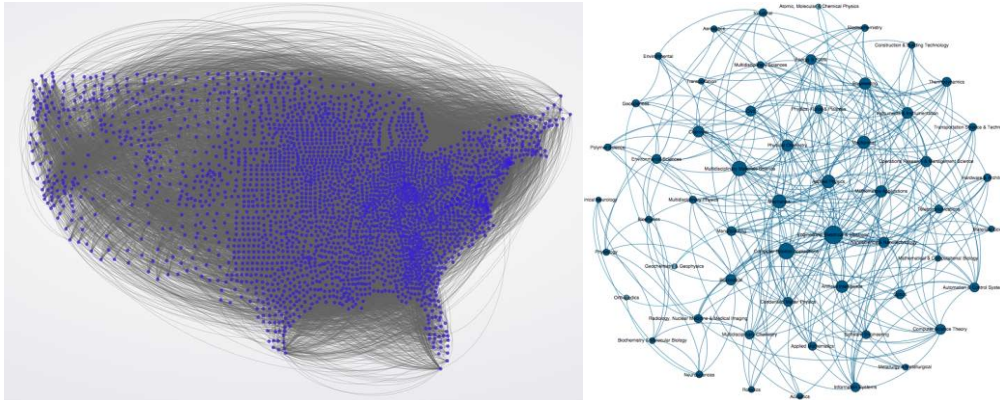


CyberSees: Type 2: Data Integration for Urban Metabolism



Urban metabolism (UM) is a term that captures the essential functions of cities and their inhabitants: flows and transformations of materials and energy, the movement of people, commerce, the creation of capital, the maintenance and renewal of facilities, and the generation and use of services. In order to study UM, large amounts of heterogeneous data need to be accessed, integrated, and analyzed. This project will investigate the feasibility of a framework for UM that encompasses: (1) The application of appropriate metrics to UM trends to establish whether regime shifts are indicative of greater or lesser sustainable urban states; (2) The identification and integration of disaggregated data for the inputs and outputs of urban systems through their life cycle stages and at various geographic scales.

The interdisciplinary team consists of six investigators (a computer scientist, a civil engineer, an urban planner, an environmental engineer, a medical doctor, and a public health scientist) and of four international collaborators (three computer scientists and one environmental engineer). Broader impacts include providing unique opportunities to educate students in the analysis and design of sustainable urban regions in a variety of socio-cultural contexts. Further, by revealing the connections between physical flows and environmental, social, health, and economic impacts, this research aims to demonstrate the critical need of an integrated systems approach to urban planning, instead of focusing on the end-of-pipe and post-crisis management, as the current paradigm.