CSTB
le futur en construction

SEVENTH FRAMEWORK PROGRAMME

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HOSANNA

HOlistic and Sustainable Abatement of Noise by optimized combinations of Natural and Artificial means

Colloque Eco-Quartiers et environnements sonores

Paris, 3 avril 2012

CIDB
Centre d'information et de documentation sur le Bruit

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Contexte

Appel à Proposition de Recherche

- SEVENTH FRAMEWORK PROGRAMME
- Theme: Transport (including Aeronautics)
- FP7-SST-2008-RTD-1

  Activity: 7.2.1 - The greening of Surface Transport

  Area: 7.2.1.1 - The Greening of Products and Operations

  Topic: SST.2008.1.1.3 – **Holistic Noise and Vibration Abatement**

Thématiques

- Développement durable et bruit
- Bruit et Santé
- Végétalisation de la ville
- Innovation

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Objectifs du projet

Objectifs principaux

- Réduction des nuisances sonores dues aux transports terrestres en se basant sur des combinaisons de moyens naturels et moyens artificiels : forme du sol, écrans végétalisés, écrans bas innovants, végétation basse et moyenne, arbres, surfaces végétalisées, utilisation de matériaux recyclés, minéraux
- Confronter les approches SP et SH
- Livrer un « Guide de bonnes pratiques » à l'attention des aménageurs

Thèmes abordés

- Innovative barriers exploiting natural materials
- Trees, shrubs and bushes
- Ground treatment
- Greening buildings
- Holistic acoustic design and perceptual evaluation
- Cost benefit analysis

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Partenaires

Sweden:

- CTH: Chalmers University of Technology
- SU: Stockholm University
- Sthlm: City of Stockholm

France:

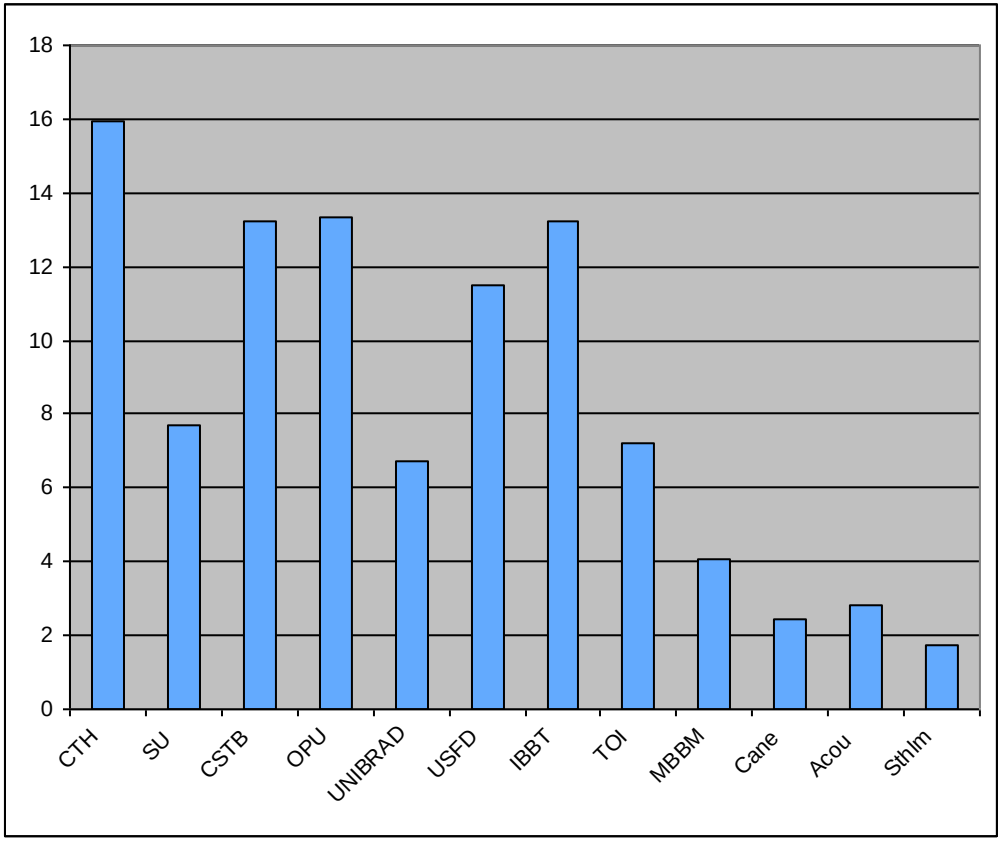
- CSTB: Building Research Center
- Cane: Canevaflor SAS
- Acou: ACOUCITE

