



Enhancing Real-Time Traveler Information



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Abstract

This study investigates best practices and lessons learned from DOTs around the nation, exploring the effective strategies of transportation data operation and management to provide public travelers with their daily trip information. Especially, this study investigates how enhance a variety of transportation data based on the following 4 categories; (1) Best Practices, (2) Special event / Work zone to Waze/TMC (TOPS), (3) Incident to TMC (Twitter), and (4) Incident to TMD (Waze).

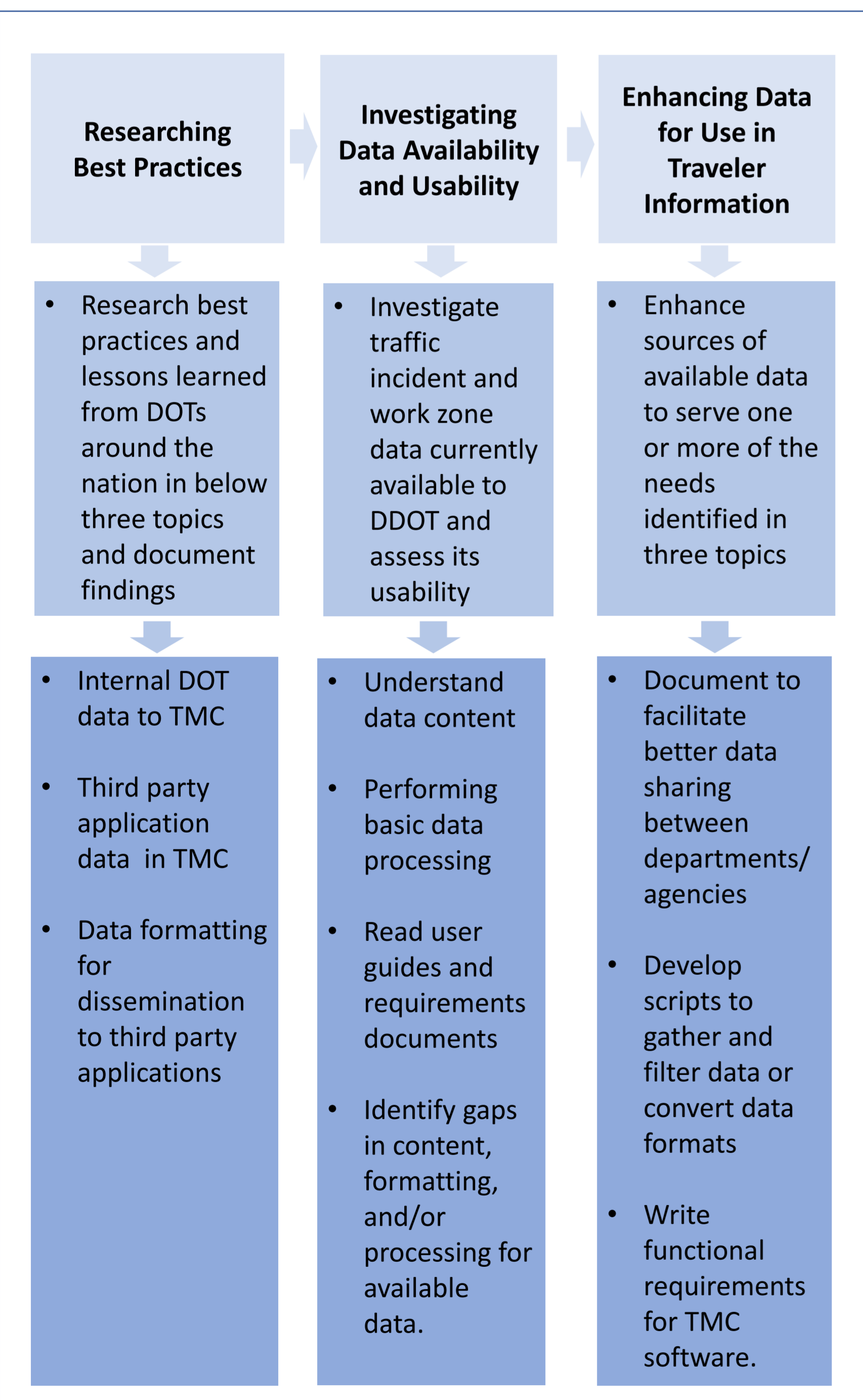
Based on findings, we realize that DDOT has a significant untapped potential to improve the extent and quality of the information provided to the public, as well as the means by which this information is shared. In the future, DDOT might be required to improve their data integration, sharing, and management based on short and long term strategies.

