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Cadastral Data and Process Modeling Using The Unified Modeling Language (UML): A Case Study of Kenya

Advances in Information Communication Technologies (ICT) and the development of object oriented data modeling concepts offer an opportunity to redevelop Cadastral and Land Registration Systems (CLRS). This thesis argues that while countries with more developed CLRS are focusing on developing an ontology that would ensure ease in communication, developing countries such as Kenya need to take advantage of the technological developments to institute fitting digital solutions based on a Distributed Database Management System (DDBMS). In this context, this thesis presents a comprehensive and integrated approach to cadastral data and process modeling using the Unified Modeling Language (UML). The UML, a standardized methodology for describing object oriented systems, is used to capture the static and dynamic components of the CLRS. Microsoft Visio, a Computer Aided Software Engineering (CASE) tool is then used to develop the models.

This research finds that the UML presents an opportunity to render the cadastral data and processes in a manner that promotes an understanding of the CLRS. The models identify areas of duplication and provide direction for reduction in bureaucracy within the CLRS, as a means of institutionalizing digital solutions. Modeling as shown in this research provides a means for solving some of the land administration problems in Kenya. These include the seamless integration of the informal settlements and customary land tenure systems into the formal CLRS and the combination of the general and fixed boundary systems. This integration would be crucial in increasing the cadastral coverage in the country. Such a move would ensure appropriate land administration and provide avenues for securing credit access

necessary to empower the land owners and therefore ensure enhanced economic development, facilitate an improved land taxation system, support the land market and ensure an improved land service delivery. The redevelopment of a CLRS therefore requires the identification of the actors, data and processes with a view of identifying constraints towards cadastral data and process modeling for a more improved Land Information System (LIS).

Key words: Cadastral and Land Registration System, Land Information System (LIS), data modeling, process modeling, Unified Modeling Language (UML), informal land tenure, customary land tenure, Kenya.