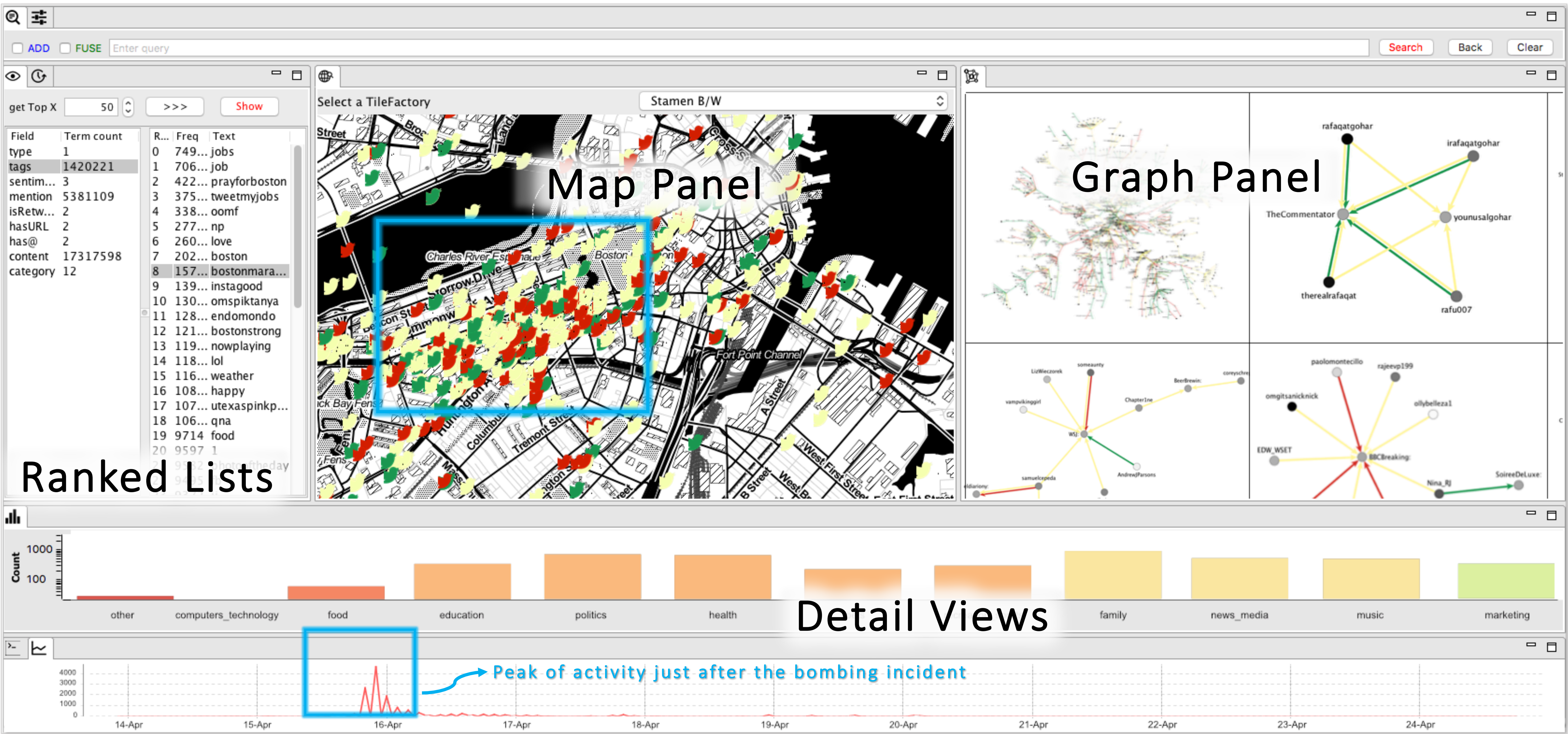


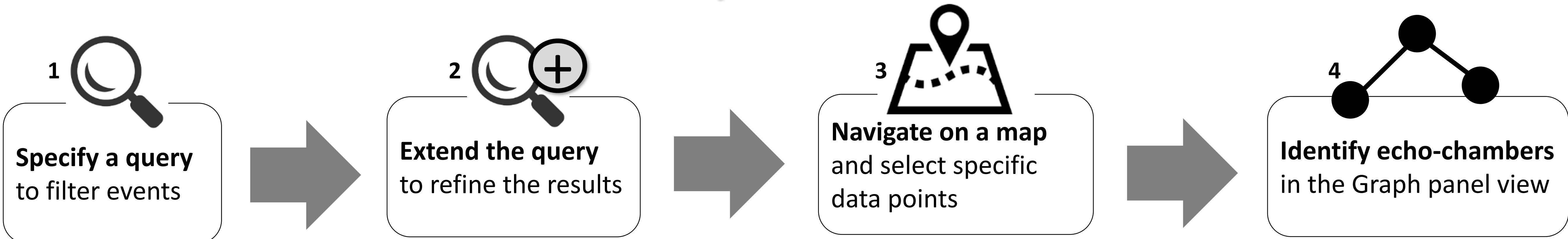
Visual Analysis of Geolocated Echo Chambers in Social Media

Michael Hundt, Bruno Schneider, Mennatallah El-Assady, Daniel Keim, and Alexandra Diehl



Our Visual Analytics tool assists in the identification of **spatiotemporal Echo Chambers** based on geotagged tweets. The linked views allow the analysis of first-hand information from eye-witnesses of an event. We analyze a set of different factors, such as spatial proximity, topic structure, and temporal relationships. In this example we analyze tweets related to **Boston Marathon bombing**.

Event Analysis Workflow



After querying the tweet-database, users start the interaction using *Ranked Lists* (1, 2) that index the tweets, then continue exploring their distribution on the *Map Panel* (3) in order to extend and refine the original data selection (2). Finally, users explore the Echo Chambers in the *Graph Panel* (4) which contains all connected components of the *Mention Graphs*.