Introduction

DDOT relies on diverse data sources from internal resources, partner agencies, and third-party vendors to collect traveling information, and provide the public with daily trip information. Particularly, recent advances in mobile and ubiquitous computing have led to a massive increase in the amount of data generated through the use of social media and personal portable navigation devices.

As such, detailed data becomes more readily accessible and third-party applications for social media and navigation devices become more widely used, there is a significant untapped potential to improve the extent and quality of the information provided to the public, as well as the means by which this information is shared. This study investigates how the DDOT can better leverage existing sources of data, especially for TOPS, Email, Twitter, and Waze to improve the way it gathers and disseminates real-time transportation information.

Methodology



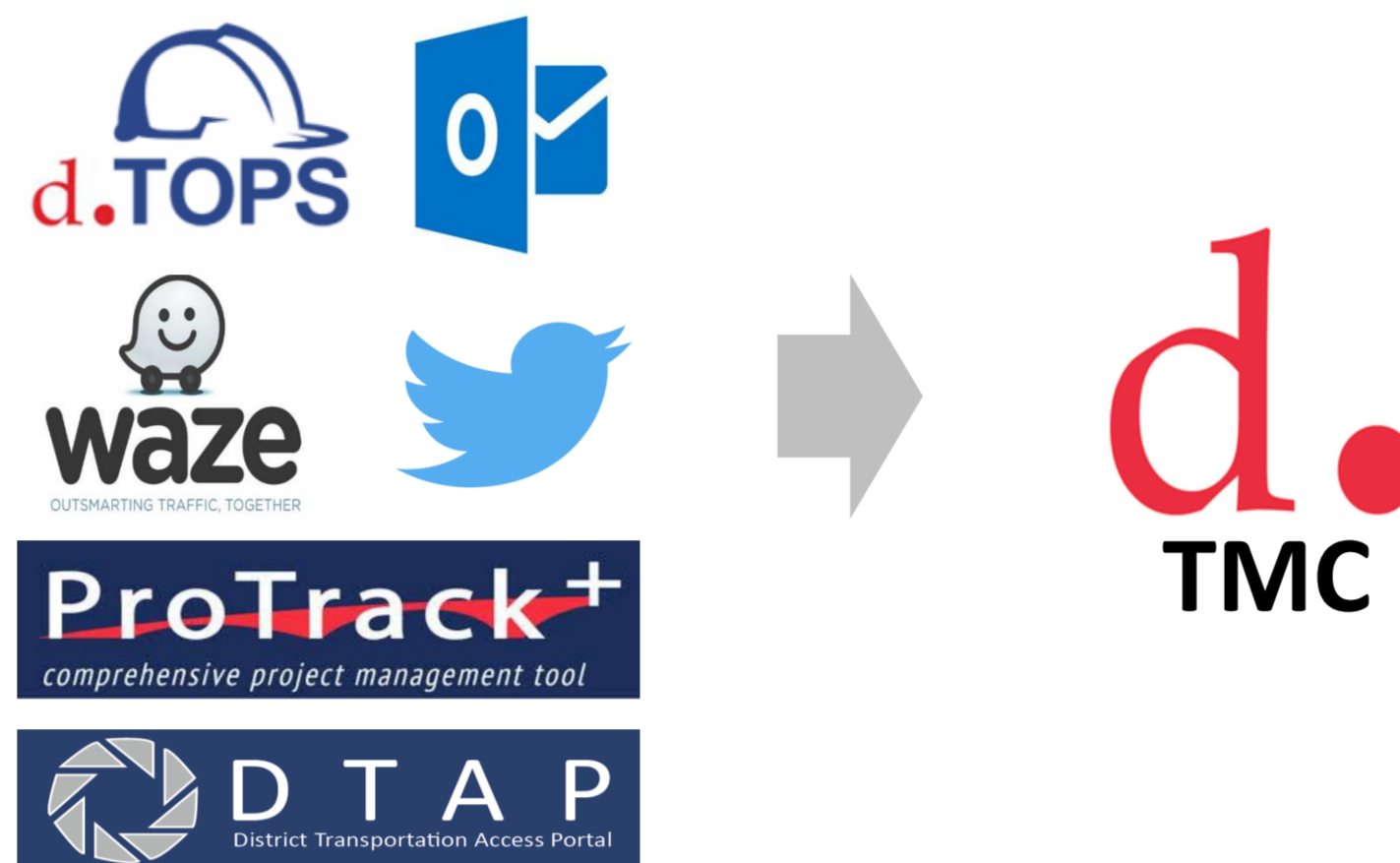
Internal Data Source

- Transportation Online Permitting System (TOPS)
- DDOT Twitter (<https://twitter.com/ddotdc>)
- DDOT/WazeData (MapServer) (<http://maps2.dcgis.dc.gov/dcgis/rest/services/DDOT/WazeData/MapServer>)
- DDOT Email
- ProTrack+ (<https://protrackplus.ddot.dc.gov/Account/Login?ReturnUrl=%2FMapViewer%2FGeneralMapViewer>)
- District Transportation Access Portal (DTAP) (<https://dtap.ddot.dc.gov>)

