



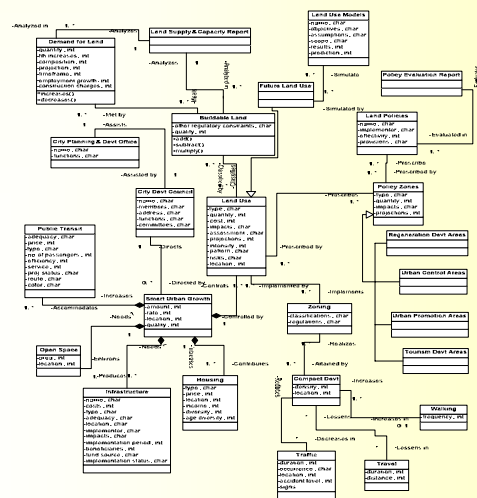
GIS Conceptual Design and Database Management Structure for Urban Land Supply and Capacity Monitoring in Quezon City, Philippines

Master's Thesis by Imelda Barrios Baleta

Theory and Methodology

This study explores how Geographic Information System (GIS), at the conceptual data model level, can be used for Urban Land Supply and Capacity Monitoring to facilitate more efficient utilization of land in big urban areas for smart growth. The real value of GIS is conceptual. On the other hand, GIS implementation requires consideration of the relevant organizational/institutional setting for it to be successful.

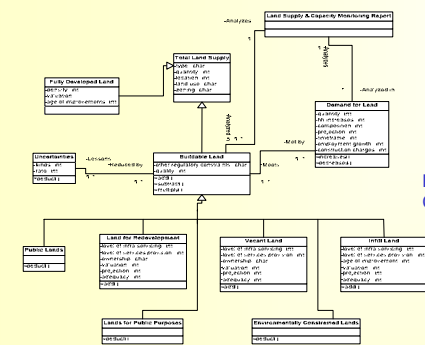
The theory of this study is based on smart growth, land supply and capacity monitoring and database management dealing with design (technical) and organizational aspects. Qualitative methods of research, questionnaires and interviews within a case study approach and the object-oriented approach for conceptual modeling utilizing the Unified Modeling Language (UML) are used in this study.



Smart Urban Growth Conceptual Schema



Map and Picture
of Quezon City



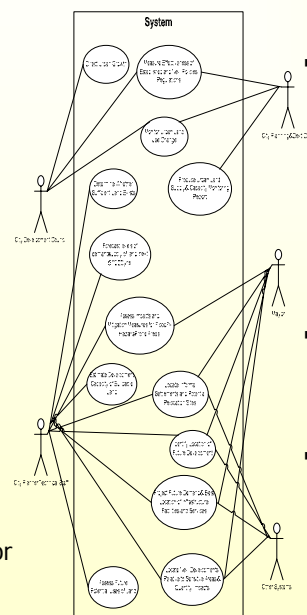
Buildable Land Supply and
Capacity Conceptual Schema

Findings

- Respondents prefer a centralized organizational structure for the GIS, centered at the City Planning and Development Department;
- Significant organizational issues to resolve include identification of the lead entity for the GIS, securing the cooperation and commitment of the different participants for data sharing, determination of what and who benefits from the GIS and scheme for the equitable distribution of benefits among the participants.

Conclusions

- Transactional updating within local governments opens meaningful avenues for local governments to capitalize on the value of information resource, however, power and politics hinder the rational development of this resource which partly explains why the state of geographic information at the local level is underdeveloped;
- The distributed network structure of a GIS linked to a spatial data infrastructure is a better option to the centralized organizational structure;
- Data build up and integration on the technical side and data sharing and benefit distribution on the organizational side are the biggest challenges of implementing the GIS-based Urban Land Supply and Capacity Monitoring.



Use Case Diagram