



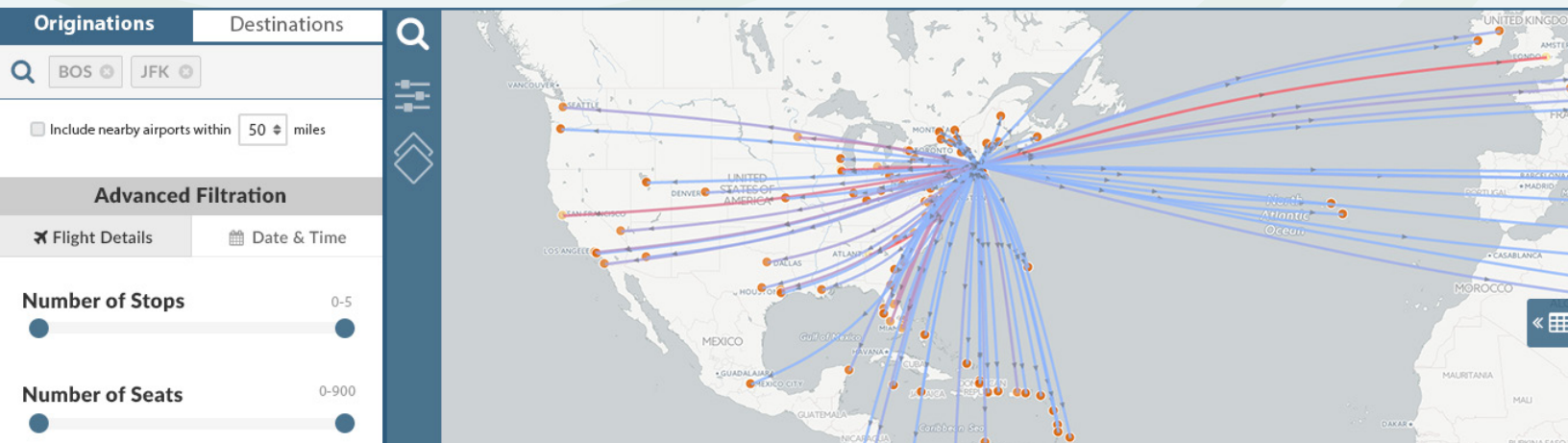
FLIRT is an analytic tool that enables users to examine air cargo and passenger networks to predict where infected travelers, animals, and contaminated goods are likely to travel.

**BACKGROUND** Today, humans and goods are traveling farther and faster than ever before, and an infectious disease outbreak in one area can quickly become a global security threat. This was evident in 2003 with the Severe Acute Respiratory Syndrome (SARS) outbreak, when a localized outbreak in China quickly spread to 5 continents.

**PROBLEM** There is a need for better tools to predict the spread of global infectious disease threats. Predicting the spread of a disease enables emergency managers and public health officials to conduct increased biosurveillance in targeted areas at high risk. This helps these at-risk areas prepare, thus preventing local outbreaks from reaching epidemic levels.

**SOLUTION** Models using air traffic data can help predict the spread of infectious disease outbreaks and epidemics. FLIRT's interactive interface enables users to query a database of over 1.6 million commercial airline flights departing and arriving from all major

global airports. Users can filter their search by departing and arriving airport, frequency of flights, number of seats on the plane, levels of connectivity, and number of stops between locations to tightly control their analysis. FLIRT also provides search tools for examining the specific routes and traffic patterns that connect airports to each other. When outbreak locations are identified, FLIRT identifies the locations at highest risk of obtaining sick travelers globally. FLIRT's heat map layer displays the likelihood of disease spread from an outbreak's origin by simulating the flow of passengers through the air transportation network to compute where an infected person will travel.



**VALUE** FLIRT's interactive interface and map layers provide a number of tools for users to visualize and explore how and where people and goods are traveling around the globe. This knowledge can contribute to efforts to mitigate the global spread of infectious disease outbreaks. Identifying the locations diseases could spread gives global public health professionals the ability to prepare for an outbreak and implement preventative measures and detection at specific high risk airports.