

# AASHTO Innovation Initiative

[Proposed] Nomination of Innovation Ready for Implementation

## Sponsor

Nominations must be submitted by an AASHTO member DOT willing to help promote the innovation. If selected, the sponsoring DOT will be asked to promote the innovation to other states by participating on a Lead States Team supported by the AASHTO Innovation Initiative.

1. Sponsoring DOT (State): Utah DOT

2. Name and Title: Ben Teran

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## Innovation Description (10 points)

The term “innovation” may include processes, products, techniques, procedures, and practices.

3. Name of the innovation:

Water Rights/Shares Inventory Tracking System

4. Please describe the innovation.

The Right-of-Way GIS team has created an inventory of existing water rights & share ownership, which is also used to track these assets to ensure they are effectively managed.

5. What is the existing baseline practice that the innovation intends to replace/improve?

Develop an inventory tracking system to manage and inventory water assets.

**6. What problems associated with the baseline practice does the innovation propose to solve?**

UDOT has been purchasing real estate for over 100 years, which often results in the acquisition of water rights or shares. Managing UDOT's water assets has become more important than ever as the State continues to struggle with drought conditions. Therefore understanding UDOT's water assets is just as critical as understanding what ground UDOT owns. However up to this point there has not been a system of tracking and inventorying these important water assets. Water rights are often tied to the underlying ground on which they are used, but they do not automatically transfer with the ground. Those matters are the subject of negotiation, additional compensation, and when successfully acquired, require additional work to effectuate the transfer. If the rights are not used and properly documented, they can be lost. There was no previous procedure to track these water assets, resulting in an unknown inventory and risk of lost ownership rights. It is estimated that UDOT has lost more than \$2 million in water assets because of the lack of tracking and maintenance of water assets up to this point. Our innovation will create a water asset tracking system to manage and inventory these important assets.

**7. Briefly describe the history of its development.**

In the discovery of the need for this system, we have found a few attempts to manage water assets. These efforts were done on paper in folders to keep track of water shares by the corresponding irrigation company. It was inefficient and ineffective, relying heavily on irrigation companies for notices. Using our current database and GIS technology we have been able to develop a system that provides notifications when renewal paperwork is required. In addition, each water asset can be viewed on a map with other applicable layers to help paint the picture of how it was acquired or where it might be able to be used. This system uses EPM & GIS to manage the inventory and provide a visual representation on a web application of all the water rights & shares.

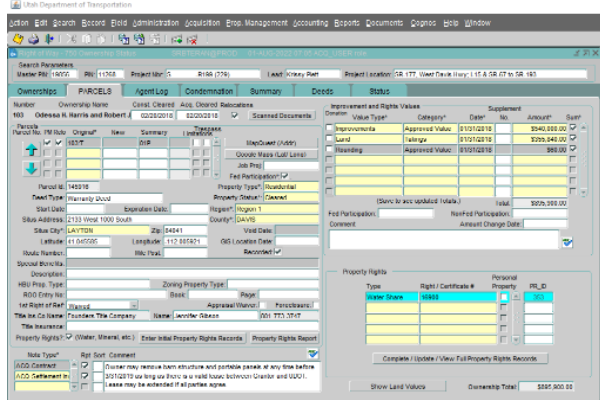
**8. What resources—such as technical specifications, training materials, and user guides—have you developed to assist with the deployment effort? If appropriate, please attach or provide weblinks to reports, videos, photographs, diagrams, or other images illustrating the appearance or functionality of the innovation (if electronic, please provide a separate file). Please list your attachments or weblinks here.**

Below is a link to the UDOT ROW parcel search web map application. The water right/share is a layer on that map that can be toggled on and off.

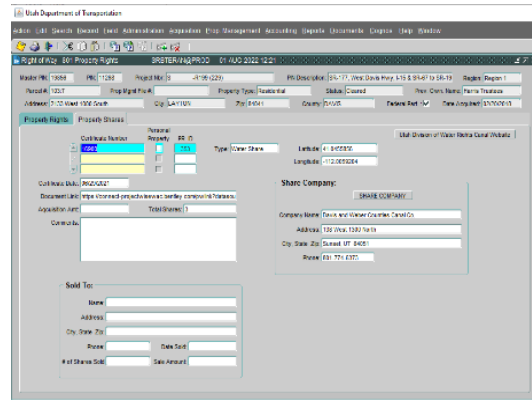
<https://uplan.maps.arcgis.com/apps/webappviewer/index.html?id=0be05e11731e45c68d375536f9588c17>

Attach photographs, diagrams, or other images here. If images are of larger resolution size, please provide as separate files.