UK:

- OPU: The Open University
- UNIBRAD: University of Bradford
- USFD: The University of Sheffield

Others:

- IBBT: Interdisciplinary Institute for Broadband Technology, Belgium
- TOI: The Institute of Transport Economics, Norway
- MBBM: Muller BBM, Germany



Durée 3 ans, démarrage 01/11/09

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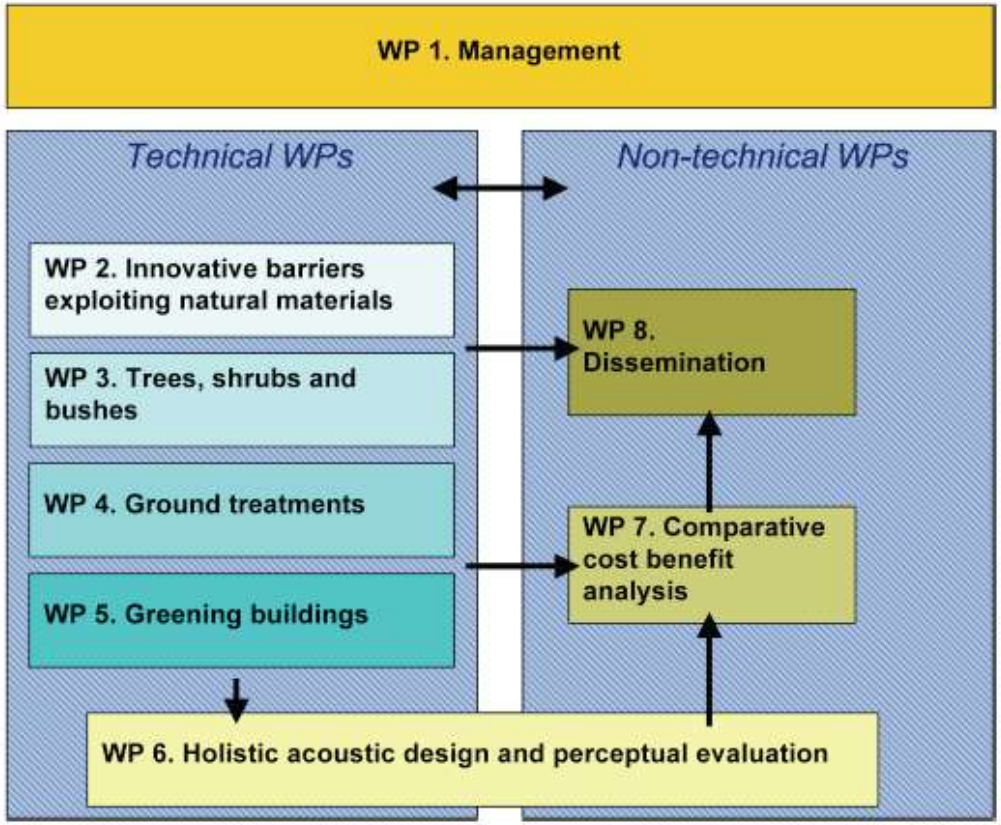
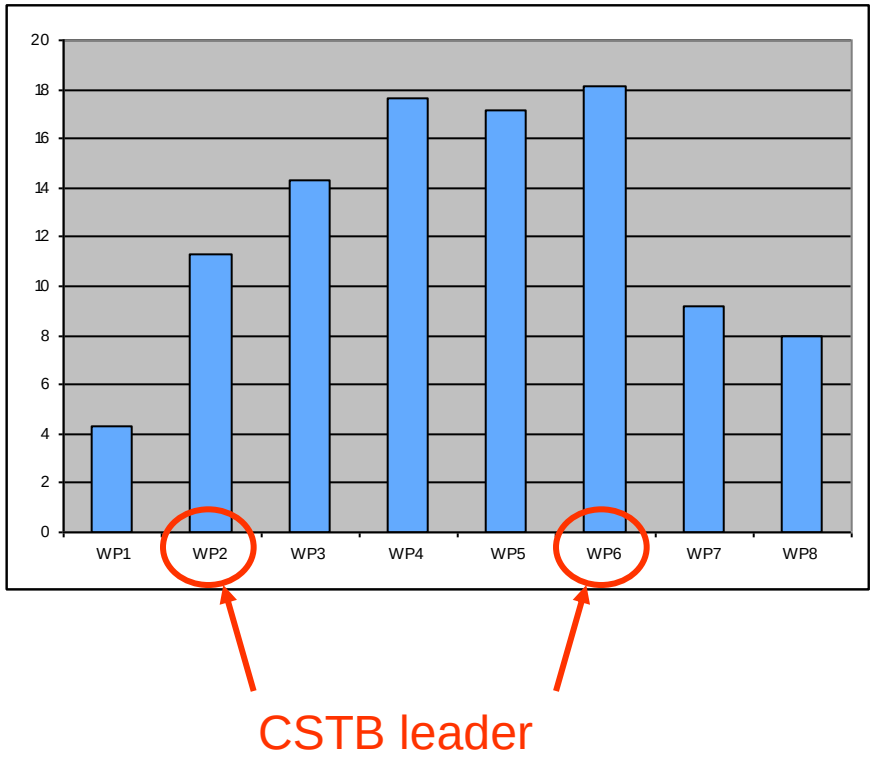
Organisation





