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Planning Support Systems for Coastal Governance, Planning, Design

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Planning Support Systems

Research findings and recent practices show the planning processes find reliable support in the integration of ICT and GIS tools to support the many tasks at hand within a integrated Planning Support System (PSS).

Harris in 1989 defined a PSS as an architecture for coupling a range of computer-based methods and models into an integrated system for supporting the planning functions (Harris, 1989).

Langendorf in 2001 proposed to the concept of Information Work Space (IWS), which refers to the collection,and organisation of data and information from multiple resources for a particular person or task. This concept fits well the one of shared platform for collaborative (one or many actors/users) planning.

Recently Klosterman (1999) more operatively defines a PSS as an integrated information system, which couples GIS (and non-GIS), operational models and geo-visualisation tools to support plan design and evaluation.

Although the former definitions are general enough to be considered applicable whatever (stage of the) the planning process at hand most experiences of information system developed to support planning and referred to as PSS often do address physical plan-making rather than its implementation process. Nevertheless, it may be argued that the PSS concept and definition could wisely broaden its embrace to all kind of planning process/stage, no matter the underlying theory or the contextual constraints.

Thus, while research should continue to address PSS design issues with reference to particular planning tasks or processes, exploiting (spatial) information technology application to planning, at the same time more attention should be devoted to the definition of a general framework for PSS design in order to help planners to tailor reliable PSS

We may argue that within a (collaborative or participatory) planning process, practitioners should focus on the meta-planning process setting flexible procedures for collaborative work based on specific phases and on shared knowledge bases, creating consensus on the workflow, and possibly directly implement it with the support of a computer tool. Several research efforts have been done in the latter direction showing promising alley for PSS development (Hopkins et Al, 2005; Maruna and Maruna, 2005; Campagna et Al, 2006 forthcoming).

Different categories of PSS can be defined according to:

- the tools integrated into the systems;
- the types and number of the actors involved in the planning process;
- the network architecture they rely on
- the process workflow according to the underlying planning approach.

The classification illustrated below was developed by the author aiming at classifying existing applications; then it was generalised supplying different conceptual models for PSS design. The taxonomy proposes different PSS models referring to the different planning approaches on which the planning process itself has been designed.

The conceptual models can be used to define first requirements as guideline for the PSS design according to the planning process at hand. A definition of each conceptual model can be found in Campagna et Al. 2006).

These conceptual models are presented here aiming at showing that a PSS may assume different forms. Hence, in PSS design, one should choose the most appropriate model for a given planning process as guideline

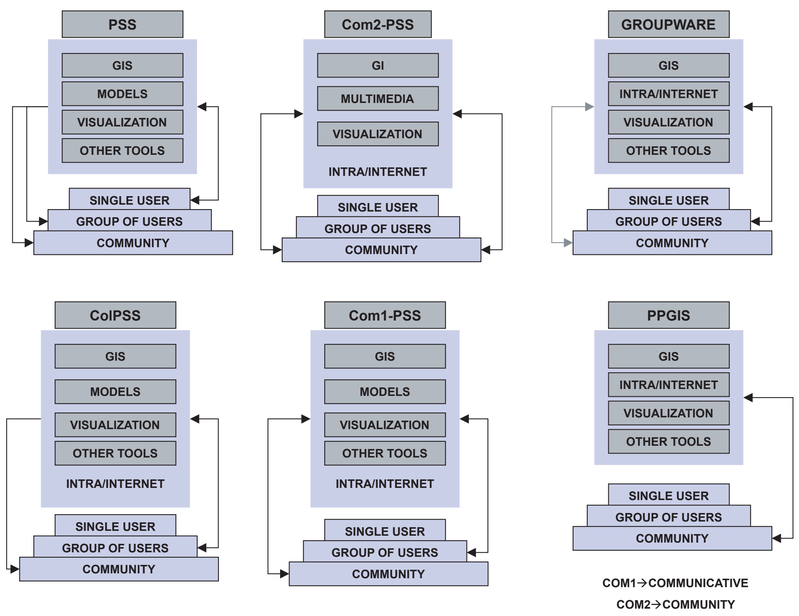

Figure 1. *Possible models for developing planning support systems. Each model takes into account different tools that can be embedded in a system according to the scope of the implementation and to the computer-user interaction.*
(Campagna, M. , Deplano, G. , De Montis, A. . 2006

On the premises above the author current research deals with the following objectives:

1. Develop a planning methodology to implement ex ante evaluation in plan-making according to the Directive 2001/42/CE on Strategic Environmental Assessment;

2. Implement such a planning method within a Planning Support System

Beside, research efforts will be devoted to devise possible methods to be implemented as computers tool for automated PSS design support.

