



Using Data-Driven Partnerships to Build Community Awareness

Norfolk and the Waze CCP

Virginia Joint Subcommittee on Coastal Flooding
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Waze and CCP Overview

What is Waze?

- Free, real-time, crowdsourced
- traffic and navigation app
- Save every driver 5 minutes every day
- 185+ Countries, 42+ Languages & Voices
- 76M monthly active users (drivers)
- 50,000+ volunteers (map editors)



Connected Citizens Program

Waze Connected Citizens Program

Empowering data-driven decisions to
achieve concrete community impact



Partner Organizations

Departments of Transportation



Emergency response



Police Departments

Municipalities



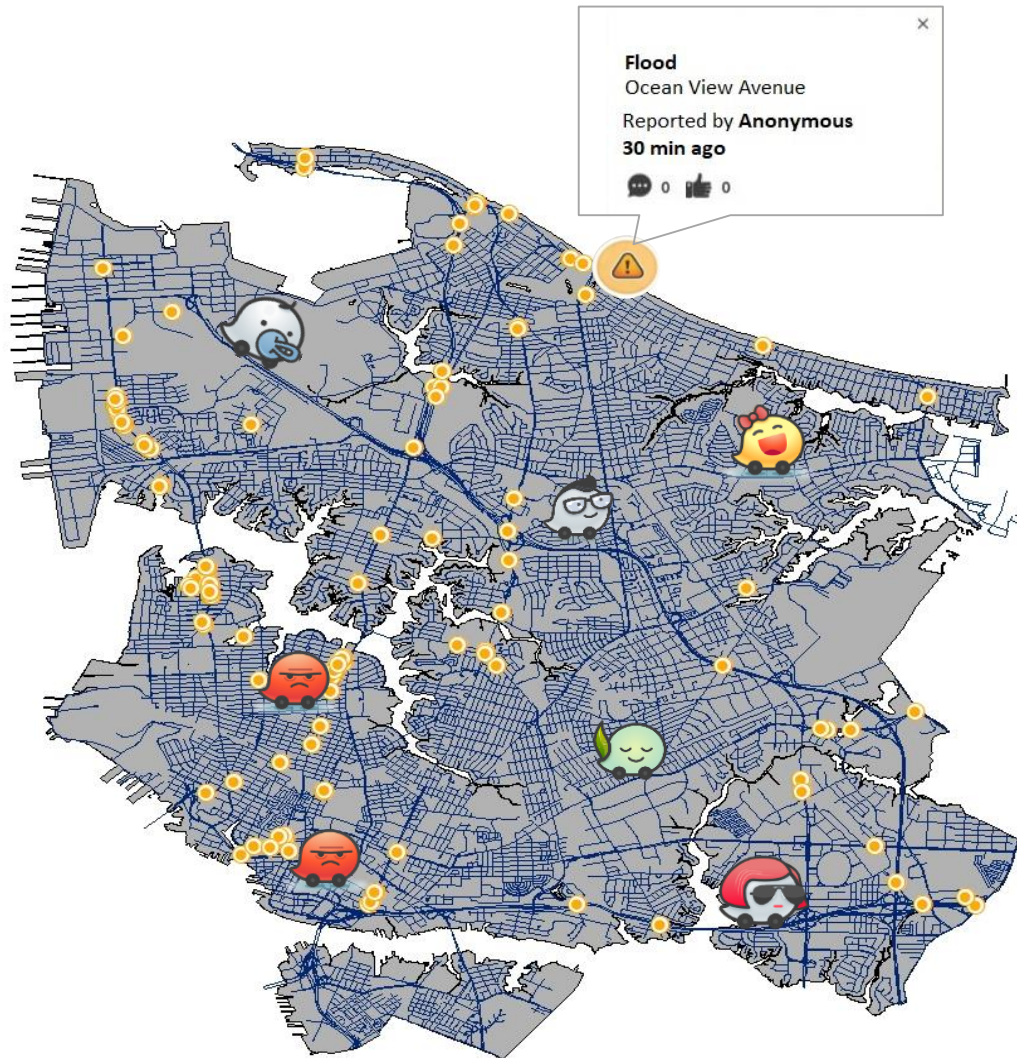
Transit agencies



Free, Two-way Data Exchange



GIVE WAZE DATA



- Road Closures
 - Construction
 - Lane closures
- Incidents
 - Road Hazards (flooding)
 - Accidents
- Unique Data Sets
 - HOV/bus lanes/electric vehicle
 - Dangerous Intersections
 - Crisis centers
 - School zones
 - Business locations
 - Parking locations
- Major Traffic Events

