

# Decisions as Outcomes:

*'How can participants reach better decisions using information technology?'*

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research director | the decision theater at ASU

Water resources research center annual conference

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# Why is this important?

- *Is engaging stakeholders an important function for scientists? Really!?*
- *Does technology improve management processes? Is it an end or a means?*
- *What does a Laboratory look like to answer these questions empirically and rigorously?*

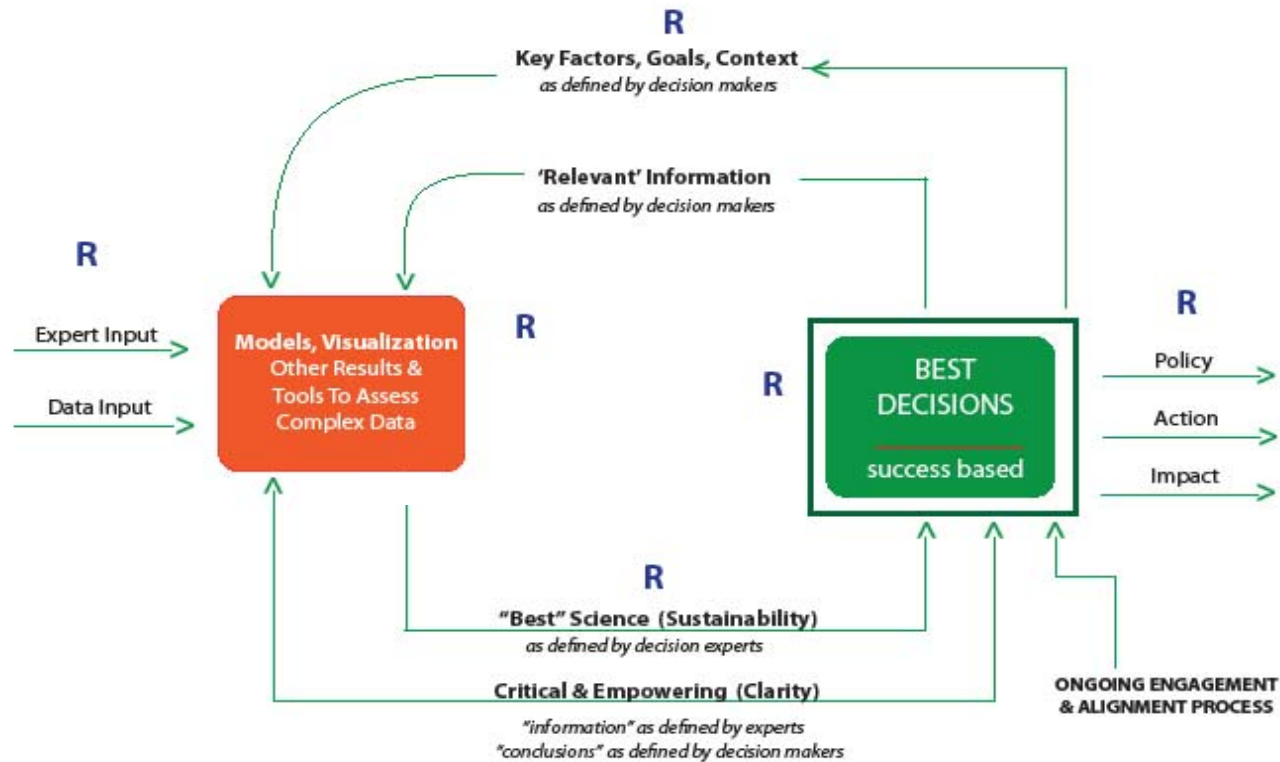


# Decision Theater

Better Decisions for a Sustainable Future

# The Decision Theater Process

Successful Decisions as the Primary Metric for Success



← **DECISION-SUPPORT PROCESS** →

Increasingly sophisticated know-how on key elements for enabling decisions & decision making

