Designing a GIS Database for Planning Organizations:
A Case Study of Urban Planning Directorate,
Dammam Municipality

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ABSTRACT

Planning Organizations are increasingly required to operate with speed and efficiency facing ever more complex political and regulatory issues. They must imbibe an immense amount of information to perform their duties in a fair and sound manner. A geographic information system (GIS) provides the data management tools for the map and spatial data needed to accomplish this task. GIS technology also provides a flexible set of tools to perform the diverse functions of government.

The purpose of this study is to design a GIS Database that caters to the needs of a planning organization. The Urban Planning Directorate at Dammam is chosen as the target organization for the current study. The organization's personnel depend on CAD drawings and paper maps to accomplish their regular planning tasks. This process is found to be time

consuming, expensive, and subject to human errors. GIS can be used effectively to overcome such problems. One of the key factors in the success of GIS is the database design.

The database is designed according to the principles of Object Oriented analysis and Design. The design procedure is accomplished in four different stages. The first stage of the study concentrates on capturing the user requirements of the target organization. In the second stage, the user requirements are analyzed to build a conceptual data model and in the third stage, a design model is built based on specific GIS software. ArcGIS$^{®}$ is chosen as the target GIS software for the current study. In the final stage, the design model is implemented in a small area on a RDBMS (relational database management system).