



# The Internet of Water for Cities

Michael Young, Vianey Rueda • July 2021

The intention of the Internet of Water (IoW) is to create the data infrastructure necessary to enable informed water policy and management decisions. Currently, multiple agencies (governmental and otherwise) at various levels manage different types of water data and store this data in a variety of locations and formats. This fragmentation of water data has led to “data rich-information poor” decision-making environments. Fragmentation prevents data from being found, interpreted, and synthesized into the information needed for meaningful action. This is exemplified by the city of Boerne, Texas, where the first municipal-level Internet of Water data hub and dashboard will be piloted.

What makes this case study important and unique? Understanding water supply-demand dynamics at the local level can inform businesses, agencies, and residents about the types of industries/businesses that can be sustained in the area. This understanding can also attract—or discourage—the establishment of new businesses and impact the overall growth of a region. Also, the municipal scale of this effort lends itself to a more locally-driven analysis of water resource dynamics. By involving local individuals, we can better identify relevant stakeholders and system boundaries using a bottom-up consensus-driven approach that promotes new ideas and techniques.

***“Fragmentation prevents data from being found, interpreted, and synthesized into the information needed for meaningful action.”***

In our study, we sought to understand the different roles and needs of local individuals and groups. This was done in collaboration with the Cibolo Center for Conservation (Cibolo), our partners in Boerne. Cibolo, along with IoW and the University of Texas at Austin, organized a series of focus groups with local stakeholders, including environmental advocates, business leaders, municipal

leaders, and representatives of socially vulnerable community members. Those discussions informed the design of a broader survey of the general public, which garnered 300+ responses and provided excellent feedback.

Engaging local stakeholders is important for many reasons. First, because local stakeholders are themselves community members, they have specific knowledge of the system being analyzed and can provide vital information on local realities. Second, individuals interpret data differently depending on their background, and can therefore provide different perspectives on the same issue, opening avenues for effective change that might have otherwise been missed. Third, marginalizing stakeholders, can create misunderstandings and engender opposition to strategies and policies that would have otherwise created positive change in the community. Finally, consistently seeking feedback on decision-making processes and leveraging stakeholder knowledge in a positive and productive manner strengthens stakeholders' dedication to proposed strategies. This approach encourages stakeholders to take ownership of the outcomes and ensures that the tools produced are useful and sustainable over time.



Cibolo Creek, Photo by Cynical Pink on Flickr

Our experience with local stakeholder groups provided us with perspectives, ideas, and approaches that will help create a more useful and resilient data hub and dashboard. The questions our stakeholders need to answer will inform the types of data that are held in the data hub and shown on the dashboard. In this way, our stakeholders will also advance data integration bringing together datasets that have not previously been combined. In Boerne, the focus group and survey results told city officials about which sources of information were trusted, and citizen needs, concerns, and willingness to support policies and/or employ water management strategies.

With this information, the research team is now developing personas that represent stakeholder groups and designing a data hub and dashboard that will be beneficial to as many users as possible. Formats of information include tables, interactive maps and/or graphs, text or email alerts, infographics, and more. As water data are integrated into this hub, users will have easily accessible and standardized

data that they can use to inform everyday decisions at the individual level, as well as policy and water management decisions with long-term impact at the municipal level.

Municipal leaders have a responsibility to ensure that their water supply is sustainably and equitably managed so that communities remain resilient. Understanding the risks and costs of a “business as usual approach” is difficult to determine. Will communities have enough water given future droughts and uncertain growth? Will existing businesses have enough water to continue operations? Will new businesses be attracted to an area if a water source is not secure? Decision-makers need data to answer these time-sensitive questions and inform decisions that affect the future.

In facilitating access to data, and the information it can provide, the IoW is helping decision-makers be data and information-rich. We are grateful for the support of the Cynthia and George Mitchell Foundation to help make this happen.

*Vianey Rueda is an MS student in the Energy and Earth Resources Graduate Program at UT Austin, and Michael Young is a Senior Research Scientist at the Bureau of Economic Geology, Jackson School of Geosciences at UT Austin.*



Cibolo Creek Ranch Pond, Photo by Richard Binhammer on Flickr  
Header Photo by Cibolo Center for Conservation