Federated Data Model to Improve Accessibility of Distributed Cadastral Databases in Land Administration

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SUMMARY

Geo-Information System manages a large volume of data concerning tenure security and market value and use. These data play dominant roles to the economical and environmental development of our society. Currently, such data are usually managed by many agencies in a distributed and heterogeneous processing environment in land administration within their organisational mandates. In such situation, the users such as individuals, notaries, real-estate brokers, surveyors, planners, municipalities and others face tremendous challenges in getting these datasets and integrating them into a single synchronous, consistent dataset using available GIS software.

This paper proposes the use of a federated data model (FDM), which acts as integrating layers on the top of the existing cadastral database systems distributed at the different locations. If such FDM is implemented in a single synchronous, consistent federated database system, the users would be relieved from the complex tasks of integration and yet get a consistent dataset for their uses at lowest possible cost.

For this purpose we firstly discuss aspects of geo-information management emphasizing on data management, users and sharing of cadastral data. Then we briefly review the concepts on federated database management system (FDMS) and its architecture. We then offer the federated data model approach for the purpose of land administration. In this content, "three-level federation architecture" is proposed. Then we briefly discuss the situation of land administration in Egypt. Finally the steps for federating distributed cadastral databases are presented. Preliminary find shows that we need to carry out such modeling practice specific to local situation to come up with an appropriate federated data model.