# Decision Theater Water Resource projects

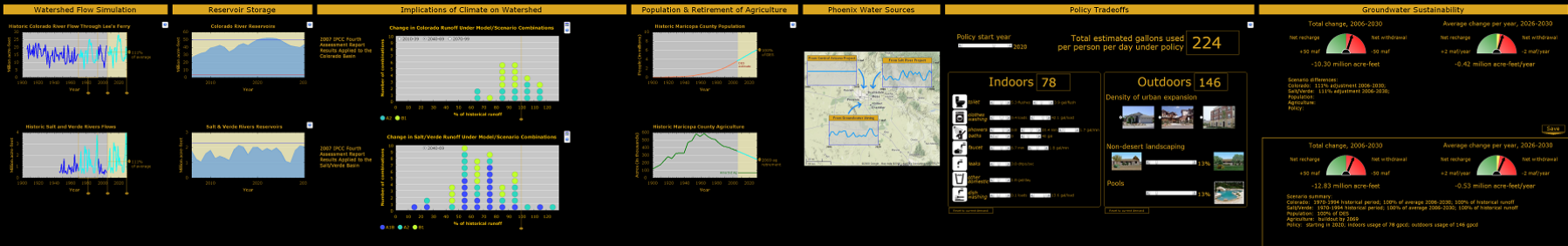
- WaterSim 1 & 2: Stakeholder focus groups
- College of Public Affairs: Certificate of Public Management training session
- Nimue groundwater visualization
- Arizona Water Institute: Portfolio Analysis for Mesa, Arizona
- City of Surprise: Water Resource Master Plan
  - With Malcolm Pirnie

# Context for *WaterSim*

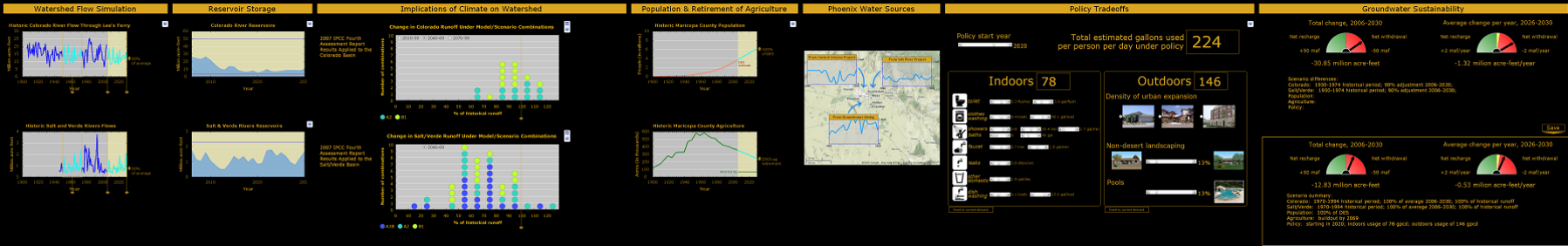
- DCDC WaterSim was created to leverage the technologies of the Decision Theater to create an integrated scenario-based simulation environment and to study decision processes of policy makers.
  - An environment for integrated modeling.
  - A boundary object to engage water decision makers.
  - An environment to study decision making processes.

