VACCINE
Visual Analytics for Command, Control, and Interoperability Environments
A U.S. Department of Homeland Security Center of Excellence

Personnel:
Alan M. MacEachren

GeoVISTA Center
The Pennsylvania State University

Benefit: *The Health GeoJunction is a visual analytic web portal that both maps information extracted from scientific literature, public health reports and event data and supports identification of cross-connections among extracted information fragments. It allows analysts to quickly build a geographically-grounded understanding of the current science and public health policy related to distributed public heath threats and events.*

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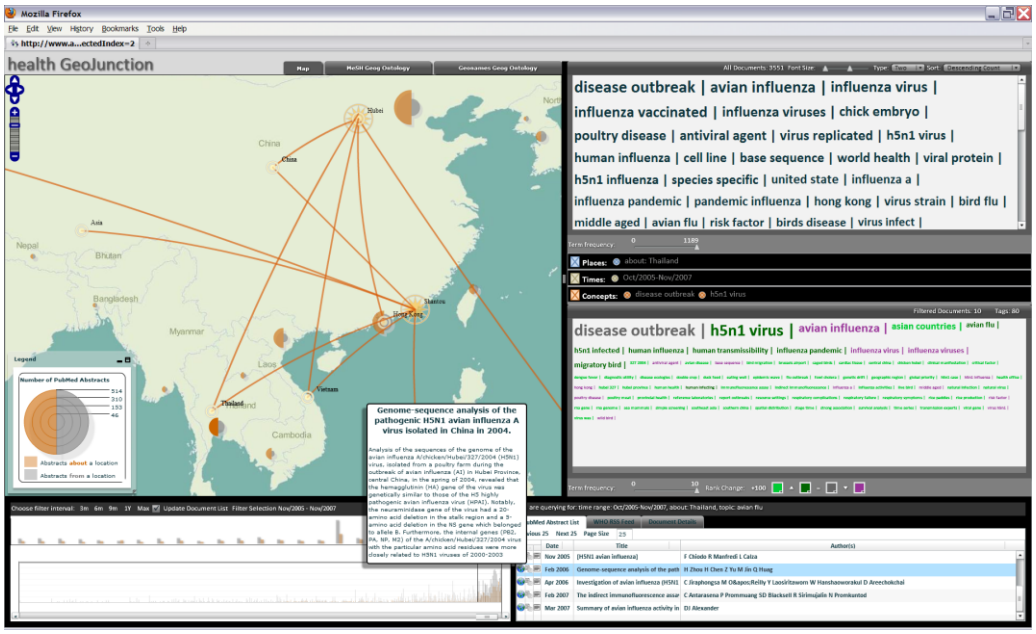
Health GeoJunction

An interactive web portal for tracking the science and public health indicators of infectious disease threats

The influenza pandemic of 1918-19 was responsible for an estimated 50 million deaths. This historic example indicates the potential global health consequences of a major infectious disease outbreak. Recent human cases of Avian Influenza A (H5N1) and resulting deaths highlight the need to enhance global surveillance and response capabilities. Understanding the science of potential human-to-human H5N1 transmission and tracking global indicators of the evolution of this threat requires integration and geographical contextualization of information from multiple documents found at multiple locations.

The Health GeoJunction supports: (1) knowledge acquisition and situation assessment based upon the current and evolving state of science and public health policy related to infectious disease threats (e.g., avian flu pandemic threat); (2) situation awareness – for an analyst with epidemiological expertise – by supporting geographically and temporally grounded cross-indexing of evidence in scientific publications, public health reports, and event data through a flexible, visual interface; and (3) characterizing the social network of domain researchers by topical coverage, geographic focus, and research facility locations.

Health GeoJunction implements Open GIS Consortium (OGC) compliant web services to process text from scientific and public health documents so that a user can gain an understanding of the geographic context of relevant public health information through interactive map-based visualizations. Specifically, text processing algorithms identify and disambiguate geographic names and provide the geographic coordinates for each place mentioned. Additional computational methods identify keywords, authors and dates for cross-referencing documents. The web interface provides maps, time series plots, and concept views for exploring document collections and their properties.



Health GeoJunction exploration: After an initial search for papers related to Avian flu, the results are filtered by using the tag cloud in the upper right, the timeline in the lower left, and then focused geographically on Thailand. The narrowed search results produce a geographic footprint and a document list in the lower right where individual abstracts can be previewed.

For more information, contact:
vaccine@purdue.edu
http://www.VisualAnalytics-CCI.org