Innovative barriers exploiting natural materials

Leader CSTB (Jérôme Defrance)

Objectives

- To carry out a **state of the art** study of acoustical models dedicated to barriers with vegetation, also considering recycled materials
- To produce and apply **porous acoustic products** made from a range of recycled polymeric and elastomeric industrial waste using a novel extrusion process
- To characterise the acoustical properties of **recycled porous materials**
- To make choices of available **prediction methods** and to adapt them to each specific application
- To carry out **simulations** of innovative vegetated/natural barriers

Innovative barriers exploiting natural materials

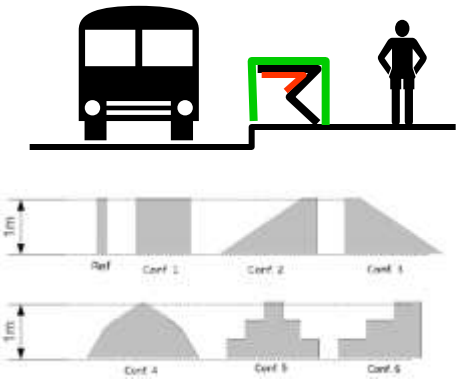
Leader CSTB (Jérôme Defrance)

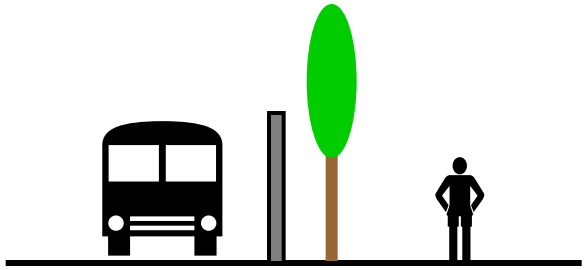
Partners

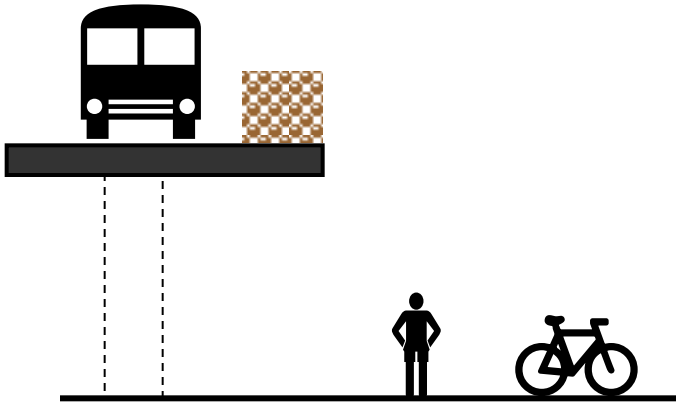
- CSTB, OPU, UNIBRAD, USFD, IBBT

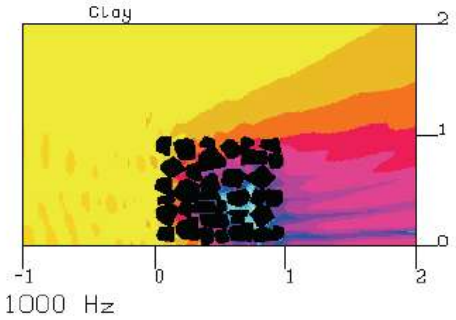
Tasks

- T2.1: State of the art of experience and models
- T2.2: Choice and adaptation of models
- T2.3: Application to innovations
- T2.4: Analysis and recommendations

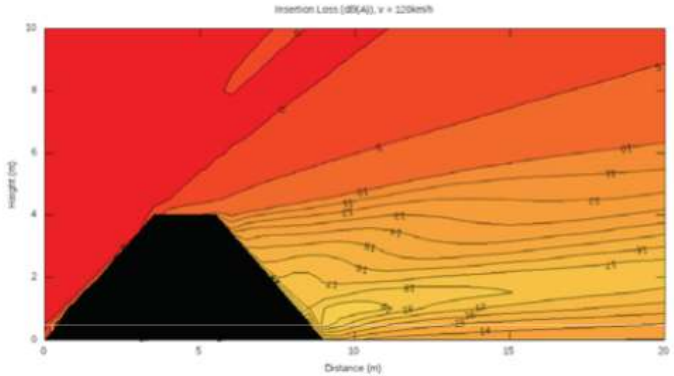




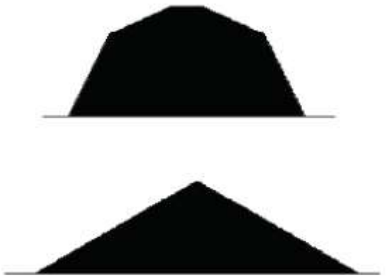




Low height gabions



Berms



Holistic acoustic design and perceptual evaluation

Leader CSTB (Dirk van Maercke)

Objectives

- To develop **psychophysical models** of the relationship between spectral and time-pattern properties of urban soundscape and perceptual outcomes
- To develop **new acoustic indicators** for parks and green areas that capture psychological restoration and aesthetic experience (complementary to Lden)
- To validate designs through field trials and lab listening tests using **auralization**
- To create a new **global prediction tool** applicable to WPs abatement methods
- To evaluate the **overall impact** of combining several or all of the abatement methods developed in the other technical workpackages (WP2-WP5)
- To make available **simplified engineering models**

Holistic acoustic design and perceptual evaluation

Leader CSTB (Dirk van Maercke)

Partners

- CSTB, CTH, SU, OPU, UNIBRAD, USFD, IBBT, TOI, MBBM, Canevaflor, Acoucité

Tasks

- T6.1: Full scale measurement campaigns
- T6.2: Evaluation of holistic solutions
- T6.3: 3D sound restitution and new indicators

Quai Fulchiron's full scale measurement campaign (Lyon)

- Low height vegetated barrier in urban area
- Physical and perceptive approaches

