City of Raleigh North Carolina and NC State

Smart Cities Partnership Project Ideas

Table of Contents

Smart City Collaborative Overview

The City of Raleigh and North Carolina State University wish to collaborate on project opportunities to leverage software, sensors and network technology to improve the City's strategic vision and operations. The collaboration will focus on opportunities that leverage NC State's strengths in skill and position as a trusted third party within the Triangle area, the University's dedication to research that improves the lives of everyday North Carolinians, and its statewide network of university professors and specialist resources.

Potential City of Raleigh Smart Cities Projects

This is a list of sample Project Ideas that city representatives would be interested to explore with NC State partners.

Capital Project Coordination Savings Estimates

Enabling "Dig Once" Project Planning and estimate amount in construction savings that could be enabled over the next 5 years as a result of better coordination of Capital Improvement Project Plans through GIS. Planning and capital improvement data management needed across City of Raleigh Divisions - Public Works (Road, Sidewalks), Public Utilities (Sewer, Water), Stormwater, and Network Infrastructure (Fiber) - as well as third party organizations such as Electric Utilities, Cable and Internet Companies.

- *COR Department Partners: City Manager's Office, Public Works, Public Utilities, IT*

Water Customer Retrofit Analysis

Identify and target customers who would benefit most from water efficiency (saving) retrofit technologies by segmenting the customer accounts by features, such as Customer Type (Residential, Commercial, Owner vs. Rent), Water Usage and Age of Properties (Wake County Property data).

- *COR Department Partners: Public Utilities*

Multi-Modal Network Gap Analysis

Demand and gap analysis for multi-modal transit options for current and planned infrastructure (Dedicated Bike Lanes, Greenways, Bus Routes. Bike Share). What % of people within areas of high density and target demographic profiles have a transit + walking (< 0.3 miles) or biking pathway (< 5 mi first/last mile) to known job / POI areas.

- *COR Department Partners: Transportation*
- Example Studies: Utah Last Mile Studies, April 2015; City of San Diego Master Bicycle Plan, Dec 2013

Stormwater Water Quality Index

Creation of a meaningful water quality scoring method and index for streams managed by COR stormwater division, using volunteer and staff collected stream quality data, in order to compare and prioritize action.

- *COR Department Partners: Public Works, Stormwater*
- *Other Potential Partners: NCSU Water Resources Research Institute (WRRI); Christy Perrin*
- *See example of similar initiative in Chicago*

Traffic Congestion and Real-Time Optimization Analysis

Using traffic camera and Waze application data to optimize light timing models, reduce congestion and increase travel efficiency. This analysis would involve using Waze traffic jam data to detect congestion patterns to prioritize further study, and then image analysis from congested corridor with Traffic Cameras to count or detect demand at lights at different times of day. The real time counts would be used to recommend new Signal timing model software to do real-time analysis of demand and throughput during green lights to suggest.

- *COR Department Partners: Transportation*

Next Generation Planning using 3D Models

Support 3D Model Development and Maintenance. Using a multitude of data sources including: state and city sponsored LiDAR programs; leveraging UAV with onboard sensors (including LiDAR). (Perhaps leveraging Drones from NGAT)

- *COR Department Partners: IT (GIS), Planning*

IOT Data Framework

As we continue to instrument our city with network-connected sensors (e.g. Vehicle Location (AVL) devices, Smart trash cans, Cameras, etc.) we will continue to develop strategies to efficiently store, manage, integrate and analyze data from real-time and near real-time sources.

- *COR Department Partners: IT*

Seed Ideas

Pavement Condition Mapping

To be scoped; *COR Department Partners: Public Works, Transportation*

Potential City of Other Government Projects
- **Wake County Project**
  - **NC Food Inspections** - Effectiveness of education efforts (are orgs learning?); Creating a better Identifying and weighing risk factors for certain types of violations and as a series of violations; Analysis with census data for prediction factors (types of neighborhoods)