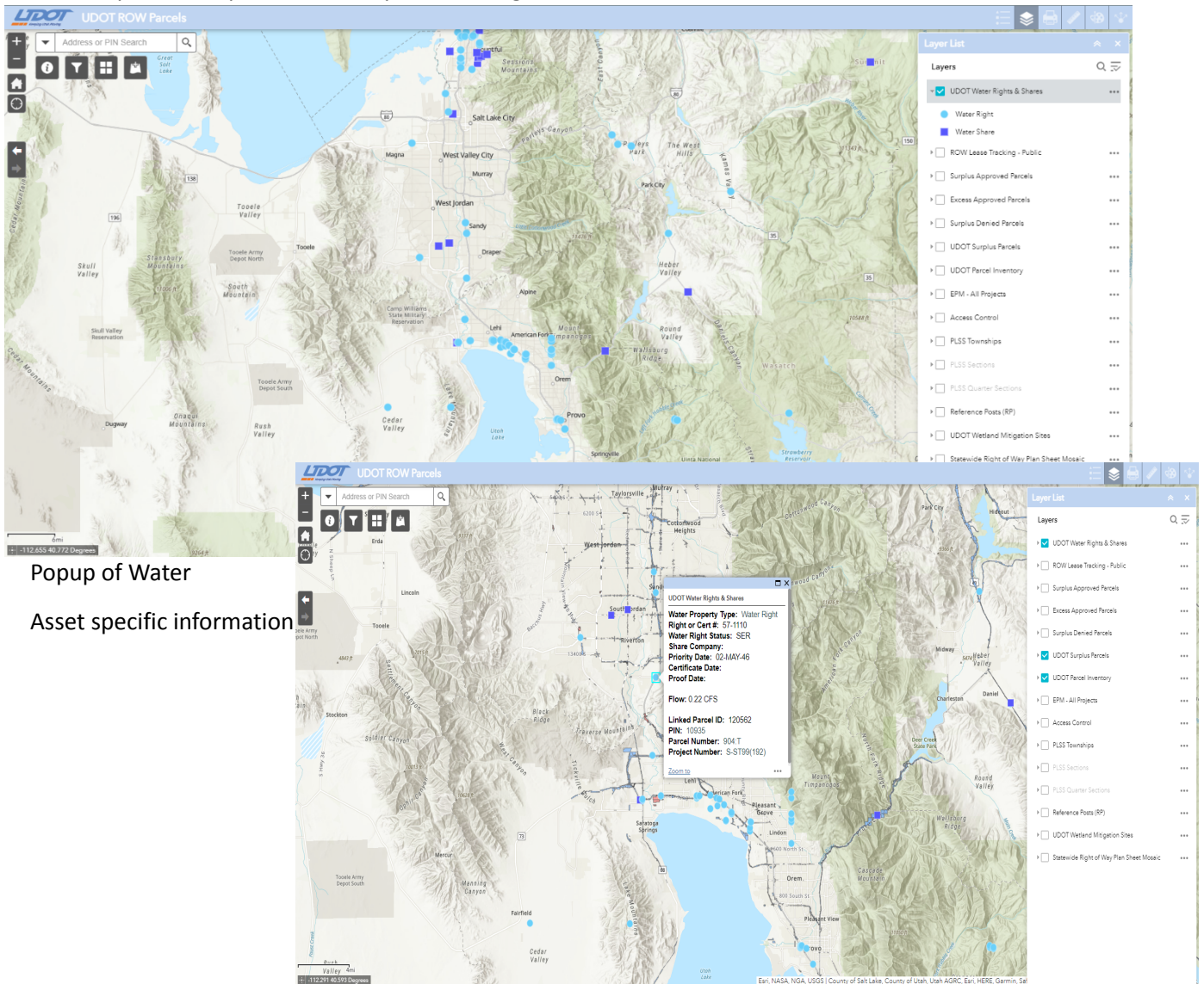
**EPM Screen of Property & Water Assets**



**Water Asset Specific information**



**Web Map of UDOT parcel inventory & Water Rights & Shares**



Popup of Water Asset specific information

## State of Development (40 points)

Innovations must be successfully deployed in at least one State DOT. The All selection process will favor innovations that have advanced beyond the research stage, at least to the pilot deployment stage, and preferably into routine use.