REFERENCES

Campagna M, De Montis A, Deplano, G (2006) Planning Support System design: a general framework perspective, International Journal of Environmental Technology and Management, Inderscience.

Harris, B. (1989) 'Beyond GIS: computers and the planning professional', Journal of American Planning Association, No. 55, pp.8592.

Klosterman, R. (1999) 'The what if? Collaborative planning support system', Environment and Planning B: Planning and Design, Vol. 26, No. 3, pp.393408.

Langendorf, R. (2001) 'Computer-aided visualization: possibilities for urban design, planning and management', in Brail, R. and Klosterman, R. (Eds.): Planning Support Systems: Integrating GIS and Visualization Tools, Esri Press, Redlands, pp.309359.

Lewis D Hopkins, Nikhil Kaza, Varkki George Pallathucheril, (2005) Representing urban development plans and regulations as data: a planning data model, Environment and Planning B: Planning and Design 2004, volume 32(4) July, pages 597 615
Maruna , M, Maruna, V (2005) ELEMENTS OF URBAN PLANNING METHODOLOGY BASED ON RATIONAL UNIFIED PROCESS , in CUPUM 2005 Proceedings, London

Nowadays the ICT revolution has created new opportunities for the implementation of democratic/partecipatory decision-making in Europe. Spatial planning and sustainable development processes may be positively affected from this progress. However, it is often still difficult to find space for real public participation within the institutional frameworks. In Italy, the planning system does not offer real opportunities for the public to participate in decision-making and experimental experiences have to find ground outside it to be built (Gabellini, 2001). This means that if we look at the public participation ladder (Arnstein, 1969) or at one of the recent interpretation of it in the light of the e-planning (Weidemann and Femers, 1993; Smyth, 2001) still opportunities for citizens to participate are found in the lower rungs (Campagna and Deplano, 2004). Recent research result proposed by the author (Campagna and Deplano, 2003) shows that in Italy rarely concern for public participation is shown in the regional planning legislation, and a robust and spread implementation still lacks.

On the other hand, according to the European Spatial Development Perspectives (CE; 1999) subsidiarity among different actors plays a role as important at least as public participation in government processes and we may find its practice more closely related to actual institutional frameworks in several Member States such as in Italy . However such processes as EIA, which instead of a strict administrative control call for forms of subsidiarity, participation, and collaborative process, may be a first move to break the rigid tradition of Italian top-down planning approach, and eventually give chance for public participation enhancement. In fact, the tools offered by the ICT progress and the digital cities development (Campagna, and Deplano, 2004) opened new frontiers to give information access to the public, creating new opportunities for democratic and transparent decision-making processes. Thus the EIA procedures for project's impact evaluation, and the newer SEA for plans, programs, and polices development and accountability can be though as planning tool to ensure sustainable development in terms of democratic collaborative decision making.

An example of the hypothesis proposed above is proposed here with reference to the case study of the Regional Landscape Master Plan of Sardinia.

As already reported by the author (Campagna, 2005) recent developments in the national and regional spatial planning normative framework in Sardinia demand for the implementation of a new Landscape Master Plan by the Autonomous Regional Government of Sardinia (RAS). According to the Regional Law n° 8/2005, which is commonly called "Coast safeguard law" in the light of its inspiring objectives based on the coastal resources protection, a new landscape plan should be developed in line with the new national law for landscape and cultural heritage preservation (National Act n.42/ 22/01/2004). Innovative approaches are therefore required for the plan design and implementation. The RAS is currently working on the new plan development.

