IN SEARCH OF A COMMON APPROACH

Perspectives on the Evaluation of Geo-ICT for Land Governance

Geographic information and communication technologies (or ‘Geo-ICT') are important for land governance. While many challenges the world faces today rely on good land governance, there is currently no common approach to evaluating the use of Geo-ICT for land-governance initiatives. This article will present the main characteristics and objectives of three inter-disciplinary perspectives that can be used to evaluate the future of Geo-ICT for land governance.

Geo-ICT has a valuable role to play in land governance - the rules, processes and structures through which decisions are made about access to land and the use of its resources. Many complex challenges the world faces today, such as adaption to and mitigation of climate change, rapid urbanisation, growing food and energy insecurity and increased frequency of natural disasters, rely on good land governance, yet no common understanding currently exists about the way in which the progress and future direction of Geo-ICT for land-governance projects and initiatives should be evaluated. Here, we will review international experiences and inter-disciplinary research to present a concise overview of three particular inter-disciplinary perspectives that can be used for the evaluation of Geo-ICT for land governance. Some illustrative applications and examples of these projects can be seen in Figure 1.

Urban and regional economics perspective

The first perspective, the urban and regional economics perspective, sees Geo-ICT as a public good which can be used to bring a sense of discipline into the spatial structure of the urban economy by ‘optimising' the spatial distribution of natural, economic and social activities. The urban and regional economics perspective concentrates on the spatial management of cities as an administrative unit. This perspective is introduced to understand how to evaluate the impact of Geo-ICT where spatial and economic data are used to inform financial, strategic and state-governance decisions. This perspective includes the study of the extent of the geographic, spatial and economic phenomena that determine both urban analysis and the formulation and implementation of regional and urban spatial policies, including development, regeneration, housing and property markets, urban liveability and future urban form. Urban analysis and spatial policy-making are generally done to determine all the needs of a city region, from transportation infrastructure to biodiversity conservation and local taxation.

For instance, GIS - a typical Geo-ICT initiative falling within the urban and regional economics perspective - can be used to construct scenarios of possible future socio-economic developments which can then be fed into an economics-based land use model. The data modelled can subsequently be used to simulate future land use patterns and to offer an integrated view allowing evaluation of the operational efficiency, operational effectiveness and the programme effectiveness on all possible types of land use. Another example of how this perspective can be applied to the evaluation of Geo-ICT for land governance is the use of Geo-ICT to improve the coherence between spatial and environmental policies, stimulating the exchange of relevant information among players and decision-makers concerned, potentially reducing conflicts while enabling the visualisation of different planning scenarios for quicker space-allocation and decision-making.

Managerial perspective

The second perspective, based on a ‘techno/legal/managerial' perspective, sees Geo-ICT primarily as a standardisable, formal and quantitative way of mediating geoinformation with the aim of making space controllable, measurable and quantifiable.

The techno/legal/managerial perspective typically facilitates the delineation of suitable spatial reference units and systems for land use planning, spatial decision-making, support for efficient land markets and maximisation of government efficiency and effectiveness in

geoinformation service delivery. This perspective looks at the technical, legal and managerial processes related to the computerisation of geoinformation (such as land records, cadastral and topographic maps, historic information, etc.), the digitisation of workflows and business processes in geoinformation organisations, the provision of digital deeds and digital signatures, electronic conveyancing systems and electronic registration systems. An example of Geo-ICT within the techno/legal/managerial perspective is the Dutch Kadaster's recent e-land administration initiatives. These include electronic conveyancing, a countrywide deed register, a register of names of rightful claimants, a one-stop shop for infrastructure information, e-services and 24/7 presence.

An interesting application of the focus of this perspective in the evaluation of Geo-ICT for land governance can be seen in both developed as well as developing countries in need of sustainable national land administration systems. Such sustainable land administration systems are able to cope with the demands of the evaluation of future land developments based on the systematic collection and analysis of comprehensive geoinformation, not only about land or property but also about the environmental impact of different types of land use. Sustainable land administration systems can therefore not only be used to aid legal, administrative and economic decision-making for land planning and future development, but also to involve the public administration, the private sector and citizens in spatial decision-making, to support efficient and effective land markets and finally to maximise government efficiency and effectiveness in geoinformation-based service delivery.

Nevertheless, the first two perspectives discussed assume the following: that Geo-ICT can be easily used to seamlessly handle spatial data contained in different administrative units; that both geodata and geoinformation can be captured, stored, validated and retrieved easily and rapidly; and that political and economic frameworks remain constant and do not change over time. Therefore, in order to further distinguish between the differences that can be seen in the literature and the experiences of Geo-ICT in public sector governance, we need to introduce a third inter-disciplinary perspective.

