# Regeneration Decision-Making: Some Early 'Opportunities' and Decisions for SURegen

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## Abstract

The multi-disciplinary EPSRC funded SURegen project is developing a digital decision support aid that will capture good practice in sustainable urban regeneration for use by practitioners for real time decision-making, training and education purposes. It will achieve this by identifying the key decision points in the early stages of the regeneration process, such as diagnosis and visioning, and simulating a variety of decision impacts or outcomes. This paper will provide detail about the development of the project's general approach and technical methodology, its data collection techniques and the important role that the project's industrial partners are playing in ensuring that the project delivers a tool that is both contextually specific to the Manchester case studies whilst providing good practice examples of interest to regeneration throughout the UK and beyond. It provides details of the outcomes of a recent workshop exploring the project partners' aspirations and priorities for the SURegen decision-support tool.

## Keywords

Regeneration decision support, Research methodology, Information system development, Regeneration good practice, Data collection techniques.

## 1. Introduction

Urban regeneration, or urban renewal in the United States, is defined as "…a comprehensive and integrated vision and action which leads to the resolution of urban problems and which seeks to bring about a lasting improvement in the economic, physical, social and environmental condition of an area" (BURA, 2009). Significantly, the less holistic Oxford English Dictionary definition defines urban regeneration as "the process of improving derelict or dilapidated districts of a city, typically through slum clearance and redevelopment" (Oxford English Dictionary, 2009). This approach was enshrined in UK policy until the 1950s (Ball and Maginn, 2005) when it was realised that mass slum clearance and property redevelopment policies were failing to eradicate poverty and by moving the problem elsewhere communities were being lost (Young and Wilmott, 1957). By the late 1970s the multiplicity and complexity of issues involved was starting to be realised, with acceptance that housing was one of many problems and social problems need to be tackled in the places where they exist. The Government's Neighbourhood Renewal Strategy demonstrates a change in approach and is taking a longer term and more sustainable approach by delivering economic prosperity, better health, safe and secure places and high quality schools (ODPM, 2003). However, the number and complexity of issues involved means there is little consensus on what SUR means, how it can be achieved and how decision-making impacts upon it (Palmer et al, 1997) whilst it is clear that urban areas characterised by high levels of deprivation, crime, derelict buildings and social disorder are clearly unsustainable (Wates, 2005; Ekins and Cooper, 1993).

The complexity, uncertainty and ambiguity about how to deliver all these aspects in an integrated way is a huge challenge, especially in light of the skills and understanding gaps that have been identified but that such a task requires (Deakin et al, 2007; Curwell et al, 2005; Egan, 2004; Bentivegna et al, 2002). Decisions are often made without an understanding of whether they contribute to or detract from sustainability due to an insufficient evidence base. The Egan Review (2004) confirmed the existence of a skills gap and the need for effective interactions between key urban regeneration professionals across the public, private, voluntary, community and academic sectors for SUR to be successful and it concluded that people with higher level generic, cross-cutting skills were urgently needed to achieve measurable improvements in communities. Furthermore, RENEW Northwest (2005) identified discipline based technical skills for delivering SUR, collaborative skills for delivering integrated, multi-disciplinary working between disciplines, and engagement and visioning skills for stakeholder goals identification and achievement as three skills gaps requiring urgent development.

## 1.1 The SURegen Project's Aims and Objectives

The four year SURegen project (www.suregen.co.uk), funded by the UK's Engineering and Physical Sciences Research Council's (EPSRC) Sustainable Urban Environments 2 program, aims to address the regeneration skills gap by developing a regeneration simulation tool to enable better understanding of the regeneration process and support decision making. The Regeneration Workbench will hold good practice knowledge about Sustainable Urban Regeneration (SUR) allowing it to function as a library of good practice that could be used for education and training purposes and a learning laboratory to support professionals and other stakeholders to understand not only the regeneration process and its key decision points, but also to explore some of the impacts of these decisions by 'what-if' scenarios. As a multi-perspective tool providing a shared workspace, the workbench will enable regeneration team members to collaborate more effectively and develop their skills to close the gap identified by Egan (2004) due to access to regeneration process simulations, identification of key decision points in the process and potential outcomes, support of team building and stakeholder engagement and advice about the most suitable assessment tools for evaluating alternatives.
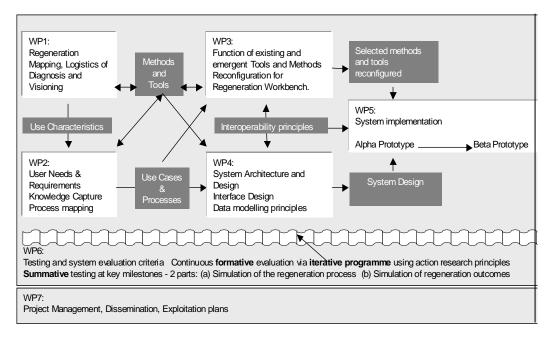
## 1.2 Project Methodology



