timbre Expert System for choosing sustainable solutions of risk based approaches and technologies for brownfield rehabilitation

Erika Rizzo, Lisa Pizzol, Elisa Giubilato, Andrea Critto and Antonio Marcomini
University Ca’ Foscari Venice

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Content

Brief introduction to the timbre project and Work Package 1.

timbre Expert System:

- general approach and structure;
- multi-criteria methodology to rank available information/documents collected within the timbre Expert System;
- functionalities and interfaces.

Conclusions
timbre project
tailored improvement of brownfield regeneration in Europe

FP7 Collaborative Project

Duration: 01/2011 – 06/2014

15 Partners
WP1 Objective: development of an expert system for the collection, analysis and classification of accessible information on the regeneration of brownfields.
Expert system: general approach

Stakeholder friendly **platform** providing tailored documents and tools for sustainable brownfield regeneration.

**Collector and provider** of information in the form of e-links to relevant documents and tools.

The Expert System will offer a methodology for the ranking of collected information based on:

- inputs from users sessions (e.g. stakeholder category the user belongs to, country where to apply the information, nr of clicks to an e-link);

- evaluation criteria such as USEFULNESS, CLARITY, RELIABILITY AND ACCURACY, UPDATING that are specifically related to web link contents.
Expert system: structure

TIMBRE WEB DATABASE

Framework for the collection of information

Users and experts participation to include new information

RANKING OF THE AVAILABLE INFORMATION

- Development of a multi-criteria methodology to rank available information/documents (Artificial Neural Networks)
- Users and experts participation to rank the information

Expert system
Multi-criteria methodology to rank available information/documents

Aim: to rank links by importance according to user’s typology and aim of search.

Methodology: **Artificial Neural Networks**

Input information

- **User related** (e.g. stakeholder category/ies that the user belongs to)
- **Session related** (e.g. search goal/aim of the user, country where to apply the information)
- **Statistics from previous searches** (e.g. previous ratings of the information)

Important features of the methodology:

- absence of information shouldn’t influence availability of the results;
- the ranking should improve continuously with the incorporation of new searches’ statistics.
Artificial Neural Networks

- mathematical model inspired by biological neural networks;
- interconnected group of artificial neurons;
- adaptive system that changes its structure during a learning phase;
- used to model complex (e.g. non linear) relationships between inputs and outputs.
Pros of Artificial Neural Networks:

- the system allows to deal with situations where the model of user preferences is not known “a priori”;
- the system can continuously learn and improve results;
- the system can work under uncertainty conditions;
- the system should not be affected by outliers.
Expert system: functionalities and interfaces
Registration / Login

- general terms of use
- new user automatic registration
- username recovery
- password recovery

Introduction to Timbre

The European FP7 project timbre - Tailored Improvement for Brownfield Regeneration in Europe - aims to support end-users in overcoming existing barriers in brownfield regeneration by developing and providing customised problem and target-oriented packages of technologies, approaches and management tools for a megasite's reuse planning and remediation.

Therefore, this Expert System is meant to be an information platform and an information management tool to support experts and end-users to get access to all the available information concerning brownfields regeneration processes.

Login

Username: 
Password: 
Forgot password?  Login

New user?  Register

Disclaimer
This software is aimed at assisting brownfield regeneration stakeholders. It is provided for information purposes only and its contents are not intended to replace consultation of any applicable legal sources or the necessary advice of a legal expert, where appropriate. This software has been produced in the context of the Timbre Project. The research leading to these results has received funding from the European Community’s Seventh Framework Programme (FP7 2011-2014) under grant agreement no 260304. All information in this software is provided “as is” and no guarantee or warranty is given that the information is fit for any particular purpose. The user therefore uses the information at his sole risk and liability. For the avoidance of all doubts, the European Commission has no liability in respect of this software, which is merely representing the Timbre consortium view.

www.timbre-project.eu
Collection of information about the user

This information will affect the results obtained by user search of specific documents because the items concerning the **preferred language** will be provided as the first ones, other criteria being equal.

The selection of one (or more) stakeholder category(ies) will support/influence the results obtained by user search of specific documents.

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Identification of search aims

Objective: to identify which are the search aims/goals of stakeholders when using the ES.

The definition of the aim/goal of user’s search will support/influence the search results (i.e. delivery of specific documents)

This information will affect the results obtained by user search of specific documents because the items concerning the country where to apply the information will be provided as the first ones, other criteria being equal.

This step is not compulsory.
The selection of information categories is related with user’s main aim of search.

The selection and ranking of the information categories are not compulsory.

The users can read the definitions of the information categories by passing the cursor on the boxes.

Ranking of selected information categories according to personal preferences.
Performing search on the Expert System contents (1)

The selected information categories have a highlighted colour.
The user can click on the e-link of interest and directly access to the selected e-page. As soon as the user clicks on the e-link, the “Vote this item” star in the column “Rating” will start flashing. ⭐

In this way the user will have the possibility to provide a judgment on the information.
The user can attribute a score to the selected item according to each of the proposed criteria. An Artificial Neural Network methodology will be developed to integrate these scores with the other information provided by the users to rank the e-links.
Conclusions

The TIMBRE ES represents an innovative tool for increasing and improving the access to available information on sustainable brownfield redevelopment.

The active involvement of stakeholders in the different stages of the TIMBRE ES development represents a guaranty that the tool will address stakeholders’ needs and requirements.

When the TIMBRE ES will be freely available, further stakeholders’ participation will be crucial for a successful continuous improvement of the tool:

• on one hand they are asked to share their knowledge by uploading new web-links in the web database, and

• on the other hand, by performing searches in the ES and by evaluating the results they will “feed” the tool with new information useful for refining the ranking of future outputs.
Thank you for your attention!
Erika Rizzo
Lisa Pizzol
Elisa Giubilato
Andrea Critto
Antonio Marcomini

Institution
UNIVE, University Ca’ Foscari Venice

Email contact: erika.rizzo@unive.it; www.timbre-project.eu