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):** North Carolina

2. **Name and Title:** Michael Madsen, GIS Analyst/Manager

   Organization: Division 3, NCDOT

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   State: North Carolina

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Innovation Description (10 points)

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

3. Name of the innovation:

Right-of-way and Utility Dashboard

4. Please describe the innovation.

The dashboard is made up of three, separate ArcGIS Online (AGOL) dashboards allowing each to show different data and the ability to be accessed simultaneously. Since right-of-way (ROW) and Utility workers

require different visuals, filters, and data, the R-3300B dashboard creates a unique experience for each department in one location.

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

The old practice was to have several different locations for information (Roadway plans, utility plans, right of way excel reports, etc.) This innovation puts them all in one spot.

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

Most projects require right-or-way (ROW) acquisition and utility relocation. These activities should happen before construction begins. Members of our teamwork with the ROW unit, utilities, construction to make sure this happens without delaying construction. This innovation allows the team to have one interactive location that could show the ROW acquisition and relocation status, the types of proposed utilities and their proposed relocation designs, the inspection abatement and structure demolition status. All these items were tracked while setting priorities to specific sections of the project and keeping up with the ROW costs associated with acquisition.

7. Briefly describe the history of its development.

This project was started over a year ago when members from the ROW team got together with the GIS team to see how we could convert all the data conveyed in the Report B to a visual format using GIS. After some trial and error, we were able to come up with system that over exceeded our expectations and inspired other Divisions to reach out on how they can implement their own products.

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.

An explanation of the dashboard can be viewed here. The dashboard itself can be viewed here. Please note the dashboard can be viewed by NCDOT staff only, if you would like access, please reach out to Michael Madsen with Division 3, NCDOT. Email: Mjmadsen@ncdot.gov Cell: 402 350 5883.

Attach photographs, diagrams, or other images here. If images are of larger resolution size, please provide as separate files.
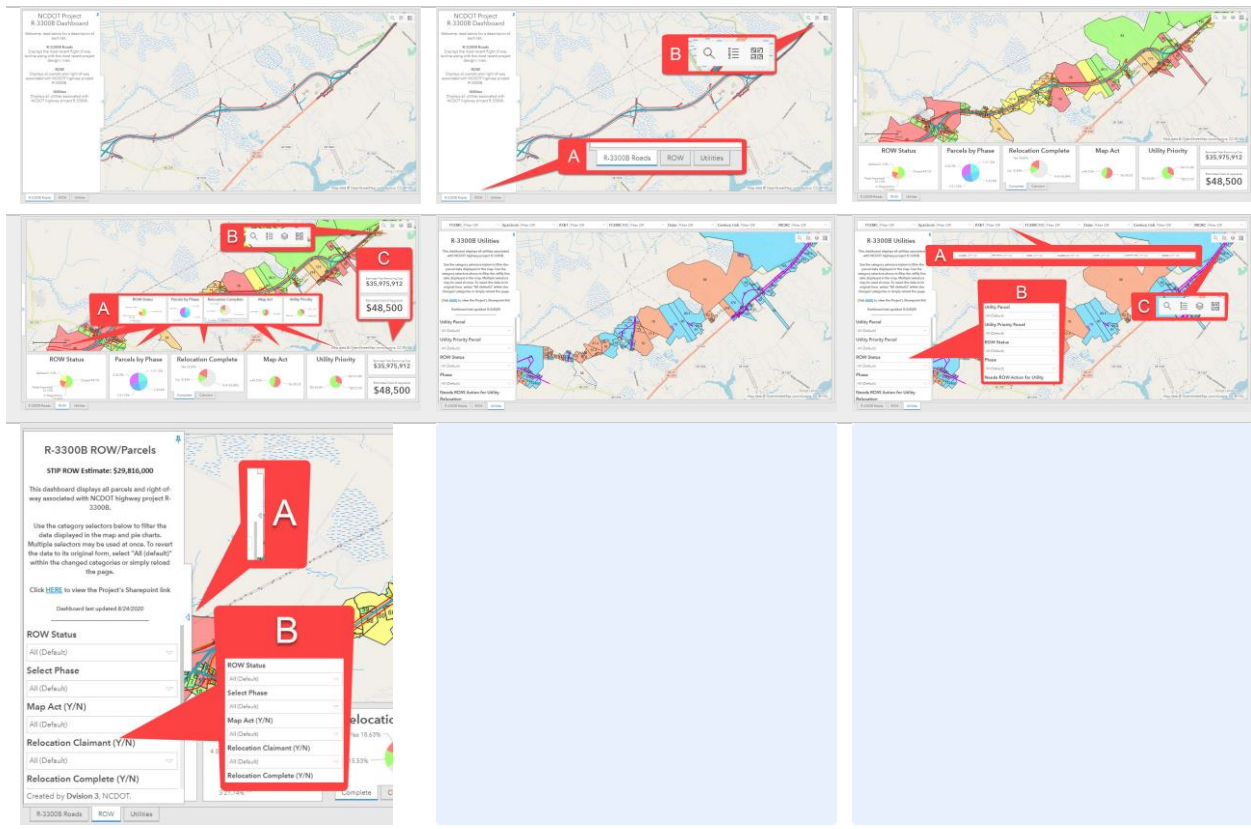
State of Development (40 points)