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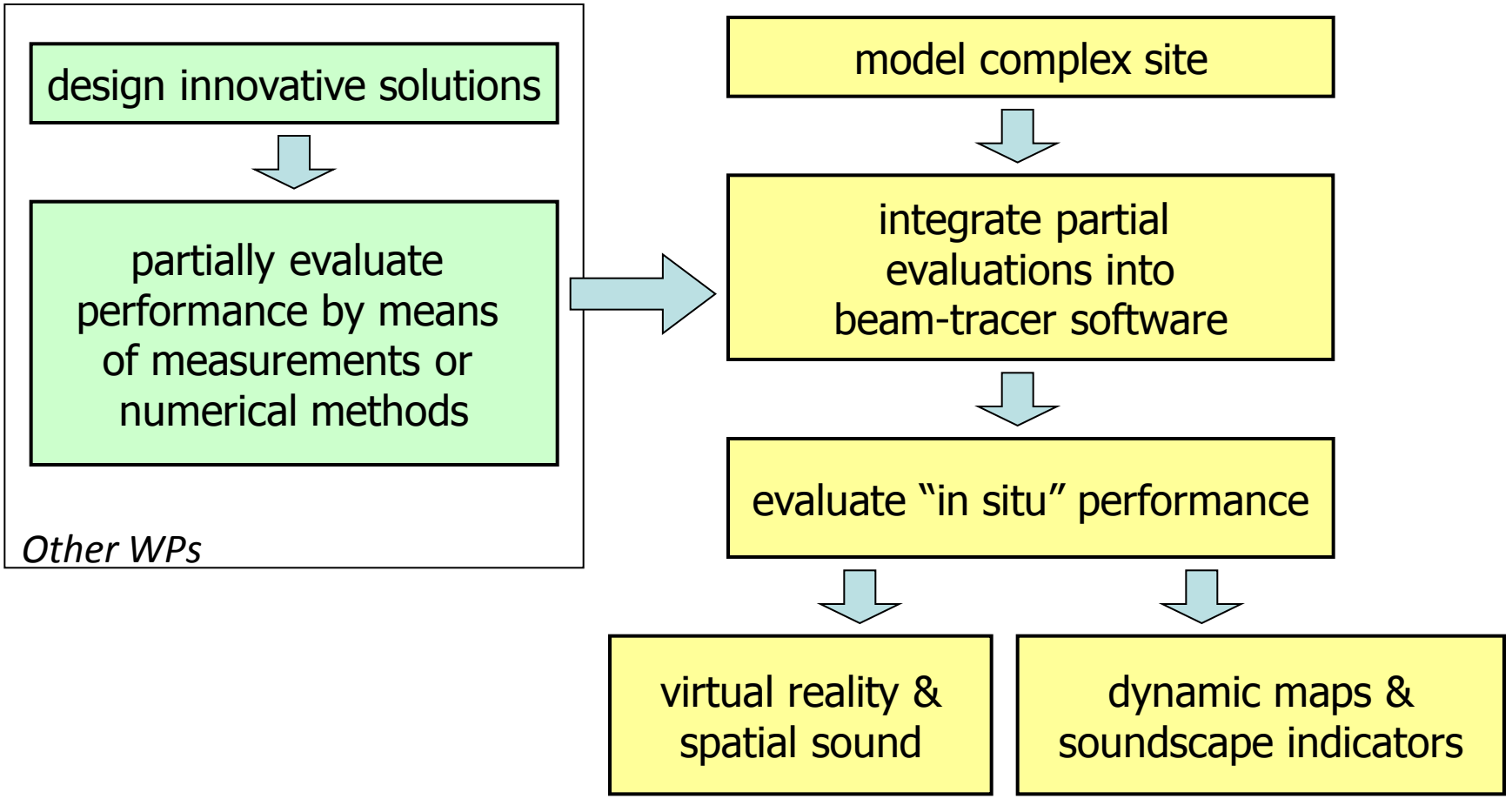
WP6


design innovative solutions
partially evaluate performance by means of measurements or numerical methods
Other WPs
model complex site
integrate partial evaluations into beam-tracer software
evaluate "in situ" performance
virtual reality & spatial sound
dynamic maps & soundscape indicators