Beside the RAS is currently undertaking the development of the new Regional Spatial Data Infrastructure (RSDI) which is seen as supporting platform for the plan development and management, or in other words a Planning Support System for plan-making and implementation. Although current developments in Regional SDI and organizational and cultural conditions are still far from those required to implement best practices as such those shown by most innovative research initiatives, still a louse coupling between plan-making and implementation task and regional SDI uses to support collaborative and participatory processes might been considered as an innovative process at the regional level framework in the national framework in Italy as well as in other countries.

The case study

The Island of Sardinia is an Italian autonomous region with an area of approx. 23,800 sq.Km. and a population of approx. 1,6 million inhabitants. Tourism is a prior economic resource for the island whose over 1,800 km of coast attract a growing number of tourist every year. The tourism pressure is strongly influencing coastal development and urgent measures should be implemented to drive sustainable growth.

A strict approach based on protection bounds can be considered anachronistic and barely effective in the light of sustainable development principles and deriving actual practice in spatial planning. The use of EIA/SEA related procedures both in plan-making and implementation with the support of the dynamic environmental knowledge framework offered by the RSDI. Thus the outline of a GIS supported planning process is proposed here aiming at stimulating the discussion of the workshop participants on the opportunities for the PSS implementation.

Rather than relying on a fixed zoning, which, whatever the inspiring underling objectives, tends to be quickly outdated (within a particular sensitive area even a single development action may influence the local landscape), the use of a RSDI PSS allow for the implementation of dynamic zones to guide the plan-implementation. The zoning plan should define EIA/SEA application thresholds rather than bounds fixed for the long term. This way each development proposal could be discussed at the local level within the EIA/SEA procedure with the supervision of the regional government which manages both the threshold definition, and the EIA/SEA procedures by mandate. According to this process the advantage are twofold: subsidiary and participation are implemented trough the EIA/SEA procedures, and the environmental framework supporting decision-making is dynamically updated reducing uncertainty in the plan implementation.

