In a world of diminishing resources and increasing population, one of the most pressing contemporary issues is the balance of water resources in watersheds. To address this problem we use an innovative approach by creating watershed models that balance the water supply and demand in the continuum of time. Our models ensure balance by continuously tracking water supply and demand flows, and when necessary, by providing the means of establishing which flows create the imbalance and how it can be adjusted.

The continuous tracking of the flows - either supply or demand - requires the modeling of the time variable behavior of both natural and human processes in the watershed since they are the source of water flows generation.

To portray the watershed processes we break them down into components: population, economics, water cycle, water resources, technology. We take a substantially different approach to the task of integrating these components into one model that looks and behaves like the reality under study. Rather than creating a model for each of the specific disciplines (i.e. demographics, economics, politics, etc.) and then attempting to integrate them we create one model which includes all the disciplines. We eliminate the impossible task of trying to get many different models to talk to each other.

For our modeling, we utilize as backdrop the General System Theory (GST), whose object of study is the *System* itself, as a relation between observed features and attributes, but does not include the nature of the mechanism involved whether physical, biological or conceptual. In this sense, GST is ***interdisciplinary*** since it principles apply to any discipline.

To define the Watershed System as a time system we introduce:

- ***Time*** **as the index that synchronizes the executions and feedbacks that exists among all acting parts of the watershed system;**
- **D*ynamics*** that describes the mechanisms that generates the time variable behaviors of the components and interactions of Water System.

To build our models we utilize *System and Control Engineering mathematics* that combined with empirical dynamic models of the watershed reality enable us to build seamless models that mirror the structure, interconnection and interaction that exist in the reality.

Systems and Control Engineering mathematics are used for build *flight simulators*, whose purpose is to guide a model plane that mimics the real one to a desired point, sometime in the future. In similar fashion, our models become *watershed simulators* that guide the portrayed watershed to a **balance state**. And, when this is not feasible, the model enables us to identify the flows that cause the unfeasibility and the associated processes involved so that a remedy can be applied.

With over 30-year experience in designing, building and deploying watershed dynamic modes we can tackle your important projects utilizing state-of-the art tools and methods.