9. How ready is this innovation for implementation in an operational environment? Please select from the following options. Please describe.

- Prototype is fully functional and yet to be piloted
- Prototype has been piloted successfully in an operational environment
- Technology has been deployed multiple times in an operational environment
- Technology is ready for full-scale implementation

The inventory system is in production and being used regularly, there have been over 347 assets added to the system.

10. What additional development is necessary to enable implementation of the innovation for routine use?

There is no additional development necessary – we are continuing to do research that results in adding and updating records as we go.

11. Are other organizations using, currently developing, or have they shown interest in this innovation or of similar technology??  Yes  No

If so, please list organization names and contacts. Please identify the source of this information.

Organization	Name	Phone	Email
Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.
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## Potential Payoff (30 points)

Payoff is defined as the combination of broad applicability and significant benefit or advantage over baseline practice.

12. How does the innovation meet customer or stakeholder needs in your State DOT or other organizations that have used it?

Provides a system of record to track and maintain valuable property rights that would be lost without regular attention and maintenance to maintain ownership. Acquisition agents now have a specific data entry point in EPM (Electronic Program Management) to enter the pertinent information on each water asset.

13. Identify the top three benefit types your DOT has realized from using this innovation. Describe the type and scale of benefits of using this innovation over baseline practice. Provide additional information, if available, using quantitative metrics, to describe the benefits.

Benefit Types	Please describe:
Cost Savings	To date, we have saved the Department approximately \$50,000 annually using the new inventory. That was achieved by identifying more than 100 water rights within a particular water district that cannot be moved or otherwise used because they have been covered by road surfaces. This cost savings will only increase as we expand our analysis of unusable water rights to other water districts (an effort that is underway). In addition, this system, if maintained, will help notify and protect all of UDOT's existing & future water assets with a current estimated value of over \$4 million dollars.
Improved Asset Performance	Water assets are now tracked electronically. There are notification indicators that send emails when a new asset is created, or a month before a water right requires the submission of a non-use application. These notifications help us keep tabs on the property rights so that they are not lost.
Organizational Efficiency	By importing the water assets into a GIS environment and putting them on a map as a layer we are able to better understand exactly where the assets are located as well as how they relate to the current Right-of-Way parcel inventory. This can be used as a resource in planning for current and future projects.

14 How broadly might this innovation be deployed for other applications? In the transportation industry (including other disciplines of a DOT, other transportation modes, and private industry)?

It's anticipated that the need for this type of system is mainly needed in western United States, as water rights are managed differently around the country. **Market Readiness (20 points)**

The All selection process will favor innovations that can be adopted with a reasonable amount of effort and cost, commensurate with the payoff potential.

15. What specific actions would another organization need to take along each of the following dimensions to adopt this innovation?

Check boxes that apply	Dimensions	Please describe:
<input checked="" type="checkbox"/>	Gaining executive leadership support	Leadership support can make all the difference if they update the benefits.
<input checked="" type="checkbox"/>	Communicating benefits	Communicating how the inventory will help those that have related work interests and demonstrating it as a tool they can use in their everyday work.
<input type="checkbox"/>	Overcoming funding constraints	
<input checked="" type="checkbox"/>	Acquiring in-house capabilities	IT & GIS technical skills are needed to support this effort.
<input type="checkbox"/>	Addressing legal issues (if applicable) (e.g., liability and intellectual property)	
<input type="checkbox"/>	Resolving conflicts with existing national/state regulations and standards	
<input type="checkbox"/>	Other challenges	

16. Please provide details of cost, effort, and length of time expended to deploy the innovation in your organization.

**Cost:** The staff costs associated with this effort were approximately \$25,000.

**Level of Effort:** This process was very time intensive and took a lot of time tracking down proof ownership information on each asset. Then connecting that information to a parcel in our existing system.

**Time:** We estimate that we spent approximately 4 months creating this new asset inventory.

17. To what extent might implementation of this innovation require the involvement of third parties, including vendors, contractors, and consultants? If so, please describe. List the type of expertise required for implementation.

We used our existing program management system that populates an Oracle database. Then to get the information on a web map application it would require ESRI software (ArcGIS Pro, ArcGIS Online).

Help from a water rights consultant was used in the development process to create the appropriate tracking fields for the database.