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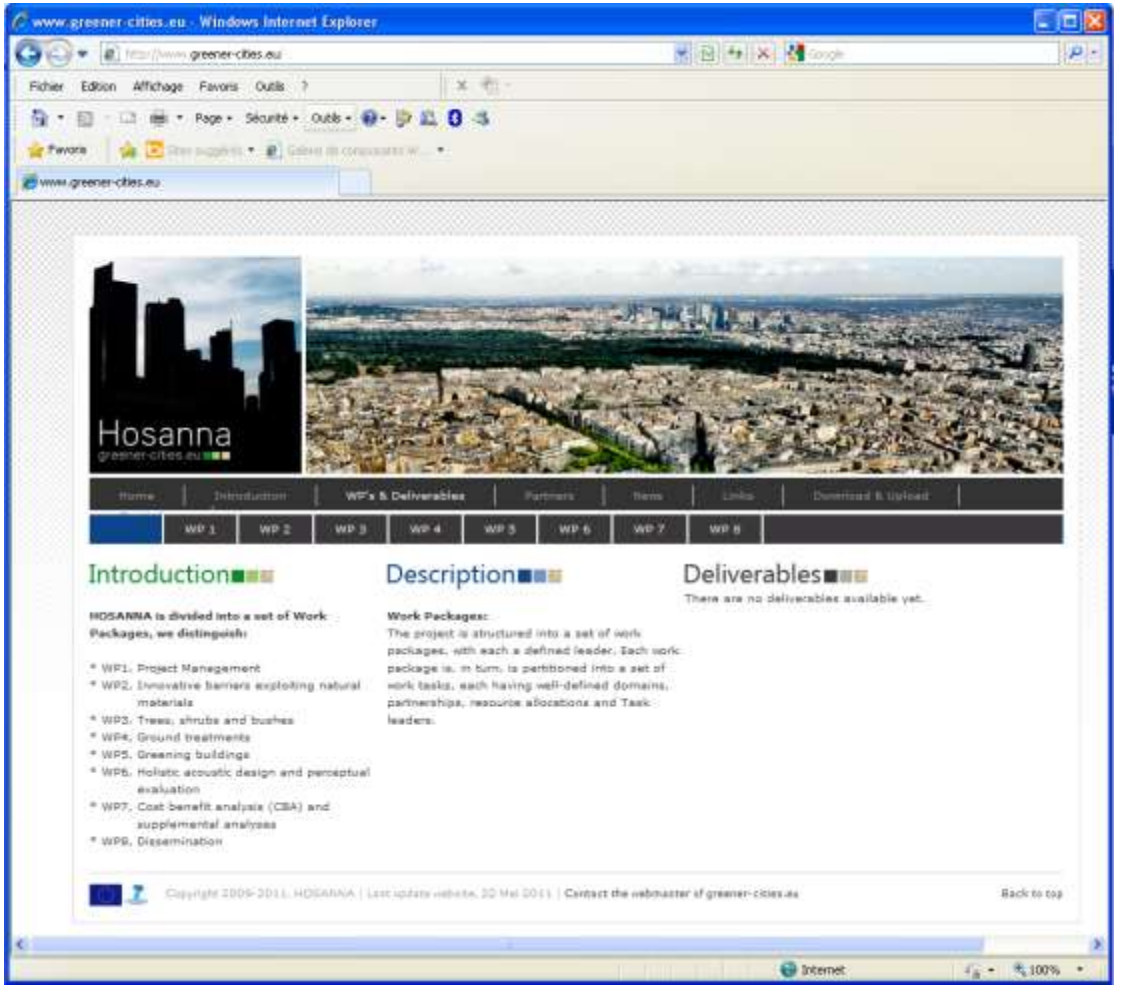
Dissémination

Site Web

- www.greener-cities.eu



Papers

- InterNoise 2011
- Forum Acusticum 2011
- Acoustics 2012
- EuroNoise 2012