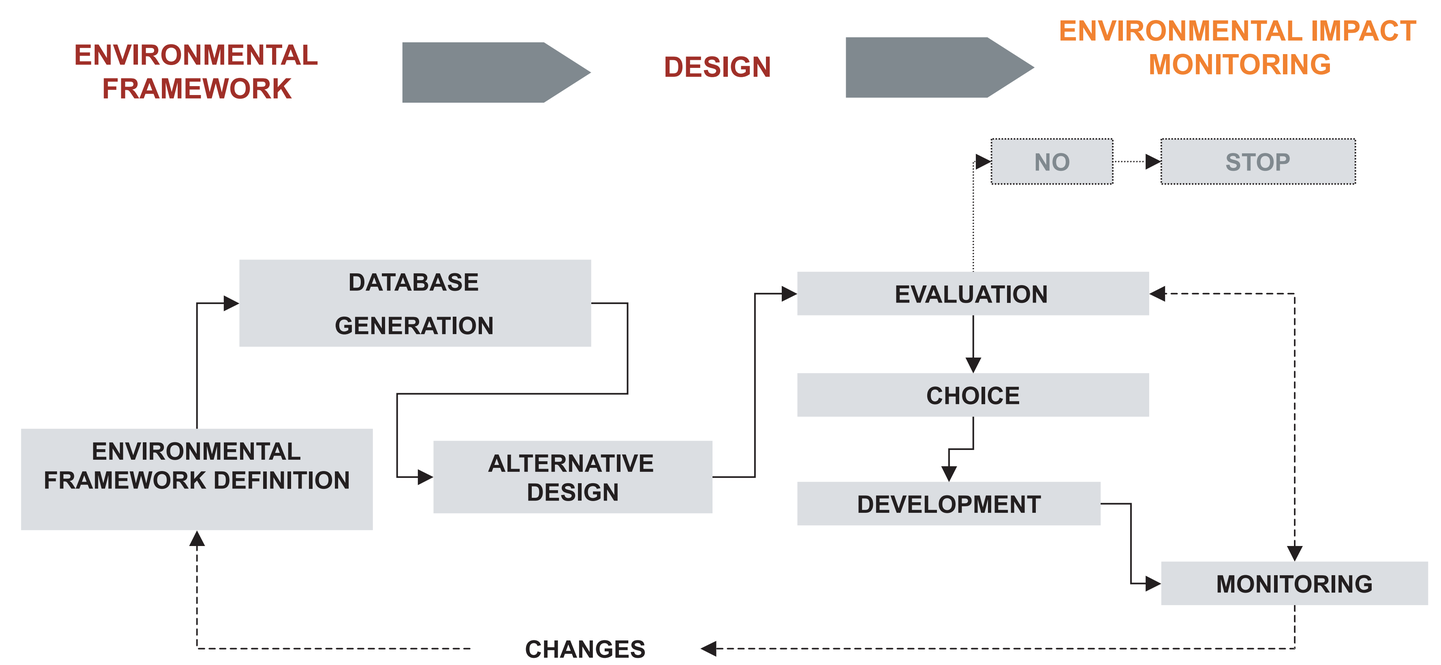

Figure 1. *General model for SEA-based planning*

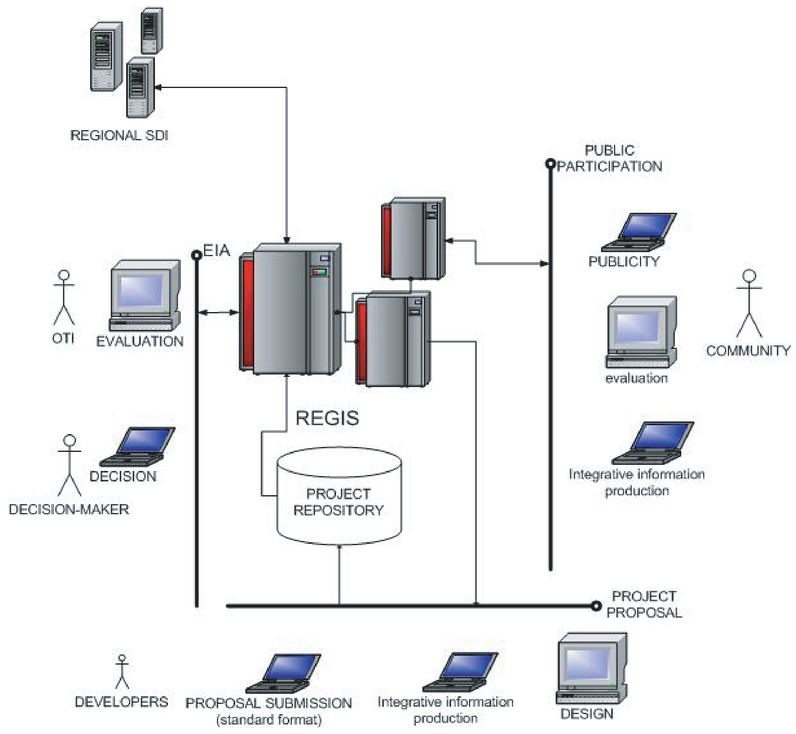

Figure 2. *General model for EIA Support System architecture*

References

Arnstein, S. (1969) A ladder of community participation. American Institute of Planners Journal 8 216-224

Campagna, M. (2003) Planning with the environment in the digital age:Towards environment-consistent Planning (Support Systems). Communication presented at the European Science Foundation: European Research Conference. EuResCo on Socio-Economic Research and Geographic Information Systems: GI for Health and environment -Spa, Belgium 9-14 May. http://www.shef.ac.uk/~scgisa/euseries.html

Campagna, M. (2005) The new Landscape Master Plan in Sardinia: Legal framework and methodological approach, Eco-imagine Training Course: "The Waterfront Management and GI" 31st May - 6th June 2005, Lisboa (PT),

Campagna, M. Deplano G. (2003) Local Authorities GI-based web sites and spatial governance: Towards an evaluation framework. In 9th EC-GIS ESDI: Serving the User Workshop Proceedings, A Coruòa, Spain, 25-27 June 2003, http://www.ec-gis.org/Workshops/9ec-gis/

Campagna, M. Deplano, G. (2004) Evaluating Geographic Information usage within Public Administration web sites", Accepted for publication in Environment and Planning B: Planning and Design, Pion LTD.

Campagna,M., (ed, 2005a) GIS for Sustainable Development, CRC-Press, Taylor and Francis Group, Boca Raton

CE (1999) European Spatial development Perspectives. Document adopted by the Ministers for Spatial Planning at the Potsdam Council on 10 and 11 May 1999 Brussels)