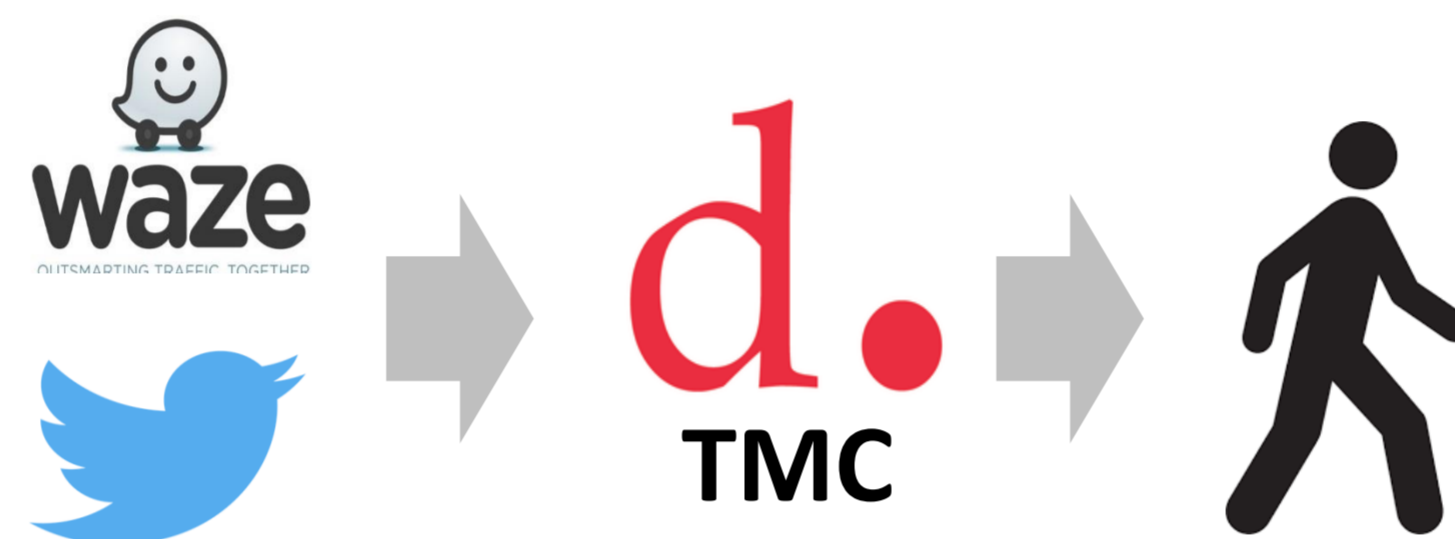
Results

1. Best Practices from Other DOTs

I. Integrating disparate sources of internal DOT data