



# Possibilities of Strengthening Jamaica's Land Administration Through Multidimensional Concepts

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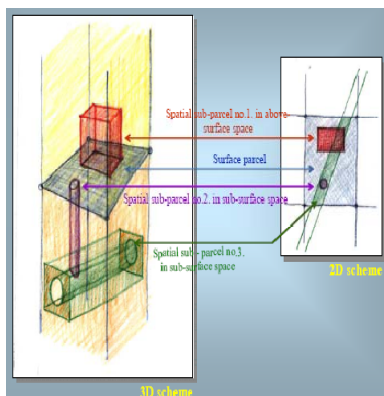
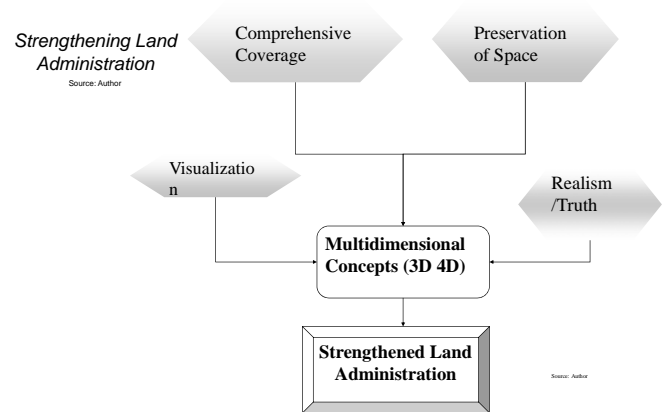
## Introduction

The cadastre has been present for a long time and its use in land management application has been sufficient over the years. But as land use intensifies, especially in urban areas, the inadequacy of the well known 2D cadastre becomes evident. There will be growing interest for such a tool to take on additional scope and to further help deal with issues of concern. The argument here is whether 3D and 4D cadastral concepts are better able to deal with intensified land use and provide a supporting role to the new demands in land management. Land use in the context of the use of space above and below the ground surface. In a country like Jamaica, which is relatively small with its mountainous terrains, there are not much suitable land available for various and necessary uses.

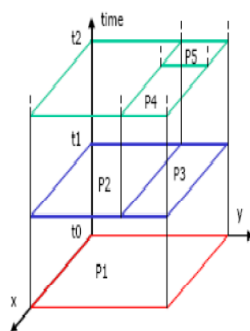
The intensity of land use in Jamaica will grow even greater. For this reason the need to consider appropriate use of land must be explored. The use of rail as an alternative means of transport whether suspended above ground or in the form of a subway highlights the potential uses of aboveground as well as underground space. The mapping of real objects (i.e. buildings and utilities in the cadastral setting) for the purposes of a cadastral map maybe seen as improbable in terms of expense and application in the Jamaican context; however it is something that needs to be assessed to deal with ever increasing problems. The issues have not been ignored, the state have recognized and made provisions to deal with the lack of an effective and dynamic land administration system.

In the mid 1990's the government and the relevant stake holders formulated the national land policy. Within the policy it was indicated that; "The Government of Jamaica has recognized that to effectively manage land, it is vitally important that a uniform, comprehensive and integrated computerized system be established to provide graphic and textual information on every parcel of land." (National Land Policy 1996)

The socio-economic issues such as traffic congestion, dependence on foreign food and energy supplies etc. has made the country vulnerable to shocks and restrictions based on actions on world markets. The ability to use its natural resources to facilitate some amount of



3D vs 2D Representation of Cadastral Features  
(source: Fornli 2003)



Subdivision of Parcels Stored in Time  
(Source: Oosterum, Ploeger et al. 2006)

independence is weakened by the fact that the current and ongoing modernization of the Land Management system falls short of being comprehensive. The provision to include real object data to a cadastral data base is not highlighted within Jamaica's land policy. Information on objects attached to the "real property" is available only after intensive research at the various department and government agencies. Lands used for housing settlements could have been more or less reserved for other uses such as the production of fuel crops. If there were a dedicated policy towards land conservation and preservation of land space for best use, then the approach to development in case of some commercial and housing settlements could have gone the route of more dense strata and substrata type of developments.