Give Waze Data: Major Traffic Events

Major Traffic Events (MTE) - are large-scale events that have associated road closures (eg. marathon race, bridge closure etc).

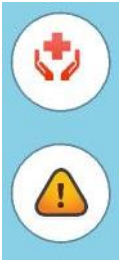
- MTEs are eligible to get additional attention, including:
 - A message to users (through push notification/inbox message)
 - A listing on our events website, and/or
 - Social media coverage
- 48 hours advanced notice (2 weeks for a custom push notification).



Case Study

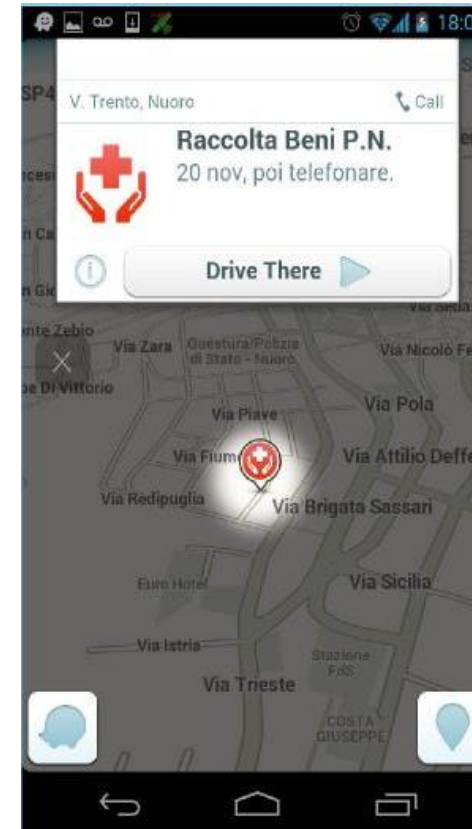
Program Impact: Crisis Response

Reach drivers with critical crisis information



Planning: Share locations of shelters

Response: Detour traffic around the crisis area



Display closest
emergency shelter
locations



Alert drivers to crisis and
resulting closures

Get Waze Data

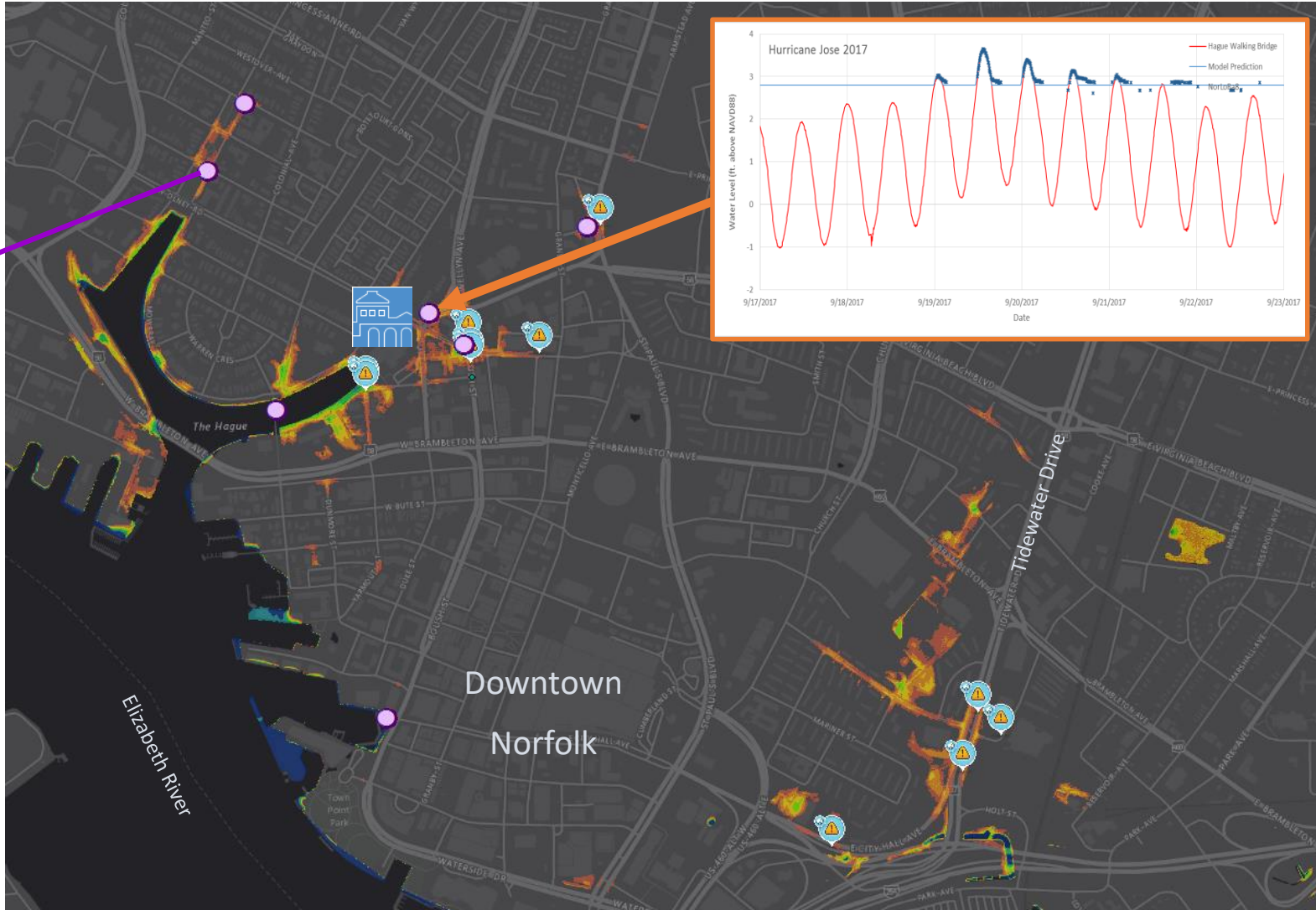
Waze Data Feed

- Traffic Incidents - jams, accidents, hazards, construction, potholes, roadkill, stopped vehicles, objects on road, missing signs -- reported by our community of mobile users
- System-generated traffic jams - location and speed data associated with slow downs below average speed for a particular segment for the time of day/day of week -- identified by analyzing anonymized user GPS signals

Email Alerts

- Waze will send alerts of important traffic events in your area straight to your inbox, including:
 - Cause of unusual traffic.