GIS sciences perspective

The third (more recent) perspective is based on geographic and information systems sciences. It stresses that Geo-ICT does not necessarily, nor neutrally, mediate spatial knowledge but can instead be contingent, informal and qualitative as well as prone to manipulation by humans displaying diverse values and interests.

From the geographic and information systems sciences perspective, we can further analyse Geo-ICT for land governance beyond quantitative combinations of variables or neatly cultivated units of measurement of space to also include the institutional and organisational contexts which may influence the interactions between human agents involved in the production of geoinformation and in the development and use of Geo-ICT. Not only does a geographic and information systems sciences perspective suggest what factors are important for Geo-ICT to be successful, but also which contextual and political factors affect them. Along with the illustrations provided for the first two perspectives, Spatial Data Infrastructures (SDI) are an interesting Geo-ICT application that falls within the geographic and information systems sciences perspective. In general, SDIs are seen to facilitate the collection, maintenance, dissemination and use of spatial information by reducing duplication, facilitating integration and developing new and innovative applications, respecting user needs and producing significant human and resource savings and returns. Nevertheless, although many approaches exist for the development of the expectations and goals of SDI (see Crompvoets, Rajabifard, van Loenen and Fernandez, A Multi-View Framework to Assess Spatial Data Infrastructures), to date not enough valid or widespread criteria exist for their evaluation, especially drawing from the vast inter-disciplinary literature and experiences of Geo-ICT and e-government.

A number of applications that are not normally considered to be within the domain of e-government (but as a matter of fact are) can provide a good basis for the evaluation of Geo-ICT for land governance. Volunteered geographic information activities (such as Wikimapia, OpenStreetMap), public initiatives (such as Spatial Data Infrastructures, Geoportals) and private projects (such as Google Earth, Microsoft Virtual Earth and other 3D models) are producing an overabundance of spatial data whereas until recently the main problem of geographical analysis for public governance was the lack of spatial data available. Hence, the evaluation of Geo-ICT for land governance according to this perspective includes the capabilities, interactions, orientations and value distributions of Geo-ICT for the successful execution of public tasks, such as the friendliness, transparency and availability of information and services to citizens, the co-ordination of government agencies and activities for integrated spatial planning and urban management, as well as the provision of feedback regarding the development, planning and enacting of policies in diverse areas to promote sustainable urban governance.

In this brief review article, we have identified and explained three main perspectives that can be used for the evaluation of the use of Geo-ICT for land governance purposes. The urban and regional economics perspective can be applied to evaluate operational efficiency, operational effectiveness and programme effectiveness. The techno/legal/managerial perspective can be used to evaluate the legal, administrative and economic decisions related to the use of Geo-ICT for land governance as well as how it aids general planning and land development. Finally, we have introduced the geographic and information systems sciences perspective by highlighting how it can help evaluate Geo-ICT in context, in particular in both the institutional and organisational contexts in which Geo-ICT is used for land governance projects and initiatives. These should not be evaluated merely in terms of static operational efficiency, but also need to include the interactions between the human agents involved in the production and use of Geo-ICT and the new dynamics introduced in the public sector by e-government concepts and applications. A summary of evaluation criteria and the Geo-ICT performance impact in various areas can be seen in Figure 2. Understanding the different contributions the three inter-disciplinary perspectives reviewed here make to the evaluation of Geo-ICT for land governance and being aware of the contexts in which Geo-ICT is introduced will help to enhance the understanding of how to evaluate and model public policies for good land governance. This should not only be done in terms of efficiency and effectiveness (such as in an economic appraisal, value-for-money assessment and impact evaluation), but also to evaluate the contribution of Geo-ICT to the development of new knowledge assets as well as to social and organisational capacity and sustainable

development.

Further Reading

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- Navarra, D. (forthcoming). Perspectives on the Evaluation of Geo-ICT for Land Governance: Implications for E-Government Policy, *URISA Journal*.

- Van der Molen P. and Wubbe, M. (2007). E-government and E-land administration as an example: The Netherlands. Presented at the 6th FIG regional conference: coastal areas and land administration, building the capacity. San Jose, Costa Rica.

- Georgiadou Y. and Stoter, J. (2009). Studying the use of geoinformation in government - A conceptual framework. Computers, Environment and Urban Systems.

https://www.gim-international.com/content/article/perspectives-on-the-evaluation-of-geo-ict-for-land-governance