# Some of WaterSim's many user-adjustable variables

WET



DRY



Watershed Simulation

Climate Change

Land Use & Population

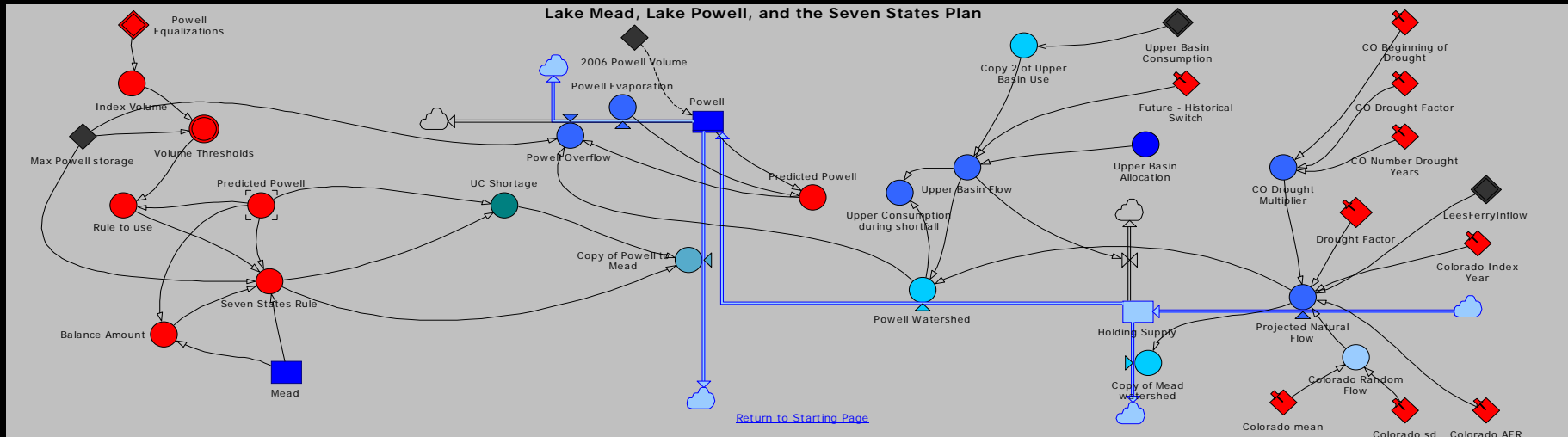
Policy Tradeoffs

Groundwater Sustainability

Slider bars on graphs allow alternate futures to be assessed in real time

# WaterSim, as Decision Tool.

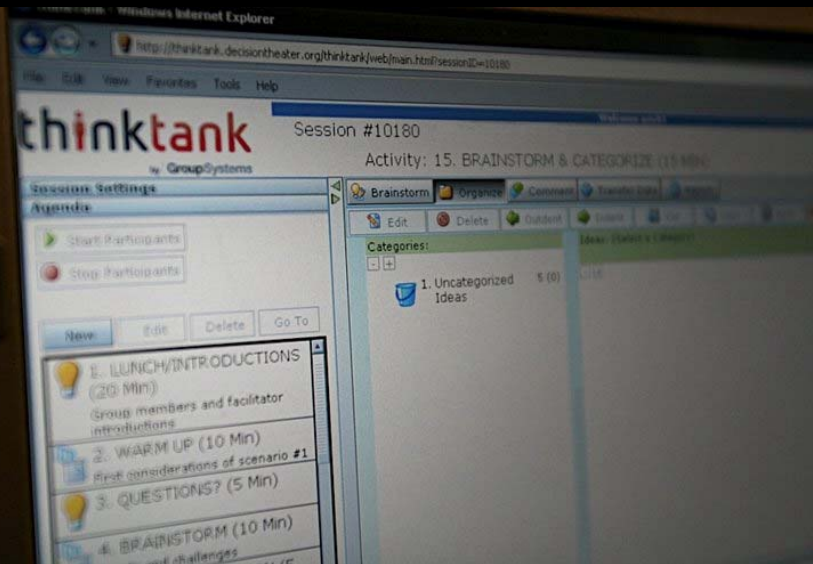
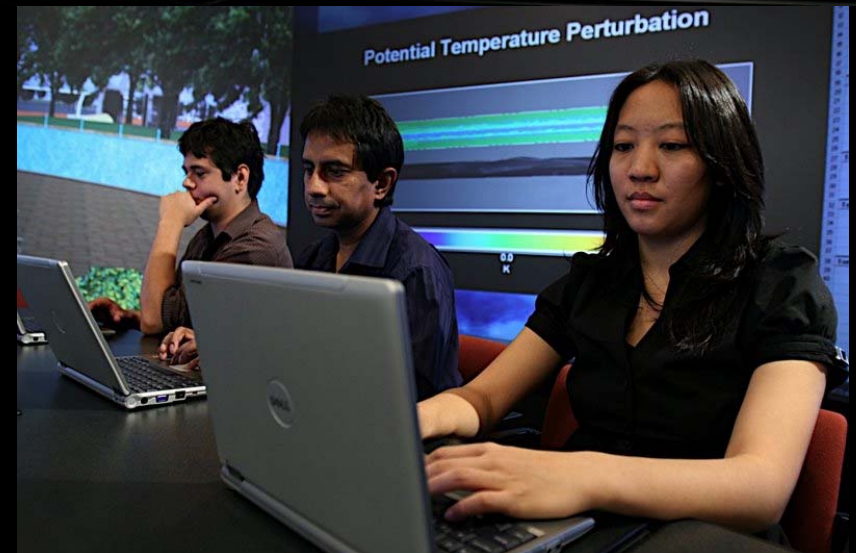
- *WaterSim* is a system dynamic programming tool for exploring Central Arizona's alternative future water scenarios in the DT
- *WaterSim* connects dozens of viewer-adjustable variables
- The flow chart below shows *WaterSim* linking different models