 - Unusual traffic emails resemble our localized twitter feeds.
 - Insights and comments based on real-time user road reports.
 - Trends, to anticipate if the traffic expected to get better or worse.
 - Optimal alternate route to bypass the traffic.

Norfolk Case Study



Waze alerts matching time and duration of street flood sensor. (Hurricane Jose 2017)



Looking Ahead

- Early warning for residents:
 - Text message, email, Alexa, Google Home, Facebook, Google+, Twitter
- Push real-time alerts to Waze
- Targeted location-based notifications
- Early warning to emergency services (EOC, fire, rescue, traffic center)
- Redirect to avoid flooding – signs & signals
- Foundation for a predictive model
- Continue to use City as living laboratory



Related Efforts

- RISE Wireless Communications Evaluation Program
 - Vendors invited to install wireless gateways and sensors
 - RISE's evaluation team will document the performance
- Dept. Homeland Security – Flood Sensor Collaborator
 - 3 Performers with 11 sensors each
 - Installation starting in 2 weeks
- StormSense Project – VIMS (CCRFR)
 - Installed 28 Sensors in the HR Region for better tidal prediction and street-level flood forecasting
- dMIST Project – University of Virginia
 - Smart Cities Approach to Sense, Predict, and Control Stormwater and Traffic Systems



Thank You!



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