Abstract

One of the most important resources at a commercial service airport is the airport pavement. An airport has the responsibility of ensuring that aircraft are able to safely land, taxi, and takeoff by ensuring that the airport pavement is in a safe and serviceable condition and that the life of the pavement is maximized. With the continuous need to efficiently manage pavement at commercial service airports to extend the service life of pavement while reducing rehabilitation costs, more airports are turning to technology to assist with these tasks. However, the cost to implement an asset management system or a pavement management system can be extremely expensive and they often do not include GIS functionality as a standard feature. Though, with the recent growth of Web GIS technologies, commercial service airports can now implement a cost-effective solution to managing their airport pavement. This research demonstrates how to develop a Web GIS application for airport pavement management for use at a commercial service airport using a low-cost, Software as a Service (SaaS) based Web GIS platform. The development includes the design of an airport pavement GIS data model. Esri's ArcGIS Online SaaS-based platform was chosen for the development of the Web GIS application that is user-friendly and easily accessible via any web browser, tablet, or mobile device. With the Airport Pavement Management Web GIS application, airport staff have the ability to visualize existing pavement conditions that enable them to make more informed pavement maintenance and rehabilitation decisions, visually compare previous inspections and detect trends, and allow them to direct the timely repair of deteriorating pavement and extend the life of the pavement. The development of this application also provides the foundation for uses in other domains such as disaster response or emergency management operations, in addition to supporting future GIS integrations with Smart Infrastructure technologies.