Great Lakes Protection Fund
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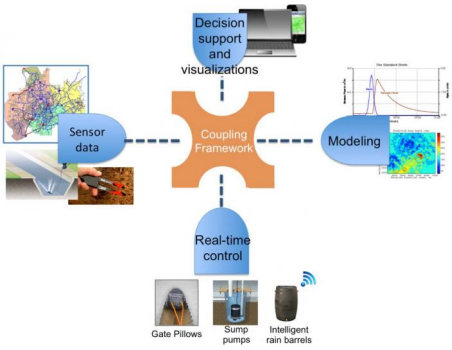
Funded Project

An Intelligent Cyberinfrastructure for the Decentralized Sensing, Modeling and Control of Urban Stormwater

Project No.	1035
Timeline	2014 – Active
Award Amount	$800,000
Team Leader	Branko Kerkez, University of Michigan, bkerkez@umich.edu
Project Website	http://open-storm.org/



Proposed Intelligent Stormwater Framework

Smart Water Systems Intro Video from Greg DeLiso on Vimeo.

The project will develop a novel smart stormwater control framework that, when deployed at scale, will reduce the occurrence of combined and sanitary sewer overflows thereby improving the water quality of the Great Lakes and their tributaries. The framework will be pilot tested at neighborhood-scale densities in Milwaukee, Ann Arbor and Toledo, reducing occurrences of localized flooding and resulting water quality impairments during the project period.

The team will create and test a scalable computing framework that optimizes the management of sump pumps, rain barrels and stormwater outlets by fusing real-time sensor data and location-specific weather forecasting with control algorithms. The algorithms will establish relationships between a number of meteorological, hydrologic and hydraulic variables and identify the optimal set of stormwater asset operational decisions, given real-time conditions, at any point in time. The computing framework will be dynamic and will evolve (i.e., learn) over time. This will be the first known application of Bayesian networks to automate operational infrastructure decisions. Customers envisioned for the computing framework are water utilities seeking to optimize the use of distributed green infrastructure assets to improve stormwater management decision-making. A smartphone application will also be developed for participating private homeowners to monitor the performance of sump pumps and rain barrels.