**Figure 1: SURegen Project Structure and Knowledge Flows**

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The project design is iterative in nature and structured into seven highly inter-dependent work packages as shown in figure 1. In order to develop, populate and validate the workbench with its stakeholders, SUR process and practice knowledge will be captured from recent research projects and good practice cases in Greater Manchester and transformed into actionable SUR knowledge objects or 'chunks', the SUR process will be mapped to inform an ontology for data modelling, appropriate simulation and assessment tools for predicting regeneration outcomes and impacts will be selected, and embedded into the workbench's data structure and system architecture which will be constructed using evolutionary prototyping and then validated it with end users. Work is currently capturing and structuring knowledge to map the regeneration process based on current understandings and state of the art, and collecting user needs and requirements from one of the case study areas and the project's non-academic partners. This data will be used for visioning, scenario exercises and developing storylines which will develop the functionality and technical specifications. Prototypes of the workbench will be validated with end users through action learning sets comprised of regeneration practitioners who will also provide knowledge of regeneration as it takes place on the ground in their case study area. This work package will also develop the workbench by validating the user requirements against the regeneration process, for their inclusion in prototypes and for their actual ability to support decision-making in the case study area.

## 1.3 The SURegen Regeneration Simulator Workbench (RSW)

The workbench development will take place by applying the modelling and matching methodology (Chen, 2007) supported by a number of quick prototypes developed using a Rapid Application Development (RAD) approach (Martin, 1991). The modelling and matching methodology compliments the SURegen project's iterative structure and it involves the collection of user requirements which are translated into a technical specification using Unified Modelling Language (UML). Chen (ibid) proposes a four process framework which involves a modelling process during which the social context, user needs and available technologies are explored, the matching process by which the prioritised system functionality is matched to the available technologies, the iteration process and the evaluation process which means the methodology is underpinned by both technically objectivist and interpretivist viewpoints. The project aims to manage conflicting stakeholder requirements by applying the 'MoSCow Rules' (Avison and Fitzgerald, 2006; Bell and Wood-Harper, 1998) and prioritise user requirements into 'must haves', 'should haves', 'could haves' and 'won't haves'. By complementing this with a number of quick prototypes, the project will be able to develop some quick technical solutions that can be constantly updated and validated with users due to the pervasiveness of computer networks and desktop decision-making tools and which can reflect changing functionality and data availability due to a shorter development lifecycle and are therefore less likely to become obsolete.

Models are described as an abstract representation of a portion of a system that consists of the concepts, objects, relationships, capabilities and reactions important to a given perspective which are used to explain a system's underlying operation and concepts (Buxton, 1994). Whilst visualisation technologies have been used for many years to present urban design plans, their ability to accurately simulate social, economic and environmental outcomes is limited by the complexity and ambiguities of urban decision-making and applications based on an integrated data model. The EPSRC funded *From 3D to nD Modelling* project developed the concept of multi-dimensional modelling and demonstrated that it is technically possible to integrate the numerous spatial and non-spatial data sets relating to these dimensions to model what-if scenarios, and that different design priorities can be tuned up or down depending on the stakeholder's viewpoint or needs. This approach allows context specificity to be applied to the model so that a model applied to a high crime area would see design features such as location of windows, opening direction of doors, use of toughened glass and CCTV and the additional cost impacts of these 'turned up'.  This concept was developed into the nD Game which allowed children to design their ideal school (http://www.ndgame.org/) and demonstrated how visualisation and simulation technologies can be used to help comprehension of complex relationships in an educational setting, develop holistic thinking about complex problems, especially those characterised by mono-disciplinary

thinking and working and a lack of consensus, elicit and make explicit stakeholder's tacit knowledge, and show impacts of decision-making. SURegen's workbench would benefit from such an holistic approach and the ability to configure data according to their individual needs, and whilst it is not anticipated that a regeneration 'super model' able to simulate all aspects of SUR simultaneously will be built during the project's duration, the model will be able to provide more concrete information about physical, economic and social outcomes of decision making and develop feasibility prototypes.

