

SWIM

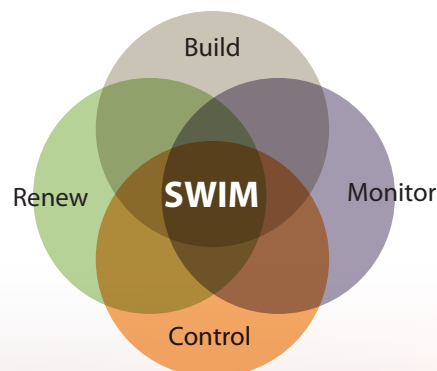
SUSTAINABLE WATER INFRASTRUCTURE MANAGEMENT

An ICTAS Sustainable Water Center



Need for Research

Clean and safe water is critical for human and ecosystem health. Most cities and towns utilize drinking water and wastewater collection systems that were constructed more than 100 years ago. Many of these systems have not received adequate upgrades, maintenance, repair and rehabilitation (U.S. EPA, 2005). Funding for these needs is limited, and a deferred maintenance, out-of-sight, out-of-mind, fix-on-failure problem-solving approach is the industry standard in many regions.



The overall goal of the SWIM is to transform the nation's capability to build, monitor, control and renew water infrastructure systems to be both resilient and sustainable.

Vision

To become a nationally recognized leader in research, development, and education related to water and wastewater infrastructure systems.

Mission

To make America's water infrastructure systems more integrated, effective, resilient and sustainable through multidisciplinary research, and to disseminate results through development and training programs designed to maximize the value of these long-lived assets.

Strategy and Approach

There are a number of researchers at Virginia Tech who are working in the area of water infrastructure systems and asset management. The primary purpose of this Center is to serve as a focal point for multi-investigator, interdisciplinary initiatives related to sustainable water infrastructure systems. This focal point will facilitate interactions with national laboratories, industry, and utilities while providing a centralized outreach resource on topics related to distribution and collection systems.

Research conducted by the Center will help in developing a new generation of installation and repair approaches; new sensors to track the condition and deterioration of installed infrastructure systems; intelligent sensors for real-time surveillance; advanced, integrated asset management approaches; and, improved understanding of the inter-relationship between infrastructure performance and public health. Both public and private distribution and collection systems are addressed, covering the large pipelines serving large cities, as well as the smaller pipe networks in consumers' homes. The Center will also foster development of a new breed of engineer trained in research and application of new technologies for water infrastructure sustainability and resiliency.

Research Activities

- Advanced Asset Management
- Sensor and Information Technology
- Performance and Prediction Modeling
- GIS Web-based Data Visualization and Analysis
- Material Behavior and Deterioration Science
- Construction and Renewal Engineering
- Public Health and Wealth
- Water-Energy-Climate Nexus

Research Facilities

SWIM Center is housed in the ICTAS headquarters building and is equipped with highly specialized equipment, state-of-the-art laboratories, and advanced data visualization and super-computing facilities.



Key Personnel

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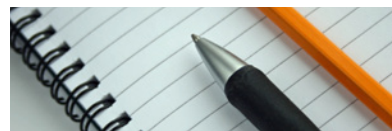
RESEARCH



EDUCATION



TRAINING



DATABASE



OUTREACH



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