Innovations must be successfully deployed in at least one State DOT. The AII 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 dashboard is now fully operational for one project (R-3300B), in development for one project (R-3300A), and in predevelopment for two projects (U-3628, R-2247).

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

Any employee with access to ArcGIS Pro or ArcGIS Online, and experience in both.

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
Division 8, NCDOT	Reuben Blakley	910 773 8027	rblakley@ncdot.gov
Right of Way Unit, NCDOT	Heather Fulghum	919 707 4363	hfulghum@ncdot.gov
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.

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?

In the shortest of terms - this innovation allowed us to have one, single location to track and manage items that could potentially delay project construction. The old practice was to have several different locations for information (Roadway plans, utility plans, right of way excel reports, etc.) This innovation puts them all in one spot.

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:

Organizational Efficiency	Having all information in one location as opposed to multiple location, some of which that cannot be access remotely. This allows for coordination efficiency between utilities, ROW, etc
Improved Operation Performance	This product allows users to access the data from anywhere with an internet connection. No longer having to go back and forth between old paper maps and excels or moving between different groups file and data structures. This allows the Department to get more out of our data by being able to see it visually through GIS.
Shorter Schedule	This improvement allows for an improved schedule and meeting milestones with greater ease.

Provide any additional description, if necessary:

N/A

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)?

Using our methodology, any division throughout NCDOT could implement their own dashboards and improve efficiency and productivity. The hope is to eventually move to a state-maintained dataset to show all projects. This would allow divisions to access this data without needing the GIS expertise permitting a more wide uses of these dashboards capabilities.

Market Readiness (20 points)

The AII 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:
☒	Gaining executive leadership support	Different groups in the organization (i.e. utilities, roadway, right-of-way, etc.) will need to agree to modify the existing practice and committing to adopting the dashboard. This can be accomplished through educating and having leadership buy-in.
☒	Communicating benefits	Communicating the ArcGIS dashboard benefits, such as organizational efficiency, time savings, improved quality and asset performance, and highlighting real-world test-case that have utilized the dashboard will assist in the adoption of the proposed initiative.
☐	Overcoming funding constraints	Click or tap here to enter text.
☒	Acquiring in-house capabilities	As the dashboard may be user friendly or rudimentary for individuals to navigate and view the dashboard data, it will require some form of expertise or experience in creating and editing a project map in ArcGIS. It will be beneficial if a designated individual in each necessary group be assigned to updating the dashboard.
☐	Addressing legal issues (if applicable) (e.g., liability and intellectual property)	Click or tap here to enter text.
☐	Resolving conflicts with existing national/state	Click or tap here to enter text.

	regulations and standards	
☐	Other challenges	Click or tap here to enter text.

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

Cost: Standard ArcGIS License

Level of Effort: Will require multiple specialists at first (ROW, Utility, GIS) but once the dashboard is created updates take minimal effort.

Time: 1-2 weeks

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.

 No additional outside support is needed for NCDOT. The expertise lies within the Department.