## 2. Data Collection and Analysis

In order to establish the workbench priorities, workshop participants were asked "What do you currently see as the most pressing priorities for what the work bench should be able to do to support urban regeneration professionals?"  23 people responded to this question and a total of 93 responses were received. All but 5 of these 93 responses were prioritised by each respondent and so 88 responses were analysed. 17 of the respondents were academics, 4 were public sector and 2 were from the private sector. The data analysis was carried out by classifying each priority identified and these were clustered into broad themes. It is important to note that the descriptors emerged from the priorities identified by the workshop participants and were not predetermined in any way. The six themes were data, workbench function, people, regeneration, technical and miscellaneous. The participants then ranked their priorities.
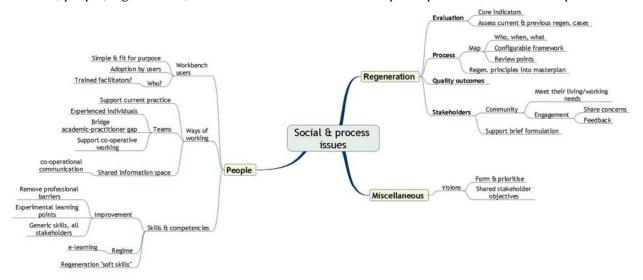


**Figure 2: Mind Map of the Social and Process Issues Identified as a Priority for the Work Bench**

Mind maps showing the detail of the classified responses provided were developed. Due to the number and variety of issues identified two maps were produced which show social and process priorities (figure 2, 'people', 'regeneration' and 'miscellaneous') and technical priorities (figure 3, the priorities 'data', 'function' and 'technical'). The most popular people issues were concerned with supporting current and not re-inventing ways of working and the ability of the workbench to bring teams together either by linking academic research with practitioner experience as in the case of climate change, identifying experienced individuals working in the field or to support co-operative working through the provision of a shared information space for communication which was especially important for teams that had little face-to-face contact. This communication could also support the community as well as practitioners. One respondent questioned whether trained facilitators would be required, further priorities identified that the workbench should be simple and fit for purpose and adopted by users. It should support the development of regeneration skills and competencies via providing experimental learning points which allow users to test out the good from the bad decisions, but also to help professionals to develop "soft skills" such as stakeholder engagement and guidance consultation. These skills could also take the form of breaking

down barriers between professionals, support the development of generic skills among *all* stakeholders or provide an e-learning training regime. The workbench should also support process understanding by providing a framework for projects which is configurable by system users and map the stages so that it is possible to understand who is involved, when and how and where the key review points for agreement exist. Related to this, core indicators could be identified and it should be possible to assess and evaluate current and previous regeneration experiences. Regeneration priorities centred on ensuring the workbench met stakeholder and community needs, specifically those living and working in the community, to allow engagement, feedback and for the uninformed to formulate a brief for their own community. It should also make it easier to understand the concerns of other stakeholders in the process and work better with them and help to define how regeneration principles can be agreed and manifested in a master plan.
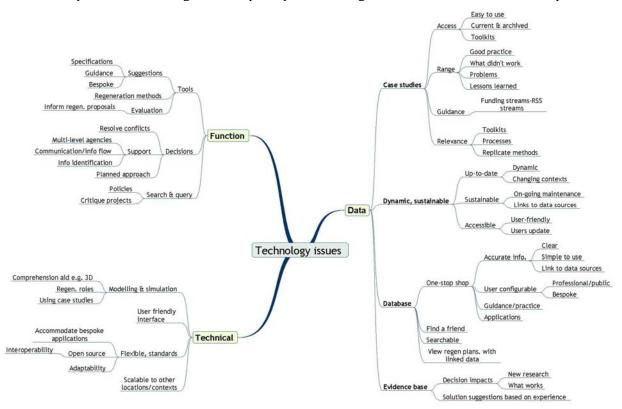


**Figure 3: Mind Map Showing the Technology Issues Identified as a Priority for the Work Bench**

From the mind map and frequency data below, it is clear that data prompted the widest range of priority responses. Of these, case studies were most frequently cited and these should be easy to assimilate, provide a range of examples of good practice, what didn't work and the problems and that these should highlight the lessons that were learned. The guidance could take the form of RSS streams of funding calls; provide access to toolkits and information related to the examples identified that is transparent enough to allow the development of easy to replicate methods. In a similar vein, the workbench should also act as an up-to-date database or one-stop-shop on all regeneration which would be able to consolidate existing guidance, research and practice and provide bespoke information. It would need to be detailed and accurate, clear and technically simple and have a flexible search facility, and perhaps one part configured for professionals and one for the public. Significantly, it would need to create a desire for users to return to it in order to build a community and keep it updated which was a concern that was raised frequently in the context of the end of the project funding and ensuring that the data is valid within a changing context and can contribute to building an evidence base for regeneration impacts about what works and why. This should extend to the generic and strategic tools that the workbench should provide access to and guidance about, for both bespoke situations and to evaluate future regeneration proposals. Additional

functions that are a priority for the RSW are the ability to resolve decision conflicts, support decision-making by multi-level agencies such as local authorities, residents and others via improved information flow between stakeholders which would enable them to locate relevant information and develop a planned approach to the decision-making process. Priorities of a technical nature were less frequently cited, but included the use of open source standards which would allow interoperability and adaptability of the workbench so that it could use data that was scalable and transferable to other locations and contexts, could accommodate bespoke applications, and have user friendly interfaces, 2D or 3D models and regeneration simulations to help communication and education.

