2019 UDOT RESEARCH PROBLEM STATEMENT

**** Problem statement deadline is Feb. 6, 2019. Submit statements to UTRAC@utah.gov. ****

Title: ESRI Insights Phase II: The War Room **No. (Office Use):** 19.02.01

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Select ONE Subject Area ☐ Materials/Pavements ☒ Maintenance ☐ Traffic Mgmt/Safety ☐ Structures/Geotech ☐ Planning ☐ Perf Mgmt/Data Analytics ☐ Public Transportation ☐ Other

1. Describe the problem to be addressed:

UDOT's ESRI ArcGIS Online platform, UPlan, is the web interface for the organization and display of the Department's spatial data, enabling data-sharing between divisions and Regions, and supporting transparency by making information available to the public. With this project we would like to build upon the 2017 UTRAC project entitled "ESRI Insights: Leveraging Spatial Data to Empower Decisions" to create a War Room-type dashboard that would enable mid to senior leadership to be able to see the performance of the maintenance crews regarding snow and ice removal during and after a specific snow event. This War Room-type dashboard would be built off of the existing ESRI-based dashboard that has been created with the previous 2017 UTRAC project, but would now include the following information in a "one stop shop" based off of specific Roadway Weather Information System (RWIS) stations: 1) Letter grade for snow removal efforts, 2) Duration of the storm, 3) Maximum Intensity of storm and When it occurred, 4) and the Cost associated with each storm event.

This project's intent is to blend the already existing dashboards of ESRI Insights Snow Plow Dashboard and the Snow & Ice Performance Dashboard into a single platform: The War Room Dashboard. The War Room Dashboard would exist in both a desktop computer platform and also in a mobile app platform.

This War Room Dashboard would empower mid and senior level leadership to be able to visualize and comprehend the actual effect that the snow removal crews are having on the roadways during and after winter storm events so that intelligent decisions can be made regarding altering operations if it is needed to streamline and optimize the process.

2. Write the project objective (25 words or less):

To build a War Room-type dashboard that can display the following information for winter storm events: 1) Letter Grade, 2) Duration, 3) Maximum Intensity and When, 4) and Cost.

3. Explain why this research is important:
(In response, consider addressing specific UDOT goals, applicability in Utah or other states, etc.)

This project will help UDOT reach its goals of Transparency, Fiscal Responsibility, and Optimizing Mobility. **Transparency** will be achieved by having an interactive dashboard that the Public can access to see how their tax dollars are being spent regarding keeping the roadways clear of snow and ice. **Fiscal Responsibility** will be achieved by UDOT continuing to strive to conduct snow removal operations in the most cost effective and efficient manner with this dashboard being a prime indicator on the effectiveness of the operations. **Optimizing Mobility** will be achieved as UDOT becomes finer tuned in their snow removal efforts based on feedback that the dashboard will provide during and after the storm event. This will lead to higher Levels Of Service (LOS) on the roadways and thus will help optimize the mobility of the traveling Public in the State.

4. List the major tasks:

1. Coordinate the sharing of existing datasets between the UDOT Traffic Operations Center (TOC) and the selected consultant performing the work to be fed into the War Room-type dashboard.
2. Create 2 prototype War Room Dashboards (a desktop application and a mobile application) complete with actual datasets based on the objectives that have already been given.
3. Conduct a proof-of-concept presentation for UDOT senior leadership in order to get feedback to further refine the 2 versions of the dashboard to meet the needs of the Department.

5. List the expected deliverables (reports, manual, specification, design method, training, etc.):

1. An interactive DESKTOP application version of the War Room-type dashboard (ESRI) that will allow UDOT's senior leaders to make decisions based on the reported performance of the maintenance crews' snow and ice removal efforts during any given storm event.
2. An interactive MOBILE application version of the War Room-type dashboard (ESRI) that will allow UDOT's senior leaders to make decisions based on the reported performance of the maintenance crews' snow and ice removal efforts during any given storm event.
3. Training sessions on how to use the War Room Dashboard for all levels of UDOT management that require it to conduct their duties.
4. A recommendation regarding whether or not to pursue permanent licensing of the ESRI Insights application for use at UDOT.

6. Describe how the research results will be implemented:
(In response, consider addressing UDOT leader support, process or standard improvement, etc.)

The GIS group at UDOT will be responsible for the continuation of the licensing of ESRI Insights and with working with their professional services personnel to get further training on the application. A champion from Maintenance Planning will be the primary point of contact for this effort – they will be responsible for ensuring that milestones are met, that the project remains on schedule, and that the end result offers a sufficiently robust final product that it can be used by mid to senior level UDOT Management to make recommendations on altering snow and ice removal operations based on the reported performance of the maintenance crews as shown on the War Room Dashboard.

7. Requested from UDOT: $100,000 **Other/Matching Funds:** $ **Total Cost:** $100,000
(or UTA for Public Transportation)

8. Outline the proposed schedule, including start and major event dates:

1. Build War Room-type dashboard (both a desktop and a mobile version) using the previous 2017 UTRAC project dashboard as a starting point: April 2019.
2. The War Room Dashboard is to begin consuming AVL data at the tail end of the 2018-2019 winter snow removal season and then continue into the 2019-2020 snow removal season: April 2019 – April 2020.
3. Create a proof-of-concept presentation of the War Room Dashboard (both a desktop and a mobile version) for UDOT Maintenance and Department leadership in order to get feedback to refine and adjust the dashboard to provide the kind of analysis that works best for the Department: October 2019 – April 2020.
4. Summarize the results of the one year trial period and provide recommendation on the continuation of the War Room Dashboard: April 2019 - April 2020.