

A platform for urban analytics and semantic data integration in city planning

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Abstract. This paper presents a novel web-based platform that supports the analysis, integration, and visualization of large-scale and heterogeneous urban data, with application to city planning and decision-making. Motivated by the non-scalable character of conventional urban analytics methods, as well as by the interoperability challenges present in contemporary data silos, the illustrated system – coined SocialGlass – leverages the combined potential of diverse urban data sources. These include sensor and social media streams (Twitter, Instagram, Foursquare), publicly available municipal records, and resources from knowledge repositories. Through data science, semantic integration, and crowdsourcing techniques the platform enables the mapping of demographic information, human movement patterns, place popularity, traffic conditions, as well as citizens' and visitors' opinions and preferences about specific venues in a city. The paper further demonstrates an implemented prototype of the platform and its deployment in real-world use cases for monitoring, analyzing, and assessing city-scale events.

Keywords: urban analytics, semantic integration, crowdsourcing, ontologies, SocialGlass, urban computing, smart cities.