into the TMC system



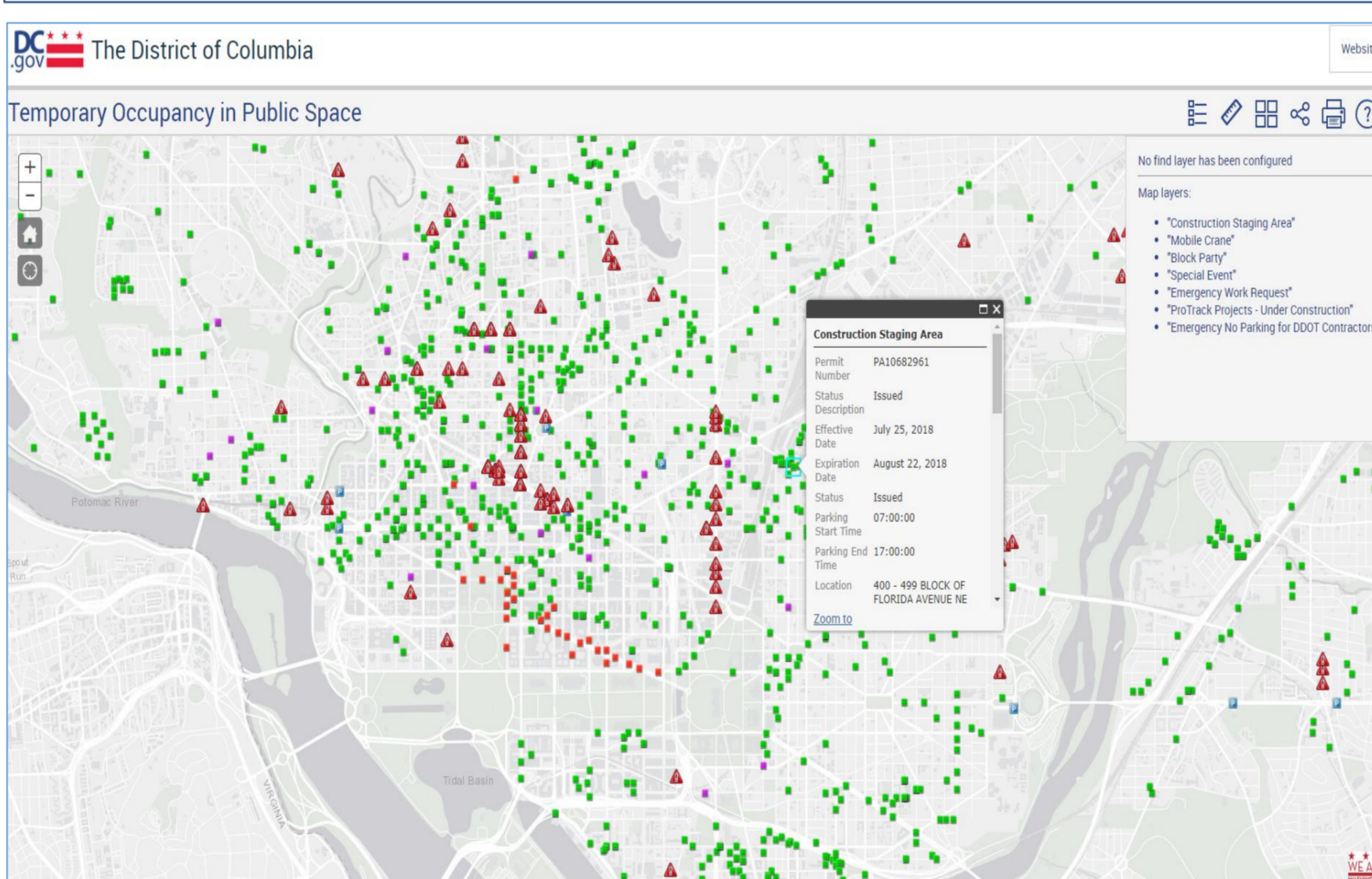
II. Gathering, filtering, and utilizing third-party application data