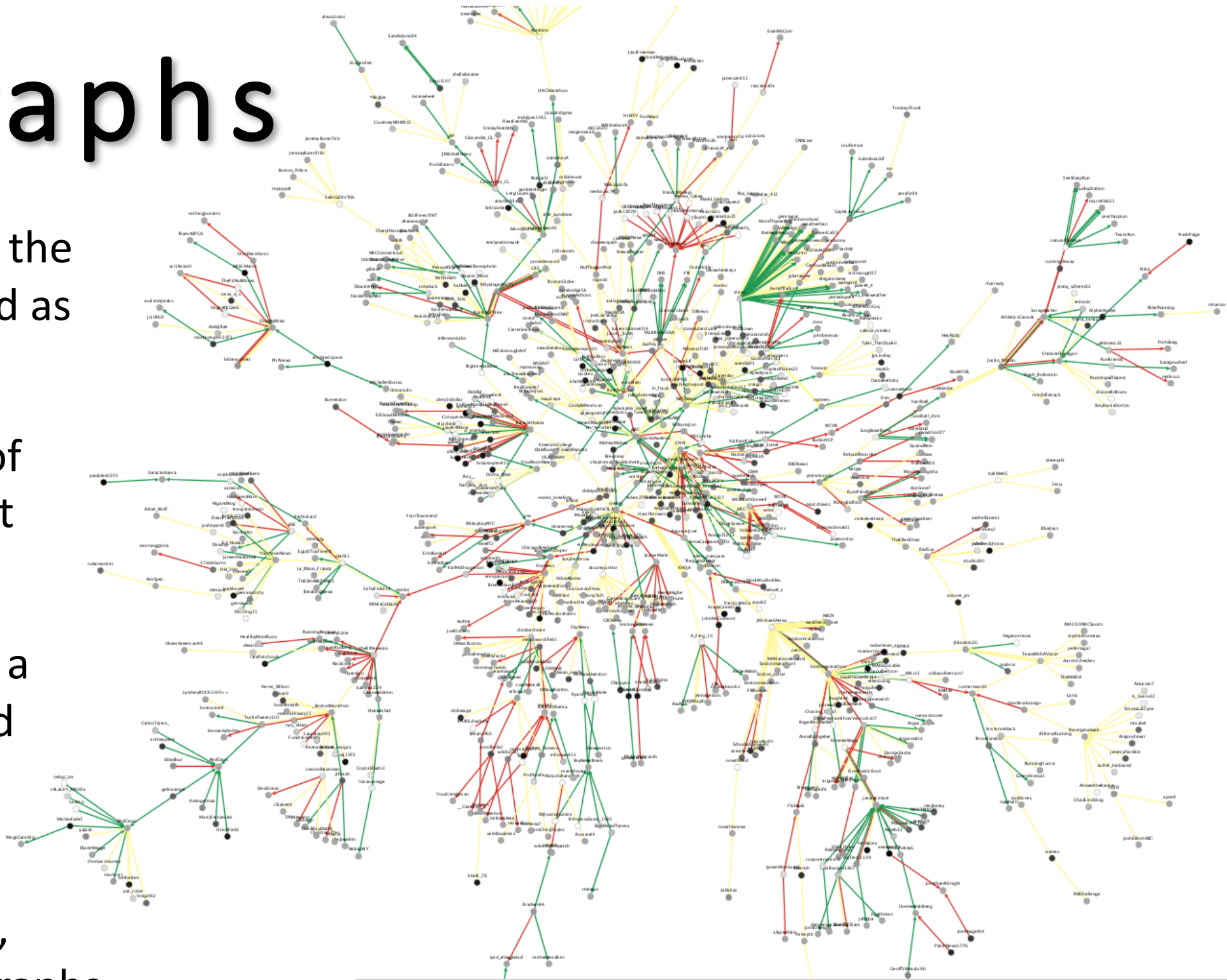
Mention Graphs

Every **connected component** within the forest of mention graphs is identified as an 'Echo Chamber'.

These graphs indicate a circulation of opinions in a **closed community** that reinforces a particular idea.

This epistemic closure often creates a positive feedback spiral that is based on a **mutual confirmation bias** between the users.

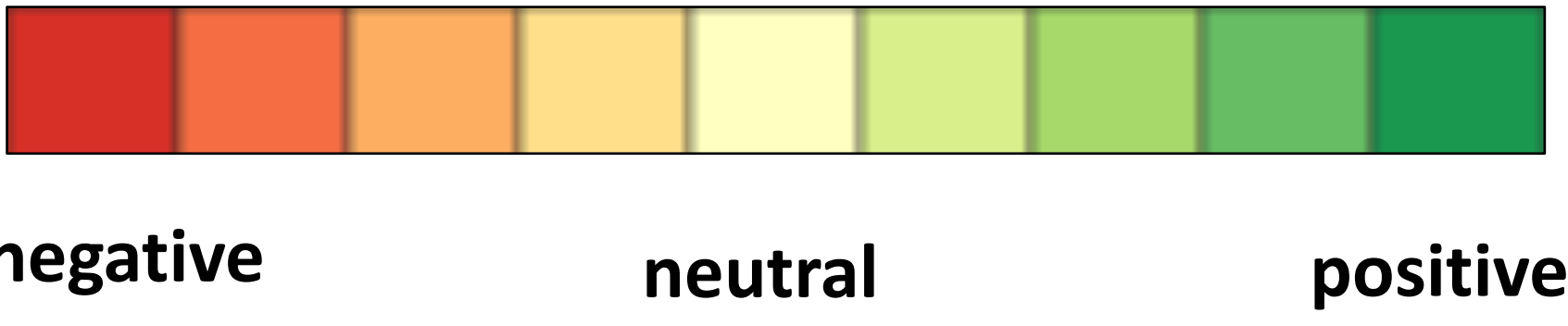
In the case of the **Boston Marathon**, we identified two main clusters of graphs. The ones about the **sport event** and the others about the **bombing crime act**.



Largest connected component shows the burst on twitter caused by the Boston Marathon bombing.

Sentiment Score

For every tweet, we compute a sentiment score based on its content and a sentiment dictionary. Using the sentiment values we identify clusters of **emotionally-charged** tweets for further analysis.



