

TSCOPE: Real-time Mobile Data Collection Technology Using Spatiotemporal Data Casting

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Natural disaster like Sandy disrupts the communication infrastructure in a major way

- With power outage, also gone are
 - Wireless at home
 - TV
 - Radio
- People used
 - Cell phones
 - Car stereos
 - Hot spots
- To connect with rest of the world
 - Voice calls
 - Web access (facebook!)
 - News



**Individual experience may vary*

However, it is difficult to gain *situation awareness*

- **Situation Awareness (SA)**
 - Knowing what is going on so you can figure out what to do (Adam, 1983)
- General public
 - News is too generic
 - Voice call is for close family and friends
 - Websites are not up to date
- Same for government, city, aid workers
 - Lack of useful source of information
- How can we know the current situation of *a specific area of interest*?



Consider a scenario...

- Government agency is trying to assess the flooding situation in a certain area
 - By collecting data & evidence, e.g., text messages, pictures from people in the affected area
- Ideally, the agency should be able to send a query to mobile phones owned by the people in the affected area
 - *Without* knowing who they are and where they are



TSCOPE is ...

- A real-time mobile data collection service that allows
- Sending *location-oriented* queries to users to get SA data
- *Without requiring knowledge* of the contact information of the recipients and their whereabouts



- TSCOPE leverages the power of crowdsourcing to create a *real-time Google street view*

Basic requirements

- Location-based data cast
 - The service should support sending queries to mobile devices based on location - in a particular region (Garment district), near point of interest (near Rockefeller Center).
 - We may need policy based management to control so that data cast reaches certain devices
- User friendliness
 - It is important to help users to use the service using human friendly names instead of geocodes (e.g., situation near Union Station, City Hall)
- Storage of past queries
 - One obvious function to support is to store previous search results and create index so that they can be used to answer future queries of similar nature
- Temporal aspects in spatiotemporal
 - It will be useful to support queries for specific time duration in the past.