III. Formatting internal DOT data for dissemination to widely used third-party applications



2. Special Event / Work Zone



TOPS to Waze

Short Term Strategies to support Waze

- Include 6 digits after the decimal point on longitude and latitude coordinates with less than 40 characters for the cause of the closure
- Use Waze Reverse Geocoding API for matching the ones in the Waze map by using the geocoding API
- Provide more information on one or both directions for road closure
- External users can update road closure status (Active/Inactive) in some fashion to receive the data from TOPS automatically.
- Communicate to the public and our partners. It allows us to recognize more accurate time lines when the occupancy is active.

Long Term Strategies to support Waze

- Develop the system that can populate the feed (either XML or JSON format) with relevant data from TOPS automatically
- Use GIS Tools to mark the spatial location of the occupancy or closure. Users should be required to pick the begin and end point on a map (Queryable via LRS REST map services).

Waze to TMC

Short Term Strategies to support TMC

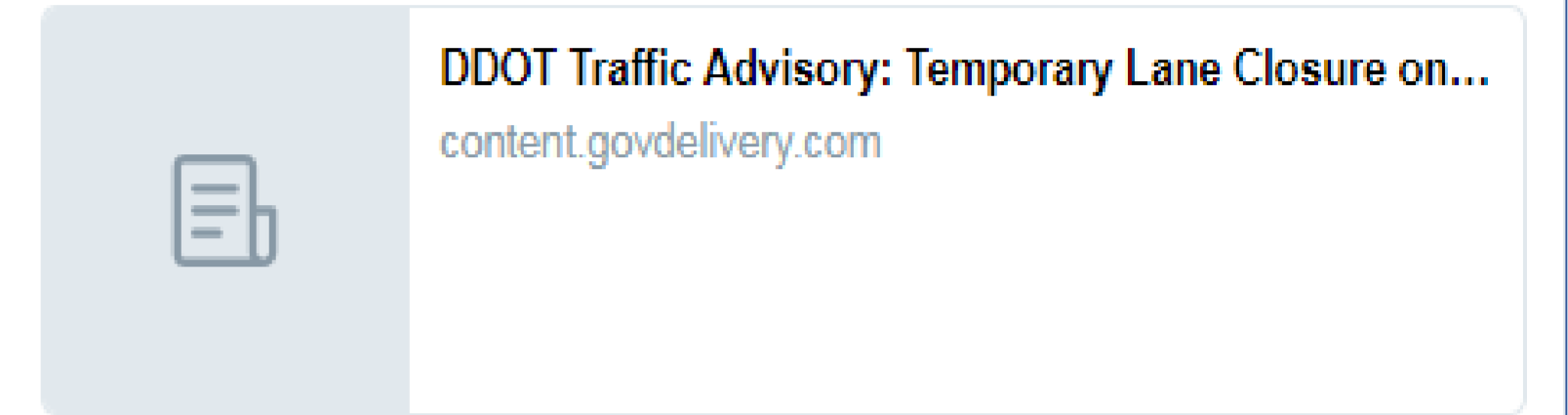
- Provide the detailed information on a lat/long content, events, timeline, agency, roadway, and specifics.

