t-HUB: The Public Transport Data Center of Connecticut

We are in the age of “Big Data”. The total quantity of global digital data is expected to reach 7.9 zettabytes (1 trillion gigabytes) by 2015. The McKinsey Global Institute estimates there will be a Big Data talent gap of 140,000 – 190,000 people globally, a gap between the supply and demand for people with the skills to properly analyze and interpret Big Data. Big Data and its inherent challenges and opportunities for improved public transportation operations and research in Connecticut has been a focus of the Public Transportation Systems research group at the University of Connecticut over the past year. An outgrowth of these efforts is t-HUB, and initiative designed to serve big data needs for the public transportation community. t-HUB is a central data storage point, access point, management point and analysis point for transit operators and planners, hosted at the University of Connecticut.

Title VI of the Civil Rights Act of 1964 (42 U.S.C. Section 2000d) states that “No person in the United States shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.”

Chapter V of the FTA Circular 4702.1A details the data collection and monitoring requirements of recipients and subrecipients of Federal Transit Administration (FTA) funds. In particular, requirements are given for collecting demographic data, setting system-wide service standards and policies, evaluating service and fare changes, monitoring transit service, and developing a Title VI evaluation plan.

These federal requirements present several challenges to the state of Connecticut, as there are 14 Regional/Metropolitan Planning organizations in Connecticut, along with 15 transit operators in the state impacted by the Connecticut Department of Transportation’s Title VI reporting and monitoring requirements. In particular, there are challenges regarding: data collection and management; survey development, implementation and analysis; and, statewide adoption and implementation consistency.

The University of Connecticut (UConn) possesses significant expertise in data collection, data mining, survey development and distribution, and houses the resources for centralizing large-scale data initiatives. In the public transportation realm, these expertise and resources are being consolidated in t-HUB, a statewide data resource for public transportation systems.

Benefits of t-HUB

- Streamline data management processes saving time and resources
- Avoid duplicative efforts by the 30+ transit operators and planning agencies in CT
- Best practices in data collection and management more easily spread throughout the state
- Centralize burden of data storage and management
- Leverage the infrastructure and flexibility of UConn’s computational resources
- Leverage UConn research expertise in data mining and analysis
- Educate students – creating talent to manage Big Data
- Build a single, centralized access point for data needs – such as Title VI requirements
- Improve connection between transit practitioners, UConn researchers and students

The vision for t-HUB is bold and large in scale. Multiple phases will be necessary to realize the vision. This project concentrates on developing a prototype analysis tool and outlining the needs of a fully-deployed system.

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