The Water Research Foundation advances science and innovation for the use and management of sensors, networks, and data to improve decision making and utility efficiency. Focuses include big data, the internet of things (IoT), analytics, and workforce skills needed to meet the demands of a digital future. Research improves the reliability of underlying physical water networks through better collection and analysis of, and action on, data from network events. Research strategies may include the use of real-time monitoring and automation, operational readiness, and network planning. The Leaders Innovation Forum for Technology (LIFT) program also facilitates identification, testing, integration, deployment, and optimization of smart technologies.

### LIFT Focus Group
Whether it’s sensors, SCADA, asset management decision support tools, or geo-intelligence, the LIFT Intelligent Water Systems Focus Group is a peer-to-peer utility network that explores and shares findings on new technologies and management strategies that will be part of the digital utility of the future. The network also provides utilities a mechanism to share the cost and risk of demonstrating new technologies.

### LIFT Technology Scans
LIFT Technology Scans identify and evaluate innovative technologies to inform water facility owners, funders, advisors, and users in order to promote early adoption of technologies. They offer technology providers an optimal platform to introduce emerging, pre-commercial, and newly commercialized technologies.

### LIFT Challenges
LIFT Challenges give students, professionals, and technology aficionados the opportunity to showcase their talents and innovation. The 2018 Challenge focuses on demonstrating the value of intelligent water systems with an emphasis on leveraging data. Participation helps move water innovation forward and top teams are awarded cash prizes. [www.werf.org/LIFT/IWSChallenge2018](http://www.werf.org/LIFT/IWSChallenge2018)
WRF Intelligent Water Systems Research

COMPLETED
Designing Sensor Networks and Locations on an Urban Sewershed Scale SENG6R16
Identifies sensor technologies (both available and in use) through a survey, workshop, and interviews to develop use cases and IoT strategies for improving operations and management of urban sewersheds as background and preparation for demonstrations.

Defining Attributes and Demonstrating Benefits of Intelligent Distribution Systems 4614
Provides water/wastewater literature reviews on smart water technologies and applications in use by utilities and a list of potential research topics.

Leveraging Other Industries—Big Data Management SENG7R16
Captures the state of knowledge on IoT and big data processing in the water sector and key non-water sectors. This knowledge will help to improve operations efficiency, asset investment decisions, and regulatory compliance, while reducing environmental impact.

Workforce Skills of the Future SENG5R16
Presents insight and keys to success to help utilities understand drivers of change, such as disruptive technologies, evolving customer expectations/needs, and changing workforce requirements. Assesses implications for strategic HR, management, diversity, leadership, culture, operating models, training/education, and workforce structure.

ONGOING
AMI-Meter Data Analytics 4741
Investigates how advanced metering infrastructure (AMI) data can maximize utility benefit by identifying strategies for AMI data analyses. Results will include a performance index to optimize meter maintenance and replacement strategies based on actual meter performance.

Building Workforce Skills for Intelligent Water Operations 4663
Helps prepare utilities for anticipated workforce changes as they implement increased automation and smart water technologies. Examines changing job requirements and means of attracting and training new and existing workers to fill more skilled positions.

Defining Optimum Security and Communication Methodologies for Intelligent Water Networks 4670
Inventories information sources currently used by water utilities, along with associated communication media and protocols, and provides recommendations for security improvements.

Intelligent Water Networks Summit and Workshops 4714
Enables the documentation and exchange of information and practical experiences among utilities interested in intelligent water networks through a series of workshops. Topics include cybersecurity, big data, smart network design and implementation, and maintenance.

Monitoring for Reliability and Process Control of Potable Reuse Applications SENG2C14
Develops an operations support tool that integrates sensors and data generated within the treatment process for immediate feedback/alerts. Integrates existing sensors as an early warning system for the treatment process to support real-time decision making.

Utilizing Smart Water Networks to Manage Pressure and Flow for Reduction of Water Loss and Pipe Breaks 4917
Develops an approach for managing pressure and flows through smart network technologies in order to extend pipe life and reduce water loss.