User Credibility Scoring

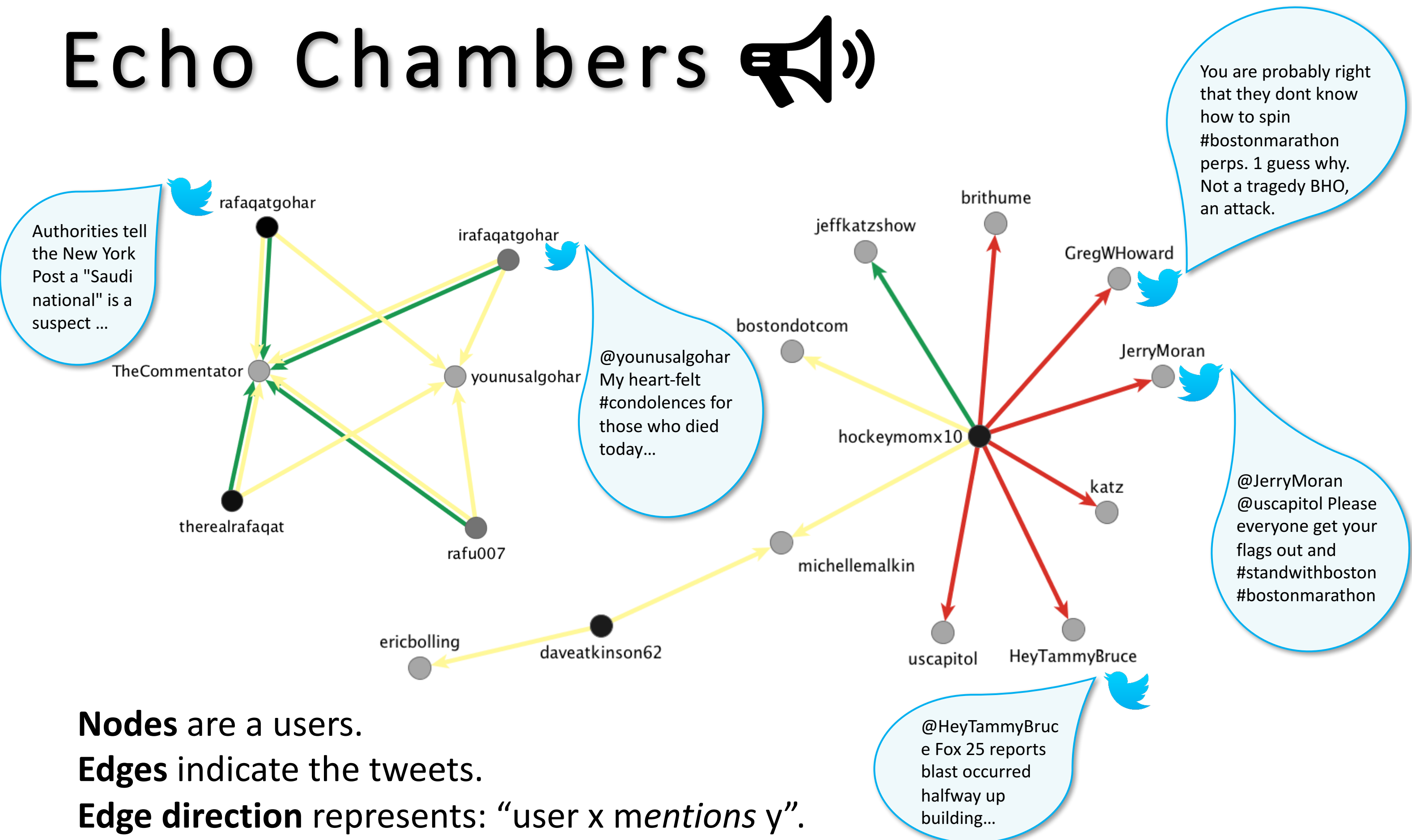


The credibility of every user is determined based on a number of factors. This scoring allows for the identification of **influential persons** within a community (topology of the graph).

We compute the user credibility score based on..

- ✓ number of followers
- ✓ user creation date
- ✓ number of tweets
- ✓ tweet reference to a valid URL
- ✓ number of friends
- ✓ content usefulness (using heuristics)

Echo Chambers



Nodes are a users.
Edges indicate the tweets.
Edge direction represents: "user x mentions y".