By examining the frequency of responses, the importance of data is clear as access to case studies (13 responses), dynamic data sets (8 responses), and databases (13 responses) account for almost 50% of the priority responses received, followed by people issues (17%) and regeneration and functions (14%).

## 2.1 Non-academic Perspectives

Figure 4 shows the proportion of responses received by members of each of the three employment groups. Whilst care must be taken drawing conclusions from these findings, given the small number of responses received from public and private sector workshop participants, it is interesting to note that only academics prioritised technical issues and indicators and evaluation. Ways of working and process have been deemed priorities for all sectors, whilst evidence base, search and query, workbench users and visions have been given priority by a disproportionate number of non-academic respondents. These trends are similar when first priorities only are each examined for each job sector with academics highlighting dynamic data (5 responses), case studies (4) and database (3), the public sector identifying case studies, evidence base, process and quality (1 each), and the private sector identifying decisions and ways of working (1 each).
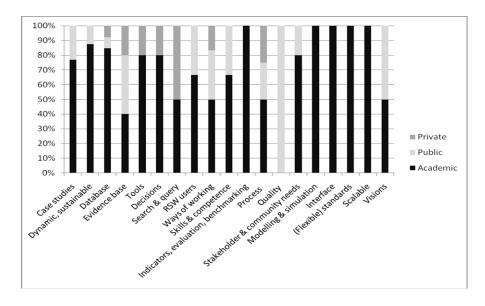


**Figure 4: Total Responses by Job Sector**

## 2.2 Industrial Partners Perspectives

It was anticipated that the non-academic partners – partners working in the public and private sectors – would have very different views as to what the workbench would be or should contain or support, and that these differences would differentiate them from the academic partners and from one another given their areas of expertise and involvement in regeneration. From the data analysis carried out on the workbench priorities, it is clear that the academic and non-academic do have slightly differing opinions on the main

priorities. During the workshop four of the non-academic partners presented their views of the workbench and these were captured by a graphic artist as shown in figure 5. This clearly shows the range of problems they are dealing and different priorities they would have for the workbench.

For the housing consultant, the problems are about people and not processes and frameworks and so bringing together the various people working in regeneration, breaking down barriers and making sense of the guidance to achieve solutions and providing a sign post to local, relevant communities or academics so people don't feel alone on their endeavours would be good. The Urban Regeneration Company (URC) representative argued that as not all URCs are located in poor, urban parts of the country information would need to be bespoke, provide a feel within a changing policy context, help bidders to understand the available funding and how to obtain it, support different professions to work together and provide good case examples. The local authority view discussed the constraints they have with money and the requirement upon them to spend it as it is designated and not as the council sees fit, even if circumstances change, and so for him it would be good to try things out on-line and take the risks he is unable to take in practice, and for the workbench to provide a database of good practice and real casework examples. The Regional Centre of Excellence view emphasised the provision of solutions and not more research, and solutions that work, have known impact, are scalable and address the pressing issues such as worklessness.
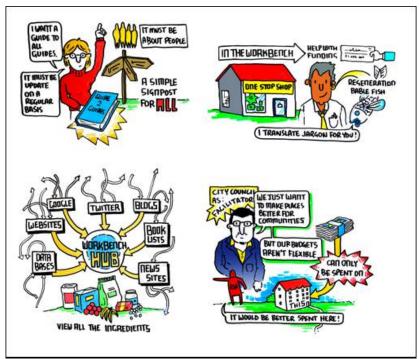


**Figure 5: Practitioner's Views of the Workbench, Clockwise from Top Left Housing Consultancy, Urban Regeneration Company, City Council and Regional Centre of Excellence (I Eat Art, 2009)**

## 3. Conclusions

From the responses received at the workshop, it is clear that there is a need for data and an evidence base for regeneration and that this is the first priority for consideration in SURegen's Regeneration Workbench. However, when the responses are examind more closely, the picture is more mixed with non academic groups identifying process, quality outcomes, decisions and ways of working as the first priorities. Given that the work bench is being developed for practitioners primarily and few non-academics completed the priority exercise, further investigations of this nature need to take place to

obtain a more accurate view. The wide range of priority requirements and broad requests such as the RSW being able to "develop generic skills for *all* stakeholders" or being a "one stop shop for *all* regeneration" along with the long-term implications of obtaining sufficient buy-in from users to ensure that the RSW's data is continually updatable, context specific and the system is maintained beyond the project's funding period will provide huge chellenges to the project, not only in delivering something of value to practitioners, but also in terms of managing expectations and filling the skills gap identified by Egan (2004).

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