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## Planning Post-Disaster Urban Recovery Using Synthetic Big Data

*A.Yair Grinberger, Michal Lichter and Daniel Felsenstein*

This paper illustrates how synthetic big data can be generated in order to meet the planning challenges of urban recovery in the aftermath of a disaster. Small areal statistical units are decomposed into households and individuals using a GIS buildings data layer. Households and individuals are then profiled with socio-economic attributes and combined with an agent based simulation model in order to create dynamics. The resultant data is 'big' in terms of volume, variety and versatility. It allows for different layers of spatial information to be populated and embellished with synthetic attributes. The data decomposition process involves moving from a database describing only hundreds or thousands of spatial units to one containing records of millions of buildings and individuals over time.

The method is illustrated in the context of a hypothetical earthquake in downtown Jerusalem. Agents interact with each other and their built

environment. Buildings are characterized in terms of land-use, floor-space and value. Agents are characterized in terms of income and socio-demographic attributes and are allocated to buildings. Simple behavioral rules and a dynamic house pricing system inform residential location preferences and land use change, yielding a detailed account of urban spatial and temporal dynamics. These techniques allow for the bottom-up formulation of the behavior of an entire urban system. Outputs relate to land use change, change in capital stock and socio-economic vulnerability. Delivering the data to planners and the informed public is facilitated through a dedicated dynamic mapping web site.

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## Can We Learn Route Users' Needs from Social Media Content?

*Ayelet Gal-Tsur, Zvi Kopelik, Einat Minkov, Itai Shor, Susan Grant-Muller and Silvio Nocera*

Information flow plays a central role in the development of transport policy, transport planning and the effective operation of the transport system. The role of social media data as a novel source for enriching and supplementing information flow in various sectors of society is constantly growing. Consequently, its potential to broaden and improve the information required to meet the needs of transport planners, operators and policy makers has been recently investigated, and the outcomes of these initial research efforts are promising. However, many challenges stemming mainly from the unstructured nature characterizing a large portion of social media data are still to be