## Research Objective

To recommend improvements to Jamaica's current Land Administration and ongoing modernization towards a comprehensive status for Land Management. To indicate the potential impact of multidimensional cadastral concepts on sustainable development.

To improve insight into these multidimensional situations on domestic level with an overall motivation towards Research and Policy development.

## Research Hypothesis

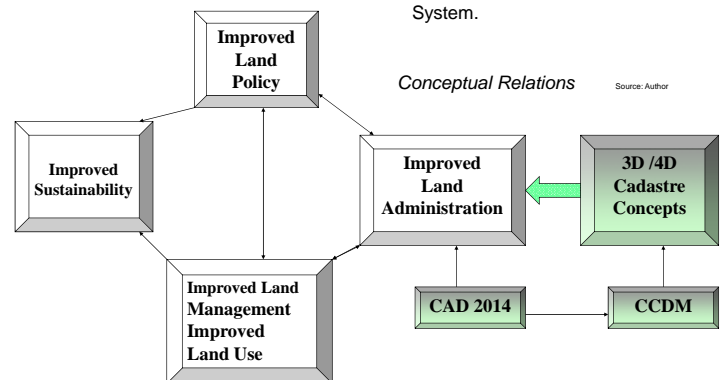
Jamaica's land administration system can be strengthened by accommodating the dynamic approaches of Multidimensional Cadastral concepts. The importance of better land use can be further facilitated though Multidimensional Cadastral Concepts.

A multidimensional system would account for both cadastral related features both above and below ground surface. Changes in boundary over time would also be accessible within the system under the 4D format all embedded within a system such as the GIS system, the Core Cadastral Domain Model. The account for utilities and features such as under ground tunnels that affects cadastral situations also makes the system have a comprehensive multipurpose coverage, extending its applicability with the link with legal situations of the cadastre.

The contribution of the multidimensional cadastral concepts on the urban landscape as well as the rural areas can be such that it helps to facilitate general goal of sustainability. Land is in great abundance around the world but as population increases and demand is exerted on the land there will be no choice but to reduce the negative impacts brought on by exploitation of natural resources. The concept will not necessary have direct contact with issues of access to land food production and dealing natural disasters but offers within a land administration system such as that of a Jamaica a number of opportunities to deal with these socio-economic issues that may be otherwise lacking in a weaker land administration system.

## Research Methodology

The research took the form of qualitative and quantitative research methods. Data was gathered through in-depth interviews, questionnaires, annual reports, literature review of prior work and concepts in relation to land administration and multidimensional cadastre. The research took an exploratory form in a descriptive context to determine the current direction in development approach on the use of space, the application of the concepts and their potential impact on Jamaica's land administration. The views of technocrats and private professionals were sought in relation to a number of issues in relation to the need for a Multidimensional Cadastre provision within the Jamaican Land Administration System.



## Conclusion

The introduction of a system of 4D and 3D cadastre would require a policy direction that has a long term vision and definite insight as to the capabilities of such tools in regards to sustainable development. Existing systems have been around for long a period of time and have proven applicable for the tasks for which it was designed and being modified for. 4D and 3D systems are derivatives from the old system and carry the traditional frame work base structure and concept in providing information and insight but further. The fundamental aspects of land administration as the facilitator of relevant information and guidelines for the land market, land management, land tenure, land valuation has served its purpose. With the rapid deterioration of the environment, an ever increasing population, the competition on the surface of the earth will intensify. The approach cannot be business as usual and two dimensional as usual because the demands are becoming more multidimensional. There are increasing demands in areas that require additional insight on the location of features underground the interrelation ship of parcels above the surface and the topology with that at ground level.