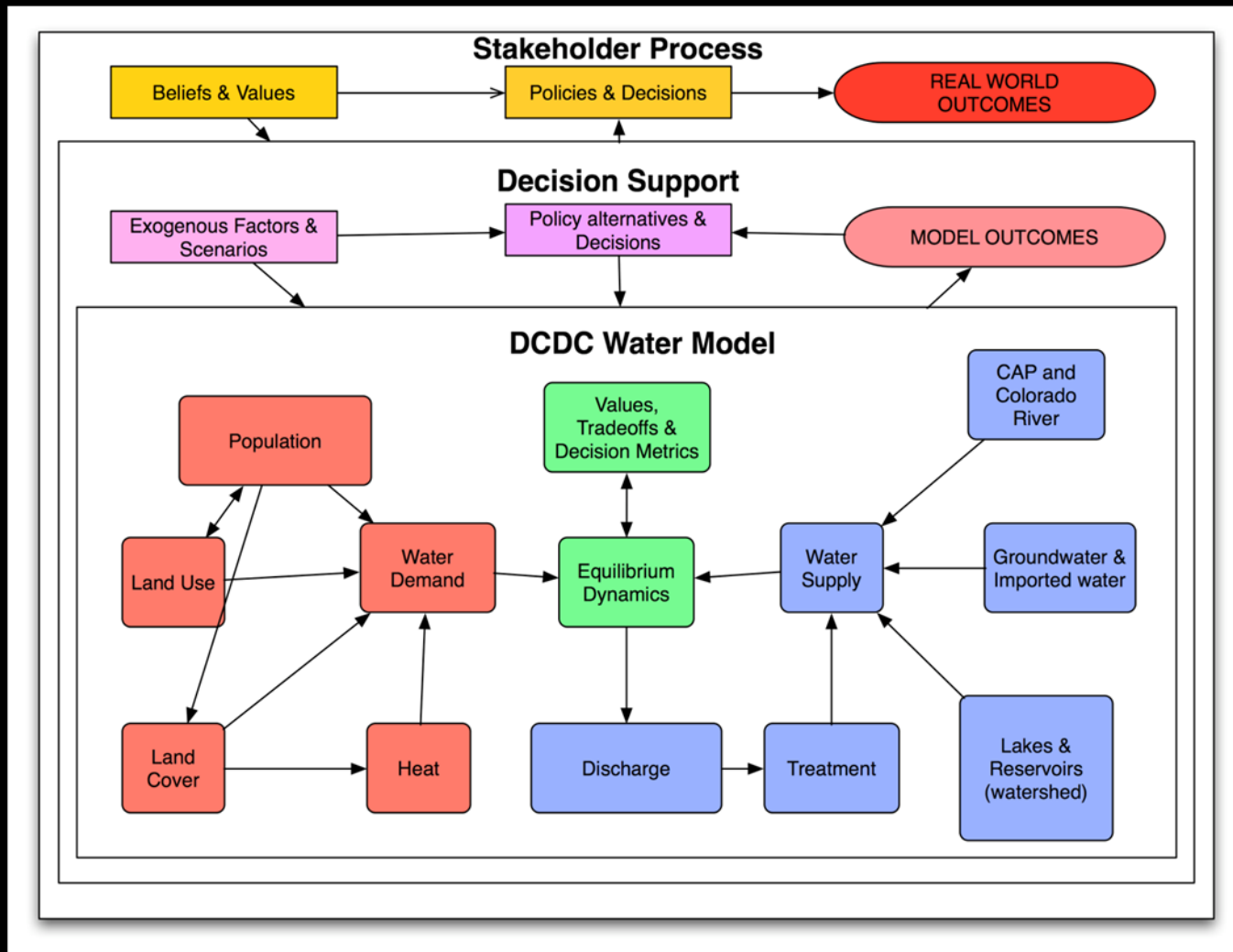


# ThinkTank, a Collaboration Tool.

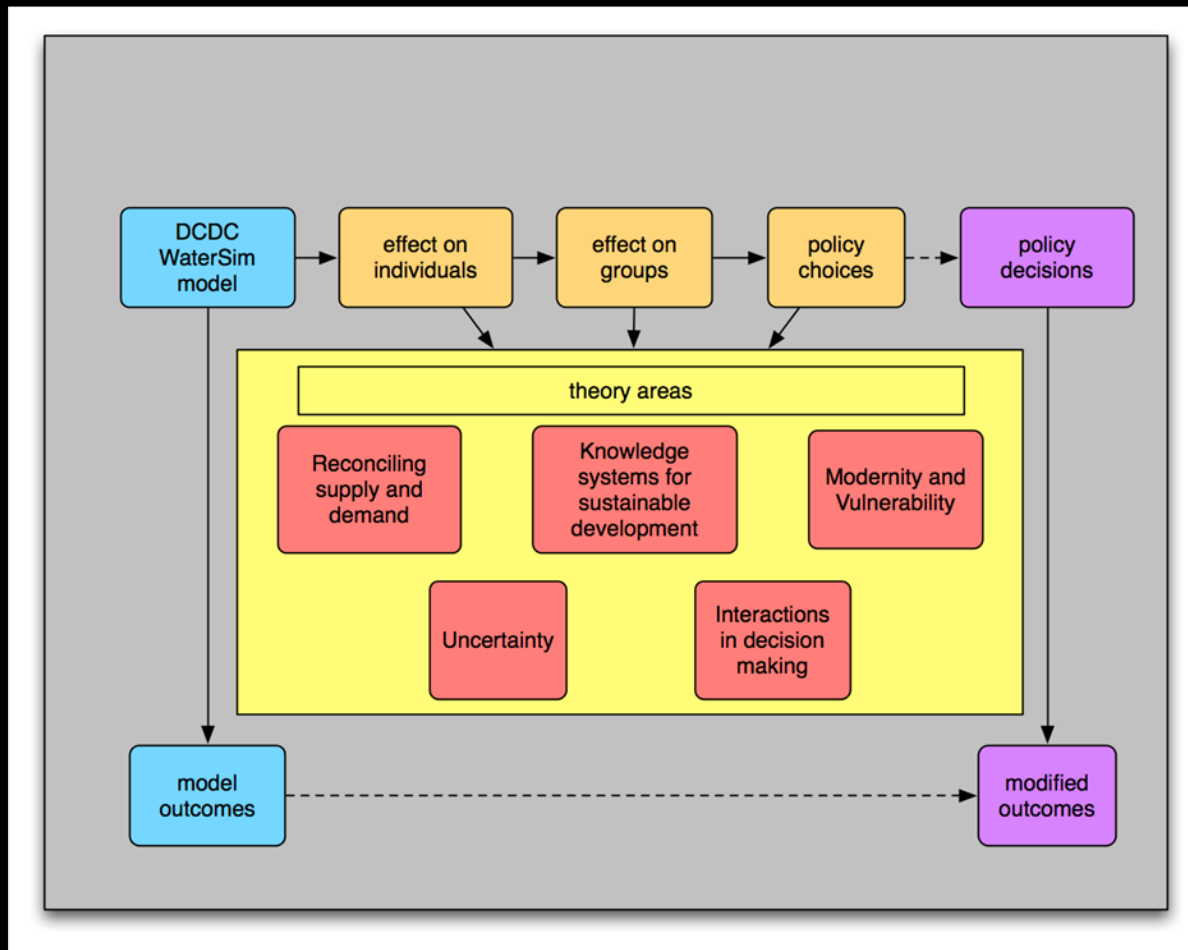
- ThinkTank is a group collaboration tool that allows many users to think together.