Long Term Strategies to support TMC

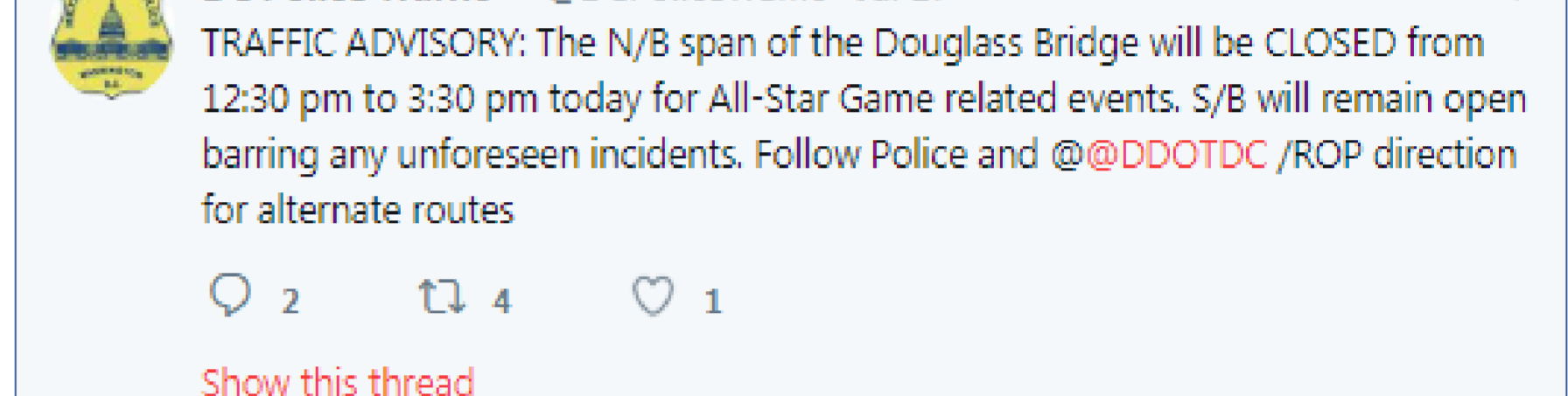
- DDOT needs to deal with the lack of functionality to remove reported events (once finished).

3. Incident Data (Twitter)

DDOT DC @DDOTDC · Jul 25
TRAFFIC ADVISORY: DDOT Traffic Advisory: Temporary Lane Closure on I-295 July 26 - August 3 [Inks.gd/2/7pnZxv](https://www.inks.gd/2/7pnZxv) DDOT will temporarily close the far right NB lane of I295 from the Penn Ave EB exit ramp to the Penn Ave WB exit ramp from July 26 until Aug 3.



DC Police Traffic @DCPoliceTraffic · Jul 17
TRAFFIC ADVISORY: The N/B span of the Douglass Bridge will be CLOSED from 12:30 pm to 3:30 pm today for All-Star Game related events. S/B will remain open barring any unforeseen incidents. Follow Police and @DDOTDC /ROP direction for alternate routes



