

# Towards Improved Land Administration Services: A Model To Support Cadastral Data Interoperability Among Land Agencies In Accra, Ghana

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**Key words:** GIM; GSDI; Standards; Data Interoperability; Land Administration Services; Land Administration Domain Model (LADM), Modelling

## SUMMARY

Although a finite natural resource, land is crucial to society's well-being and advancement. Vis-à-vis the significance of land, its provision is at the end of a complex interplay of government, agencies, and private entities on different facets of society, all of which establish people-to-land relationships. In pursuing improved land services, this research explored cadastral data interoperability among land agencies at the heart of land service provision in Accra, Ghana.

The “as-is” use cases of three key services: land title registration, and building permit acquisition were assessed and revealed suboptimal provision of land services across various defined indicators. The analysis of agency(s) operations and interactions uncovered challenges including semantic heterogeneities of data, a lack of metadata, inconsistent use of data standards, the absence of an Integrated Web-based Platform, and a culture of resistance to data sharing. Building upon this baseline, our proposed model for cadastral data interoperability, inspired by global standards and principles, consisted of five key components, which are: interoperability governance guidelines; an inter-agency relationship structure; cadastral data standardization using LADM; a metadata technical specifications guide; and cadastral data dissemination mechanisms.

The study concludes that the proposed model offers a promising framework for enhanced coordination among land agencies, facilitating cadastral data interoperability and sustainable land management in Accra, Ghana. To seamlessly integrate the model into land agency operations, we recommend building consensus for change, providing technical training, securing financial support, adopting an incremental implementation approach, and instituting continuous monitoring and evaluation. We see the significance of this study strongly where the development of this model and its potential implementation set the tone for facilitating emerging advancements such as 3D cadastres using artificial intelligence (AI), especially in the presence of interoperable data and

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