

Exploring and Developing the Application of a New Information Management and Decision Support System as an Economic Land Regeneration Tool: In Coastal Cities

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Key words:

ABSTRACT

Coastal Cities are areas of intense and continual change in the marine and land environments; this change must be managed sustainably. The sustainable development of urban areas across the world can be facilitated through the professional skills of the surveyor through the land use planning and development system. The professional surveyor adept at regenerating skills could further their economic appraisal and spatial land planning expertise with the aid of information management systems.

This paper introduces the first steps of an initiative to develop an information management and decision support system making best use of advances in computing technology, network applications and the communications revolution afforded via the Internet to enable a holistic approach to addressing these issues. The aim is to contribute to the understanding of best practice around the world that identify and manage change in coastal cities and builds upon the basis for action outlined in FIG Agenda 21 statement (Chpt IV). This paper explores the potential and ongoing development of this product idea specifically applied to changes in land use within coastal cities.

Coastal land has always been under legitimate pressure to be developed. However, the decisions are becoming increasingly complex. By creating a working partnership with the Institute of Marine Economics, based in Qingdao, China it is hoped a desk top case study exercise may be undertaken that demonstrates relevance to a real world situation. This study will seek to understand and apply the ongoing relationship with professionals in government agencies and the industrial land occupiers.

The power and strengths of the programme are outlined by application to the case study. However, the software is not a replacement for human thought and community interaction. The aim is to demonstrate state of the art gematics and knowledge bases that are designed specifically to build consensus approaches, and the extent to which such a management tool is pivotal in decision making.

If coastal cities are able to confer a competitive advantage on the businesses operating within them, then urban land and planning administrations must implement creative and innovative sustainable growth policies. This is in order to deal with such challenges as, housing needs, environmental hazards, improving economic and social benefits and rationalising marine transportation corridors. The ultimate challenge is to find solutions to these problems, which are at least economically feasible, and at best financially rewarding, while at the same time promoting a sense of community and identity.

While the growth of these conurbation's brings with it many fold economic, social and cultural opportunities, it can also bring ecological crisis and breakdown in traditional social and cultural patterns of behaviour. The challenge this century is to facilitate decision making that embraces a wide range of people and communities. On the one hand, coastal areas require stewardship, on the other, legitimate sustainable development of coastal areas will continue. There is a need for integrative decision making techniques which combined with wise use of our natural resources will substantially move toward a sustainable approach.

The opportunity that may arise is to adopt a single scheme of management whereby development practices and those of the local planning authority can be married by use of decision support tools.

The information management system will embrace the application of advance visualisation tool, which will bring the issues graphically into focus and via the use of web based mapping and information exchange techniques enable enhanced consultation between users and interested parties. This will underpin the achievement of consensus building and conflict resolution based upon best use of available information and the development and application of best practise reinforced via the system design and content.

This decision support component of the system utilises knowledge based computing techniques, which are underpinned by a rule- based approach. The rules are informed via collective knowledge and expert opinion that is catalogued within the system and auditable with regard to its derivation inclusive of published literature, which has been considered. The complex nature of the decision making process and the need to account for variation on the quantity and quality of information available upon which to base a decision demands a risk based approach. Analysis of uncertainty and bias must be accommodated. This is achieved via the application of probabilistic techniques to provide a "best fit" on the basis of expert knowledge to ensure the rule base is complete and developing towards the holistic approach which is required in achieving the goal of sustainable development. The limitations are recognised and tracked and the system evolves, as greater knowledge and information sources become available. This learning process creates the foundation for a system, which recognises \the need for continuous improvement linked to the collective knowledge pool.

The case study refers to a city of circa three million peoples that is undergoing changes in the economic structure along its coastal belt from rationalisation of the port to improving and enhancing coastal tourism and leisure. It commences with an appreciation of the contributory factors in the decision making arena from a wide disparate range of people and communities. Starting with the land economic motivator approach to regenerating coastal land based on standardised feasibility assessment utilising appropriate appraisal techniques. The regulatory context of the regional and local land use planning and economic development agendas is added to the decision pool. This is further complicated by the environmental sensitivities of the coastal margin. Thus the complexity of decision making becomes apparent.

Full consideration is given to sustainable development principles and related environmental assessment and land-use planning criteria including cumulative impacts, definition of significance of impact, conflicts of interest, definition of best practicable environmental options.

In conclusion, there is a need over and above the existing decision making practices for a practicable approach to and achieving a fair dispersal of the natural resource whilst maintaining the benefit of coastal land for the future. The application of advances in information management and decision support techniques is widely recognised within the concept of the Global Information Society which receives significant aid funding to ensure that the informatics revolution does not extend the gap between developing and less developed economies. The development application of the proposed system for sustainable master planning and development decision making in coastal cities will enable collaborative interaction amongst key stakeholders within the region This can now be achieved using recently available and affordable technology to ensure wise consensus in the use of the land resource.

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TS8.4 Economical Aspects of Planning and Implementation
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FIG XXII International Congress
Washington, D.C. USA, April 19-26 2002