# WaterSim, as Decision Support System



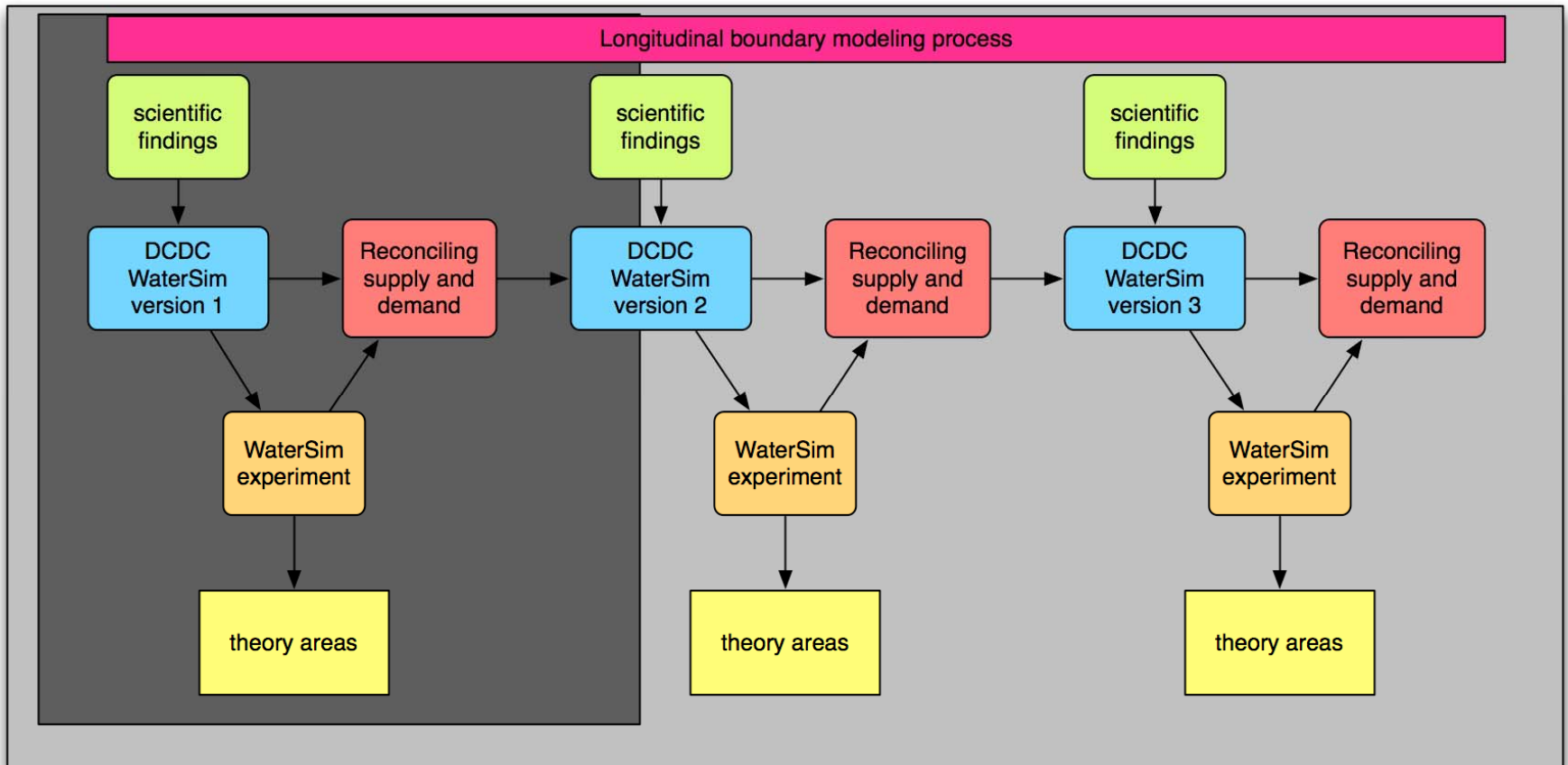
# WaterSim, as *research* framework.



# WaterSim, as Decision-making Environment



# WaterSim, the stakeholder engagement process



# WaterSim: results

- Water professionals focus on information at the geographic scale of their job function.
- Topics that are politically dangerous are avoided (e.g. price, population limits).
- While many technical experts anticipate model results, policy experts and service professionals find value in exploring multiple scenarios.
- Participants are more likely to divulge information on sensitive topics (competency, gatekeeping, and risk) UNLESS there is an opportunity to exchange important information or solve a pressing problem.

*Wutich, Lant, White, Larsen, Gartin, "Comparing Focus Group and Individual Responses on Sensitive Topics: A Study of Water Decision-makers in a Desert City" **Field Methods, (2008).***

*White, Wutich, Lant, Gober, Larsen, Senneville, "Credibility, Salience, and Legitimacy of Boundary Objects for Environmental Decision Making: Stakeholder Reaction to DCDC WaterSim." **Science and Public Policy (In Press).***