
Texas Water Technology Roadmap Forum

A Water Technology Roadmap Forum Facilitated through
an Interdisciplinary and Multi-Stakeholder “Charrette”

Organized by:

**The Meadows Center for Water and the Environment &
STAR Park at Texas State University**

AccelerateH2O – Texas Water Technology Accelerator

The Water Institute of Texas

and

**The National Science Foundation Research Coordination Network on Climate, Energy,
Environment and Engagement in Semiarid Regions**

Underwriting Sponsor

The Wells Fargo Foundation

Co-Sponsors

The Meadows Foundation

The Texas Research and Technology Foundation

Location and Date:

[The University of Texas at San Antonio \(UTSA\) – Downtown Campus](#)

Durango Building, Southwest Room

501 West Cesar Chavez Blvd., San Antonio, TX 78207

[Parking: Lot D3](#)

Coffee - registration - networking: 8:00 AM to 8:45 AM

Forum: 9:00 AM to 4:00 PM

February 25, 2015

Overview of the Roadmap Forum

Sponsors

This one day forum – to be conducted through a facilitated charrette - is underwritten by the Wells Fargo Foundation, and co-sponsored by the Meadows Foundation, and the Texas Research and Technology Foundation. The Forum is convened by The Meadows Center for Water and Environment and STAR Park at Texas State University, AccelerateH2O – the Texas Water Technology Accelerator, the Water Institute of Texas, and the National Science Foundation funded Research Coordination Network of Texas universities and institutes on climate, energy, environment and engagement in semiarid regions (RCN-CE3SAR).

Goals and Objectives

The main goal of the Forum is to prioritize and frame key milestones for a bold plan to initiate a "*Texas Water Technology Roadmap*" and a subsequent strategy on a "*Pathway to Commercialization*," which will help guide Texas toward global leadership in water technology. To achieve these goals, the Forum brings together, by invitation only, individuals from diverse technical and business backgrounds in water. These individuals are interested in accelerating growth of Texas' water technologies, industries, and sustainable water use. They represent Texas' leading water, industry, and economic development associations; residential, industrial, and agricultural organizations; university research centers and other Texas research institutes; and non-profit centers of excellence. An explicit intent of this forum is to complement, supplement, strengthen, enhance, and extend the work, efforts, and accomplishments of these key stakeholders, and to offer a collaborative model and mutually beneficial solutions. Three objectives guide the Forum:

- To generate the first-ever Texas Water Technology Roadmap that will position the State to become a global water technology hub.
- To define a specific process to more effectively link research, expertise, facilities and programs, addressing our current challenges and long-term competitiveness.
- To form "innovation teams" within a virtual "collaboratory" that crosses disciplines, campuses, networks, and resources to implement recommendations and support vital roadmap activities.

Rationale

Why does Texas need a roadmap? While many efforts to address Texas' water matters have been undertaken, largely missing from the dialogue has been the creation of statewide and regional technology roadmaps. This "map" can be viewed as a tool to match goals with specific technology solutions, often including tactics, activities, and investments supporting current and future competitiveness and technology development. Texans have used such roadmaps in the past to attain global leadership in energy and agriculture, in transistors and microprocessors, and in life sciences and semiconductors. In short, a technology roadmap will show Texans the many connections and specific routes to sustainable water use, innovation, accelerated commercialization, and economic competitiveness.

Framework

The Forum builds upon recent work by AccelerateH2O, which, in cooperation with others, has worked to identify critical technical needs for water technology in Texas, finding significant opportunities for innovation and commercialization, in areas such as desalination, reuse, conservation, and 'smart-water' technologies (sensors, monitors, data analytics). The Forum will (1) further focus/refine technology needs and targets, (2) define the current scientific and technical capacity of the State's centers of research (i.e., academia, industry, non-profit) to address these needs, (3) provide a point of departure for the process of building a water technology roadmap for Texas, and (4) emphasize market-based and innovation-driven outcomes.

The topic of “water” has many dimensions, as is displayed in Figure 1. Therefore the overall topic is framed within a broad context that reflects the world we live in today and is influenced by “Volatility, Uncertainty, Complexity, and Ambiguity” (VUCA).

