REGENTIF

A Network for Knowledge Interchange on Regenerating Old Industrial Facilities

There is a common understanding in most, if not all, public administrations that urban sprawl has to be reduced and only used as a last option. Old infrastructures, brownfields, have to be reused even if dealing with abandoned industries is more complex than developing directly out of greenfields.

The main objective of REGENTIF is to setup both a methodology and a supporting Knowledge-Based System that can be easily used by experts and newcomers involved in regeneration projects.

Fundación LABEIN[1], NEOTEK Nervion, Cracow University of Technology (CUT), Rzeszów Regional Development Agency, Milano Metropoli Development Agency, Fondazione IDIS, Dura Vermeer Group (DVG) are the European partners, working together since 2003 to achieve the REGENTIF goal.

Motivation for work

As a consequence of the rapid technological change, European countries face the problem of managing old industrial facilities. Regardless the very different productive sectors in their industry, all these countries must face a process of change in which traditional cornerstones of the economy such as mining, steel industry, etc. and their associated infrastructures become useless unless our society can find a new purpose for those resources.
On top of this, the incorporation of countries from Eastern Europe, where this kind of structures were more prevalent, is making even more necessary to find innovative solutions to this general problem.
"Ad hoc" successful regeneration projects have been performed all over the E.U. countries, even with exchange of experiences among many of them. However, a lack of shared methodological framework to face this complex issue has been appreciated. A "project by project" approach has been a dominant paradigm in the field.

Our approach is aimed at building a shared framework be based on common features, both technical and non-technical, that can be identified in old industrial facilities, so that a methodology for handling the problem can be obtained. The methodology provides a series of patterns to enhance innovation culture and facilitate decision-makers' practises. This way, it would allow achieving systematised procedures for the actions that must be carried out in order to deal with the regeneration process.

Our work is focused on facilitating the transition from an industrial society (and its collateral damages: big obsolete industrial facilities, contaminated sites, brownfields…) to the knowledge society. That means, for instance, enhancing tertiary centred SMEs that provide services or supply chain relations around regenerated facilities that are usually service-oriented activities (leisure, cultural, learning…). In order to do so, accumulated knowledge will be embedded into a KBS (Knowledge-Based System) so that it can be reused in future projects as a new approach to technology transfer to tackle the regeneration of old industrial facilities in Europe.

Description

The Anticipatory Multidisciplinary Prospective working methodology (AMP), which will be finally implemented into the KBS. The AMP describes a set of procedures and steps for the regeneration of a derelict industrial site. It is based on the Anticipatory Intervention Model (AIM) that has resulted from a combination of theoretical and practical approaches alike. For this latter, twenty-six cases from different European countries were analysed using a questionnaire set up under the schema of the AIM. For that analysis, many interviews with brownfield managers and developers were held.

Model (AIM)	**Methodology (AMP)**
Dimension of the regeneration problem **Approach to the regeneration problem** - Phases - Key factors - Key actors - Patterns of solutions	**Phases and tools for the regeneration process**
Theoretical perspective	**Operative perspective**

Table 1. The Model and the Methodology

The intermediate result of our work is an integrated working methodology including technical and non-technical issues, to anticipate innovative solutions to regeneration problems. Such a methodology aims at the following specific objectives:

- Identify dimensions, key factors and key players (non-technical)
- Define dynamics to identify anticipatory patterns of solution and create future scenarios (non-technical)
- Elaborate procedures for Industrial Technology assessment and engineered construction opportunities (technical)
- Elaborate procedures for environmental assessment (technical)
- Assess every regeneration problem/project and evaluate maturity for further actions (non-technical)

- Become validated by its implementation in several pilot cases (technical)
- Be implemented into a Knowledge Management tool, the KBS, as a new approach for technology transfer in the pilot cases (non-technical)

The aim of the KBS is to support the intuitive use of the methodology by giving a step by step guide so that users can be aware of the main tasks as well as have a reference to good practices and possible problems found in Europe. The system also supports co-operation among the stakeholders as defined by the methodology.

The Anticipatory Intervention Model

In order to investigate the dimensions that characterize the regeneration projects, their preconditions, and the key factors for success or failure, we need to use a systematic analytical framework. This framework is based on the so-called 'Hexagon Model' (Nijkamp et al. 1993; Fusco Girard et al., 2003a; Fusco Girard et al., 2003b), as seen in Figure 1. The 'Hexagon Model' clearly defines the various dimensions that characterise the regeneration process according to a sustainable perspective.