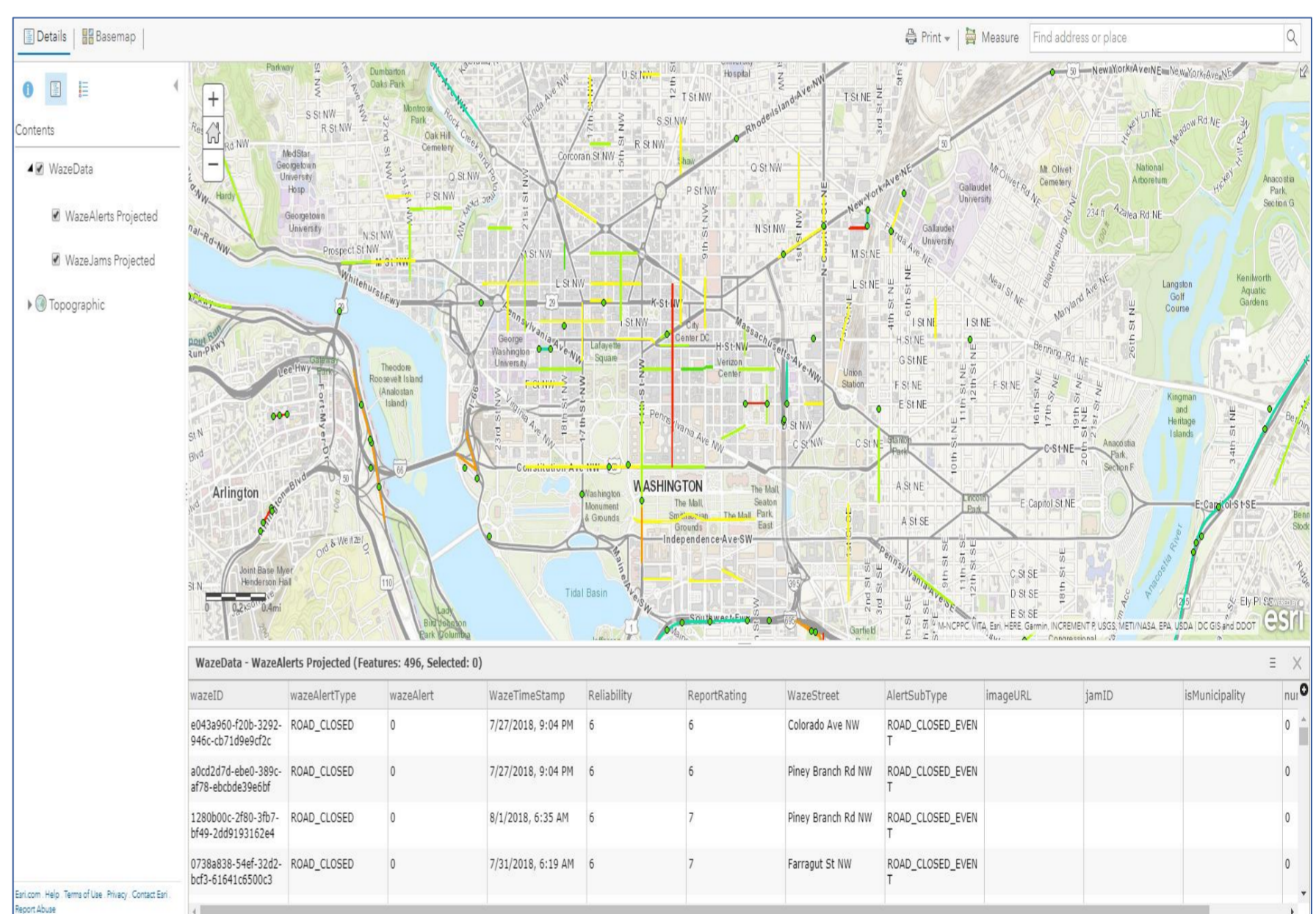
Short Term Strategies

- Create separate DDOT traveler information twitter
- Develop additional channels - Facebook can promote to disseminate real time information to public.
- Create additional 8 twitters at the neighborhood level - Washing D.C. categorizes 131 neighborhoods into 8 wards. 8 real time information twitters can be much helpful to travelers that need traveler information in a certain area.

Long Term Strategies

- Encouraging people to earn rewards within the application by posting information about incidents can increase user engagement (free parking or other such benefits in the city).
- Provide commuters and travelers with mobile access (Develop APP and website)

4. Incident Data (Waze)



Short Term Strategies

- Provide the detailed information. Data includes a Lat/Long content, however the data does not always include agency, roadway, direction, type of accident, specifics.
- Provide Detailed alert types. All road closed alerts require different time periods to disappear in the display. For example, most alerts last for a minimum of 30 minutes. But, in case of potholes, it will require much a longer time to be resolved. (If a thumbs up to an alert occurs in the last half of the 30-minute window, it will extend the alert for another 15 minutes)

Long Term Strategies

- Multiple users report the same incident in different ways. DDOT can reduce alerts to unique events, which reduce the duplicate events received significantly.

Conclusions

Current DDOT collects, shares, integrates, and uses a variety of transportation data across multiple organization. Information on traffic incidents, special events, and construction work zones – deriving from diverse transportation data sources– enable traveling public to make informed decisions about their daily trips.

Nevertheless, there is a significant untapped potential to improve the extent and quality of the information provided to the public, as well as the means by which this information is shared. Based on short and long term strategies, DDOT might be required to improve their data integration, sharing, and management in the future.