzazione di un'area attrezzata con alberi e sedute per la riqualificazione generale dell'area.



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QUADMAP QUIET AREAS DEFINITION & MANAGEMENT IN ACTION PLANS

AREE PILOTA

L'intervento progettuale realizzato nell'ambito del Progetto Quadmap per la riqualificazione del giardino scolastico ha previsto la realizzazione di una barriera antirumore di altezza 2,5 m e di lunghezza 94 m, con l'integrazione di lavagne sul lato interno della barriera.

Il principale obiettivo del Progetto QUADMAP, co-finanziato dalla Comunità Europea, è consistito nel definire una metodologia armonizzata per la selezione, la valutazione e la gestione delle zone silenziose indicate dalla Direttiva 2002/49/CE.

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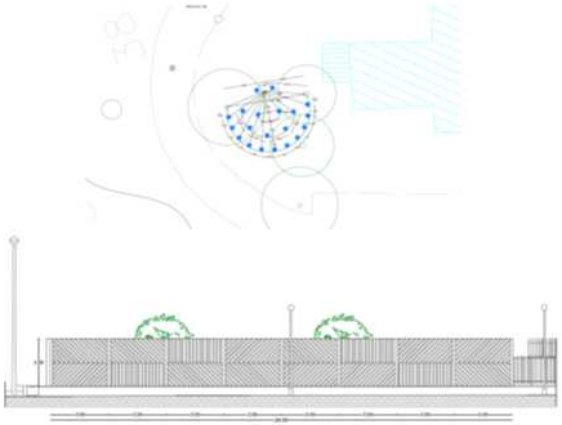
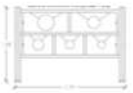
QUADMAP QUIET AREAS DEFINITION & MANAGEMENT IN ACTION PLANS

AREE PILOTA

L'intervento progettuale realizzato nell'ambito del Progetto Quadmap per la riqualificazione del giardino scolastico ha previsto la realizzazione di una barriera antirumore di altezza 3 m e di lunghezza 50 m. Inoltre l'intervento ha previsto la realizzazione di un'area attrezzata con alberi, sedute e giochi sonori.



Il principale obiettivo del Progetto QUADMAP, co-finanziato dalla Comunità Europea, è consistito nel definire una metodologia armonizzata per la selezione, la valutazione e la gestione delle zone silenziose indicate dalla Direttiva 2002/49/CE.



Partner del progetto:

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Beneficiari associati
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QUADMAP QUIET AREAS DEFINITION & MANAGEMENT IN ACTION PLANS

AREE PILOTA

Scuola "Pio Fedi"

Scuola "P. Uccello"

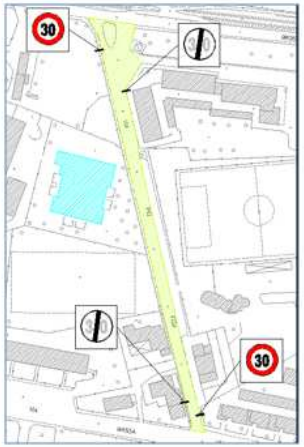
Scuola "Vamba-Montessori"

Scuola "Manzoni"

Scuola "Dionisi"

Scuola "De Filippo"

I risultati delle indagini acustiche hanno evidenziato problematiche acustiche all'interno dell'edificio piuttosto che nel resede esterno. Conseguentemente, l'intervento progettuale per il miglioramento del clima acustico del giardino scolastico ha previsto la limitazione della velocità di transito su via Pio Fedi realizzata attraverso inserimento di nuova segnaletica stradale con limite di velocità 30 km/h.



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QUADMAP

QUIET AREAS DEFINITION & MANAGEMENT IN ACTION PLANS

AREE PILOTA

La fase di indagine svolta nelle diverse aree del giardino della scuola "Paolo Uccello" ha riguardato misure fonometriche di breve e lunga durata (settimanale), registrazioni binaurali e questionari che hanno evidenziato le caratteristiche acustiche e non acustiche del resede.

Il principale obiettivo del Progetto QUADMAP, co-finanziato dalla Comunità Europea, è consistito nel definire una metodologia armonizzata per la selezione, la valutazione e la gestione delle zone silenziose indicate dalla Direttiva 2002/49/CE.

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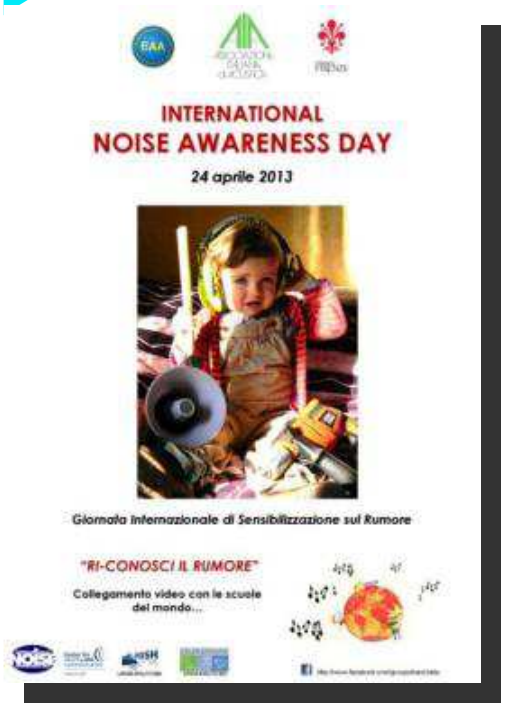

QUADMAP ROJECT and QUADMAP PARTNERS have actively supported INAD activities in 2013, 2014, 2015 editions

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Subject Area T05 promotes and collects **structured and regular sessions** on **research projects funded by EU** and on Education activities, both on noise and vibration.

A **PROJECTS FAIR for ideas and partnerships** is organised on Wednesday 12 July

Regular Sessions

T05.RS01 - European Projects on Acoustics
(Gaetano Licitra, Italy)

Structured Sessions

T05.SS01 - Listen to TANGO: an EU-funded Network for Research on Thermoacoustics and Aeroacoustics
(Maria A. Heckl, United Kingdom)

T05.SS02 - LIFE DYNAMAP
(Patrizia Bellucci, Italy & Giovanni Zambon, Italy)

T05.SS03 - Quiet Areas
(Lapo Governi, Italy & Miriam Weber, Netherlands)

T05.SS04 - Noise awareness
(Sergio Luzzi, Italy & Antonio Perez Lopez, Spain)

T05.SS05 - Education in Acoustics
(T. Elnady, Egypt)

T05.SS06 - Predictive Maintenance Employing Non-intrusive Inspection & Data Analysis (QUIET-TRACK)
(Patrick Vanhonacker, Belgium & Konstantinos Vogiatzis, Greece)

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Thanks for your attention

Sergio Luzzi

Arnaldo Melloni

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