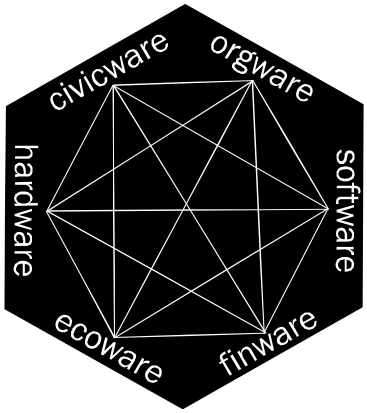

Figure 1. Hexagon model

In line with this model, it is possible to outline a multidimensional approach to the problem of regeneration which takes account of the multiple aspects that, to varying degrees, form part of the process of implementation and management of redevelopment. Each dimension is clearly correlated to and interrelated with the others, and is therefore indispensable to take account of the connections and overlaps that may exist between them in order to implement effective integrated intervention strategies.

Using the 'Hexagon Model' it is possible to highlight the co-existence of two important dimensional categories which can be divided into 'technical' and 'non-technical' dimensions (Figure 2).

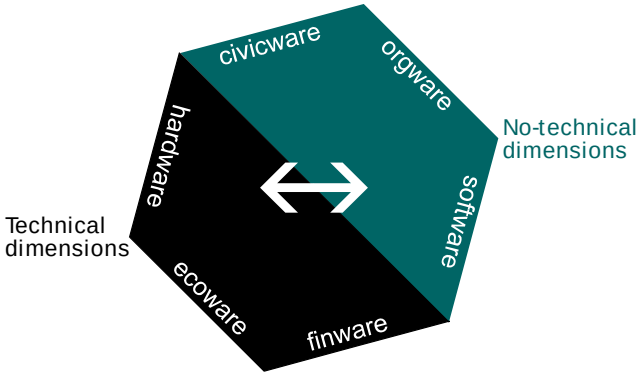

Figure 2. A multidimensional perspective: technical and no-technical dimensions

The first group includes *hardware*, *ecoware* and *finware*, namely those dimensions that require the direct involvement of expert knowledge and which can determine concrete impacts and effects on the physical reality of transformations. For example, ecoware includes the following concepts or key-issues, shown in Table 2.

Dimension	Key-issues
Ecoware	Natural environment Landscape Contamination and pollution Environmental renewal: soil, materials and waste Renewable sources and energetic efficiency Risk analysis Urban ecology management Human health

Table 2. Example of ecoware dimension

The second group concerns *civicware*, *orgware* and *software*, which represent the dimensions closely linked to the involvement of shared knowledge, the promotion of the sense of individual and collective responsibility, to the implementation of participatory processes.

It is possible to underline how the technical and non-technical dimensions are mutually complimentary and that the latter, in particular, represent an essential component of each transformation process which is able to encourage and support the former.

The non-technical dimensions help set up mechanisms of involvement and create awareness both of problems and potential solutions, by promoting an active role on the part of the community and institutions. The demonstrated experience of good practices of regeneration has led to the recognition of non-technical dimensions as fundamental, since they can contribute to creating a 'culture of sustainability': this implies disseminating less conflict-oriented, more consensual and increasingly co-operative forms of behaviour for which we uses as a reference point values, meanings, symbols and rules that can affect the way the natural and urban environment is used, of shaping institutions, of regulating human and social relationships, and of activating economic dynamics.

