Exploring Spatial Analysis Capabilities in Google Maps Mashup Using Google Fusion Tables: A Case Study in Land Lease Data Retrieval

Abstract

This study examines whether a map mashup application created with Google Maps API and Google Fusion Tables API can be used to supplement traditional desktop GIS applications in certain geographical studies. Historically, researchers have used online mapping tools like Google Maps to aid in their geographical research but these online tools have typically played a supporting role; most of the spatial analysis is still done using desktop GIS software. In order to determine whether online tools can handle some of the analytical tasks, a map mashup application that can be used to aid in oil and gas lease management is developed. The application can be used to perform a number of tasks that were traditionally associated with desktop GIS, such as performing attribute and spatial analysis, drawing buffers and polygons, and retrieving data from an external data source.

This study uses Google Maps API and Google Fusion Tables API programmed with JavaScript, a popular interpreted computer programming language that is an integral part of most web browsers, to develop a map mashup application. The application has the ability to display polygons as a feature layer, to draw polygons to delineate the boundaries of study areas, to store the location and attributes of sample points selected from a map, to draw buffers around point features, and to perform spatial and attribute queries from a table of spatial records. An accuracy assessment performed on the external data retrieving capability shows an accuracy of 100
percent. The application met all of the functional requirements and successfully demonstrated the utility of map mashup applications in GIScience research. Among some of the major impediments for more widespread adoption of map mashup applications are legal restrictions Google placed on commercial use and several technical limitations enforced by Google to reduce server load.