

DHS Science and Technology Directorate

SMART: Social Media Analytics and Reporting Toolkit

CHALLENGE: Social media as a data source

Recent advances in technology have enabled social media services to support space-time indexed data. Such spatio-temporal data has immense value for increasing situational awareness of local events, providing insights for investigations and understanding the extent of incidents.

However, with the massive number of messages generated and diffused through online social media platforms, locating meaningful and actionable information in a timely manner is crucial, yet non-trivial for decision makers. Currently, there is no platform to integrate multiple relevant data feeds and provide interactive, easily understood information to first responders through one seamless interface. Hence, analysts require new methods for monitoring their topics of interest, identifying trends and anomalies, and dealing with the data volume and its dynamic nature.

PROJECT: SMART

SMART is an interactive web accessible system that provides users with social media data (e.g., Twitter and Instagram) for analysis and visualization. SMART has been deployed to multiple real-time events (e.g., 2017 Inauguration, Hurricanes Harvey, 2018 State of the Union) to augment emergency responder situation awareness. SMART is a direct collaborative scientist, engineers, and first responders.

Making Social Media Interactive and Explorable

The major functionality of the SMART system includes real-time monitoring of social media channels, extraction of trending and abnormal topics, topic clustering, and message categorization. These components are tightly integrated into a coordinated environment to provide actionable intelligence. Web and news media sources are incorporated in the system so that users can search news articles of interest. The system also provides email alert/summary services that automatically send emails related to user-defined topics.

IMPACT:

SMART has been deployed to multiple public safety and law enforcement agencies including police departments, U.S. Coast Guard sectors and fusion centers for real-time monitoring and emergency management. The effectiveness of SMART has been demonstrated through use during multiple real-world events including:

1) large-scale planned events such as conventions and festivals; 2) recurring events such as football games; and 3) abnormal events mass shootings and natural disasters. End user feedback emphasizes that SMART provides an immersive exploratory environment that allows them to customize and supervise the monitoring and analysis in an interactive manner.

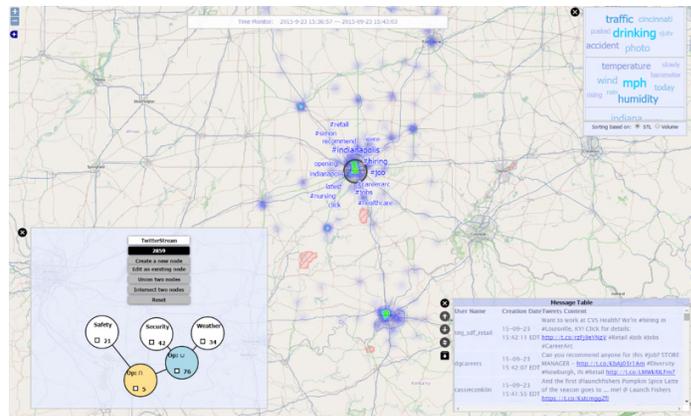


Figure 1. The SMART system presents user-defined classifiers and allows users to modify and filter based on their needs. Users can also use interactive features such as Contentlens on the map view to observe prominent keywords extracted from tweets inside the lens and investigate detailed information in the message table.

Recent accomplishments

In 2017, the development team deployed SMART to over two dozen new users, including supporting the US Coast Guard in information integration efforts during US Presidential Inauguration, Hurricanes Harvey, Irma, and Maria.

Upcoming milestones

By 2019, the development team and DHS plan to deliver a commercial version of SMART for prototype testing by first responder groups.

Performers/partners

Vendors:

- Purdue University, West Lafayette, IN
- Davista Technologies, West Lafayette, IN

Current stakeholders:

- US Coast Guard
- Public safety and law enforcement agencies



Homeland Security

Science and Technology

To learn more about SMART, contact Amalia Rodenzo, Contracting Officer, at Amalia.Rodenzo@hq.dhs.gov.