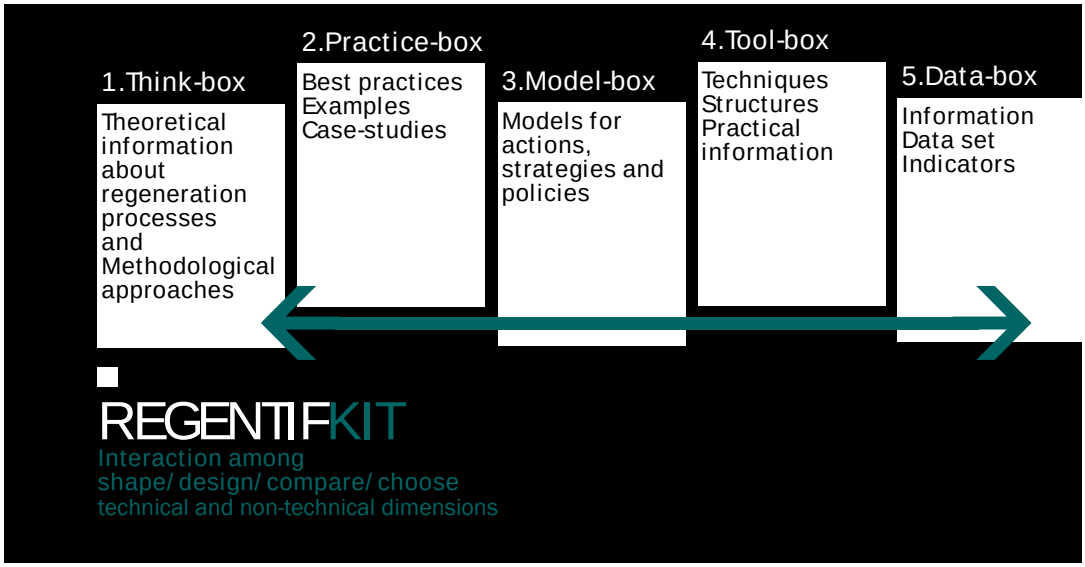

Figure 3. The REGENTIFKIT

The Anticipatory Multidisciplinary Prospective

The AMP is the name given to the methodology developed and tested in this project. It is an integrated working methodology including technical (construction-restoration technologies, environmental assessment…) and non technical (urban regeneration, social involvement…) issues, to help identify problems and collect innovative solutions along those dimensions identified in the AIM.

The methodology, being based on the AIM, is aimed at linking the technology, the socio-economy and the environment. These sectors have been analysed to collect tools and techniques for each of them. Those techniques are introduced in the software supporting the methodology in order to make them available to prospective users.

The AMP methodology includes a module directly based on the model, namely the AIM, with self assessment procedures for the different dimensions of the problem that lets users evaluate the characteristics of their regeneration processes. This module produces a report with the strengths and weaknesses of the case. To foster social awareness, participatory methods such as, for instance, scenario-based reasoning, are also included in the methodology.

The use of the AMP is aimed at SMEs providing services in the tertiary sector, and to public institutions and agencies involved in local development.

The Knowledge-Based System

The methodology developed in the project is supported by a Knowledge Based System (KBS) as new approach for the technology transfer process. The main purpose of this software is to activate interactions among public institutions, private firms both large and SMEs, research organizations and other key actors involved in the problem in supporting and enhancing the innovation process from the very early stage of every industrial site regeneration process. As a result of that, a more efficient and coordinated decision making process will be reached.

The AMP methodology is the baseline on which the associated software system is based. It is therefore possible to identify a set of specific 'boxes' that contain the tools that are needed to structure and elaborate a transformation process of an ex-industrial area as can be seen in Figure 3.
That system includes a database whose structure is modelled according to the different dimensions of the problem. On top of that, there are several applications whose main purpose is to guide the user with the participatory tools, the economic possibilities, technologies available and possible suppliers, etc.

In summary, the information system complies with the guidelines described by the methodological procedures described above. Its main objective is to guide the user through the successive steps that make-up the AMP.

Pilot projects

The REGENTIF methodology (regeneration diagram, stakeholder involvement...) is tested by pilot cases located in Italy, Poland and Spain.

Sesto San Giovanni (Italy): Ma.Ge. building

The Municipality belongs to the metropolitan area of Milan, the main town of Lombardy Region.

Brief description
The Ma.Ge. is an historical listed building (1920); it presents a shed cover typical of the industrial architecture of the past century. The ground level is illuminated by several large windows almost covering the whole perimeter wall surface and by several skylights located on the shed. The building was before a nuts and bolts factory, then a storage deposit. In 1994 it was closed cause of the steel industrial crisis.

Activities
Initially the context of the pilot project has been analyzed. We selected the information, reviewed the accessible data, reconstructed the history of the Sesto San Giovanni and the reclaiming process of the area. We also did the same for the Ma.Ge. building, identifying the potentials and the difficulties,

exploring a first group of actions or potential transformation for the building.
In order to collect ideas on the possible future regeneration of the Ma.Ge. we organized a European Awareness Scenario Workshop (EASW) event. Some very interesting ideas were proposed. The workshop evidenced also how local stakeholders have been living the entire regeneration programme of the area of Sesto and some of their expectations related to this specific programme. We designed some guidelines and general objectives of the Ma.Ge. regeneration programme.

Cormano (Italy): “La Fonderia del Suono”

The Municipality belongs to the metropolitan area of Milan, the main town of Lombardy Region.
At this moment also a second pilot project named “La Fonderia del Suono” is testing REGENTIF methodology. The place has been for several years a metallurgical industrial site and the name chosen for the new structure, "Fonderia del Suono“, would guarantee the linkage between the site and its history.