Water challenge dimensions, such as - economics, politics, social factors, protecting the environment, technologies, laws, policies and regulations, are all interconnected, interrelated, and interdependent. Add multiple stakeholders with multidisciplinary backgrounds, add multi-institutional and even multinational audiences, and water soon becomes a very complex topic.

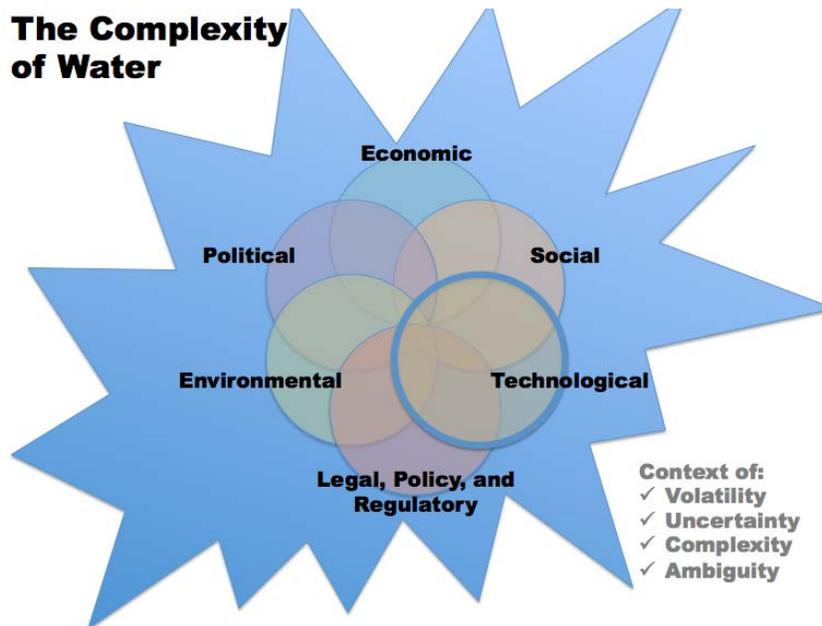


Figure 1. The General Context for the Charrette

Addressing this context and all of these dimensions is completely outside the scope of the Forum and facilitated charrette. Consequently, the focus of the Forum is on one area: the technology dimension of water, as shown in Figure 2.

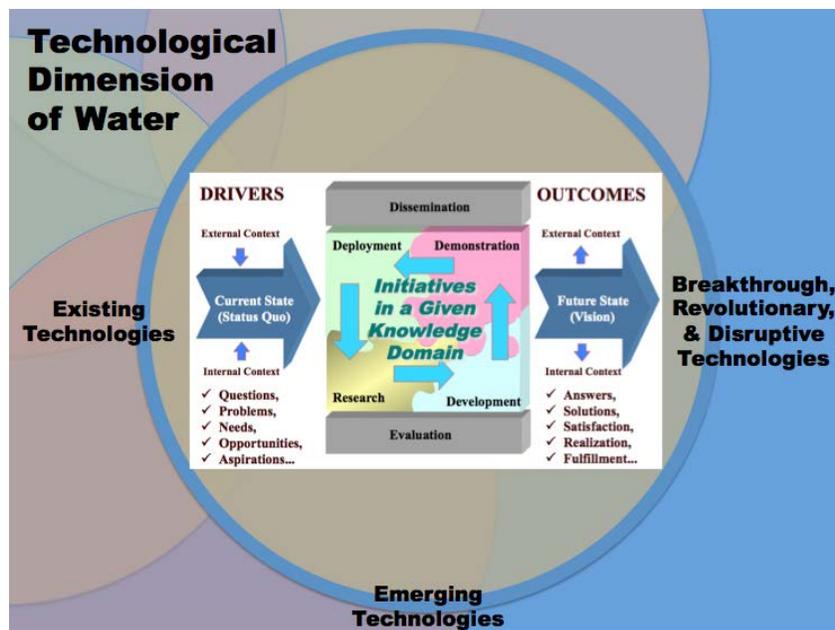


Figure 2. The Framework for the Charrette

A goal of the Forum - and instruction to facilitators - is to structure the discussions among participants around the identification, organization, and documentation of data, information, knowledge (as expressed in best practices), experience (as expressed in lessons learned), and wisdom across a broad continuum. Discussion will focus on the following:

- (1) An initial set of existing technologies that define the status quo, together with a baseline of questions that have not been answered, problems that have not been solved, needs that have not been satisfied, opportunities that have not been realized, and aspirations that have not been fulfilled.
- (2) A set of next-generation emerging technologies resulting from research that leads to development, development that leads to demonstration, demonstration that leads to deployment, and deployment that leads back to research, while continuously conducting dissemination and constant evaluation.
- (3) A final set of breakthrough, revolutionary, and disruptive technologies that define a vision of the future state of outcomes composed of answers to the questions, solutions to the problems, satisfaction of the needs, realization of the opportunities, and fulfillment of the aspirations.

Process

The Forum will be facilitated using a **charrette** process. This will be an intensive workshop involving people working together under compressed deadlines. Charrettes are commonly used in urban planning and architecture. They provide for an interactive pace in which a diverse group of stakeholders, representing pluridisciplinary perspectives (i.e., multi-, inter-, cross-, and trans-disciplinary) on a given topic, come together and follow a rigorous, facilitated vision-driven process to achieve established outcome-oriented goals and objectives.

Charrettes are especially suited to encouraging discussions that go beyond conventional thinking, and that stretch the envelope of the status quo into the realm of new possibilities. They also are an effective means to initiate collaboration among a diverse group of parties with common interests. The charrette process combines techniques often referred to as brainstorming. The charrette provides for divergent, lateral, provocative, and convergent thinking. Charrettes allow ideas to flow in an open way, each new thought building upon the suggestions of all participants, while capturing key ideas of the discussion, and creating lists, issue maps, and diagrams. These all help charrette participants to visualize alternatives and to discuss and evaluate best choices.

The Dean of the College of Architecture at Texas A&M University, Dr. Jorge Vanegas, will lead the charrette. Dr. Vanegas is well-known for his facilitation skills and is providing support to the Forum through, RCN-CE3SAR, where he is a member of the Steering Committee.

To begin, participants will examine the most critical issues facing residential, commercial, agricultural, and utility-based water interests. Participants will focus on aspects of these issues that can be addressed through technology innovation and market-driven solutions.

Moving from a generalized discussion to a more specific level of the scientific and technical, participants will prioritize urgent and near-term needs and gaps from an end-user, market perspective.

Based on this framing of issues, participants will work in smaller cross-function groups of the research and IP development communities, and demand side of technology (such as suppliers, industry, and utility representatives). These groups will define scenarios for collaboration, coordination, and alignment of immediate opportunities (proof of concept, pilot projects, demonstration and validation).

A final full-group session will create an initial list of 'targets of opportunity' for which participants will be asked to continue their discussion, engagement, and partnership in a post-forum process.

Post-Forum Activities

Following the Forum, information collected during the course of the day will be used to begin drafting the roadmap.

The facilitator, members of the Forum planning committee, and any volunteers from among the participants will assist in developing the initial draft roadmap document of findings and recommendations. A final report and associated briefing on Forum results will be disseminated among all participants, and will contain:

- An initial **plan of action** for completing an initial version of the water technology roadmap for Texas, based on the results of the Forum and subsequent discussions;
- A collective **consensus** of (1) baseline information; (2) vision and anticipated desired outcomes; (3) possible pathways on how to move between the baseline and desired outcomes; (4) indicators, metrics, benchmarks, and assessment mechanisms, and; (5) potential challenges.
- An **inventory of assets**, which identifies existing talent, infrastructure (data, information, knowledge, experience, resources, tools, etc.), and capacity that can be leveraged collaboratively and immediately to further develop the water technology roadmap.

May 1, 2015 is the target date to have a completed version of the Texas Water Technology Roadmap, though it need be understood that this will be an ongoing and iterative process, where updates and new priorities will emerge over time.