Lemoniz (Spain) Nuclear Power Plant

The Municipality of Armintza-Lemoiz's (*Lemoiz in Basque*) is located in the region of Biscay, Basque Country.

Brief description
Lemoniz Nuclear Power Plant is an abandoned structure that covers an extension of 380 he. The construction of the building started in 1968 but in Spain there was a strong popular opposition against nuclear power. During the period 1974-1982 there were sabotages, kidnappings, one murder, crossed declarations among the different informative media, etc against the plant. The frame was the political Spanish transition. It is from this date, 1982, that the works remain paralyzed up to the current days. During all these years, different use possibilities have been considered. In 1984 the nuclear moratorium was definitively established.

Activities
Initially the context of the pilot project was analyzed. Relevant data, interviews with local actors, visiting the site in situ and other secondary data were gathered and analyzed. Also, and in the attempt to understand the possible future alternatives for the site, the different dimensions that affect a regeneration process were analyzed: ecoware, finware, software, civicware, hardware and orgware. In order to collect more ideas and foster social participation in the decision making process of Lemoniz, a scenario building workshop was carried out with the participation of the different agents affected by the future regeneration of Lemoniz. Experts, environmental people, politicians, citizens living around the site, and other technical participants were proposing interesting ideas for the regeneration of the site during an EASW. The workshop demonstrated the strong interest of local stakeholders in the future of Lemoniz and brought back to life a process that has been blocked for too long.

Stalowa Wola (Poland) Brownfields

Kwiatkowskiego Park, a part of the Stalowa Wola Steelworks (HSW), is located in Stalowa Wola, Podkarpackie voivodship, South Poland.

Brief description
The pilot case is an area of 46,12 ha, separated from the original site of the Stalowa Wola Steelworks (HSW) according to the HSW revitalization programme. The site is covered by large forest complex acting as part of insulating greenery belt for the steelworks. The buildings on the site are former production shops. Two of them are of importance:
No. 300 - the former shop for thermal and mechanical treatment of casts, dating from 1960.-1970., a typical of the period two aisles structure - reinforced concrete framework with steel truss roof. The original machinery is partly preserved. The hall is disused since 2004;
No. 149 - the former press-form shop built according to the original design from 1937-1939, finished after WWII, a nave and two side aisles forming a “basilica” cross-section, steel framework filled with red brick and large glazed parts characteristic of the original concept of the whole HSW industrial architecture. The hall is rented and used by a private investor, but the contract expires in March 2006.

Activities
After a one-day discussion with the HSW representatives, local government and regional institutions, the pilot case was carefully chosen according to the valid revitalization programme of the Stalowa Wola Steel Mill (Huta Stalowa Wola HSW) as a non-conflict area which promises successful restructuration in a foreseeable time. In the problem setting phase we have gathered historical data, studied the revitalization programme, reviewed accessible data, prepared information package on the site and buildings for the key-actors. Then an EAS Workshop was organized to obtain a common vision and ideas leading to the realization of the vision. Key-actors representing a wide range of interested stake-holders gathered during two sessions of the workshop.
Articles in the local and regional press were published, and several local TV reports broadcasted; a web-site “Park of Ideas” was activated and an Internet discussion forum under the same heading started. At the end of the closing EASW session a group of people interested in further development of the regeneration of the Kwiatkowskiego Park area formed. It seems that the REGENTIF activities set in motion a growing concern of the local community regarding the area. Recent decisions, among them closing down of the scrap metal crusher, may have been accelerated by REGENTIF.

Conclusions

Initiatives such as REGENTIF, aimed at producing and disseminating a body of knowledge that can be incorporated into a model, can help to reduce that gap between the current state and the requirements of sustainable growth. For that reason similar projects co-exist with REGENTIF.

[1]Parque Tecnológico Bizkaia, Edif. 700, E-48160 Derio, Bizkaia, SPAIN, josemari@labein.es

References

(1) Nijkamp P., Oirschot G., Oosterman A. *Regional Development and Engineering Creativity: An Instrumental Comparison of Science Parks in a Knowledge Society*, Free University, Amsterdam (1993)
(2) Fusco Girard L., Forte, B., Cerreta, M., De Toro, P. and Forte, F. (eds), *The Human Sustainable City. Challenges and Perspectives from the Habitat Agenda*, Ashgate, Aldershot (2003).
(3) Fusco Girard L., Forte, B., Cerreta, M., De Toro, P. and Forte, F. (eds), *L’uomo e la città. Verso uno sviluppo umano e sostenibile*, Angeli, Milan (2003b).

With support of the European Commission under the Fifth Framework Programme, "Innovation and SME Programme".