



Global Public Health Surveillance System

Benefits

- Provides connectivity, aggregating and integrating, and data mining of all existing healthcare, veterinary and wildlife networks
- Dedicated global monitoring capability detects emerging virological disease enabling real-time reporting to respond and contain
- Ability to review previous travel patterns to predict an outbreak's potential spread pattern
- Security provides authentication services ensuring only authorized users can access the system; user privileges are determined by roles
- Participants have control over their own data and what is exposed to the network via metadata entries
- Scalable, cost-effective and web-based

A Turnkey, Secure Open Architecture GPHSS Network

Disease surveillance for epidemic intelligence purposes at the national and international level can provide critical information for early detection and containment of emerging health threats. Local, regional, national and international disease surveillance systems have evolved in the absence of international standards or collaborative protocols for specific data types, resulting in a wide variety of unique databases containing valuable information. Current information sharing across the various reporting systems (human, veterinary and wildlife) happens via human-intensive, time consuming activities such as the exchange of e-mails or faxes.

The Global Public Health Surveillance System (GPHSS) is a cost effective, secure, web-based, open-architecture system that would connect all existing healthcare networks and add additional virological disease monitoring capabilities providing a real-time global situational awareness. The GPHSS provides data exchange, aggregation and integration enabling global disease surveillance without the need for expensive harmonization of data across the various systems. The system leverages technologies developed for the United States Department of Defense and the existing communication infrastructure to ensure the secure exchange of information in a manner that provides anonymity for individuals and respects national sovereignty.

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In the containment battle of an emerging pandemic, every day matters

Aggregating and integrating information from all relevant sources via the use of database adaptors and the creation of metadata results in a global healthcare situational awareness network that would allow scientists and doctors in real time to share virological disease information and provide early warning of a pandemic outbreak and take the necessary steps to address and contain the disease.

Applications automatically process the metadata in real time and software agents continuously search the metadata for virological disease anomalies and trends using numerical, temporal and geographic criteria for alerting human operators when and where appropriate. A metadata catalog provides a substantial information resource for human exploration using visualization tools and data mining applications resulting in a significant knowledge discovery and knowledge management gain.

The Current State of Healthcare Networks and Challenge of Data Aggregation

Currently disease reporting occurs in various forms for humans, domestic and wild animals according to the networks set up within countries by the agencies responsible for tracking the information. Existing healthcare networks are effective in their prescribed applications; however, are limited in global effectiveness because they are; not real-time, stove piped, stand alone, platform-centric, difficult to search and for the most part proprietary. To achieve timely, effective global disease surveillance requires the aggregation and integration of data from all these sources in an automated manner. In-domain and cross-domain electronic communi-



cation are hampered by unique databases, data schemas and systems. Clearly, data harmonization across the various systems at the global level would be prohibitively expensive.

Faced with similar problems in the United States defense community, Raytheon has developed and fielded a cost-effective, secure, web-based, open-architecture solution for making diverse database sources available to authorized users.

Global Public Health Surveillance System

Utilizing technologies developed for the Department of Defense and the existing communication infrastructure the GPHSS would allow scientists and doctors in real time to share virological disease information and provide early warning of a pandemic outbreak. The GPHSS is focused on enabling reporting speed to detect, respond and contain.

If a GPHSS were in operation, local and regional health information would be continuously updated from networked healthcare providers, hospitals, health clinics and veterinarian clinics. GPHSS software agents would be continuously searching for virological anomalies in proximity.

Real-time detection of a virological event would trigger the notification of global, national and local authorities about an emerging

pandemic threat giving the authorities time to mobilize immediate control measures and to deploy field teams to the cluster area within hours of the event detection.

In the containment battle of an emerging pandemic every day matters. Raytheon's GPHSS real time detection capability gives the appropriate decision makers the time and knowledge to help make the correct decisions to keep a pandemic to a manageable event and potentially saving millions of lives.

Raytheon can't stop a deadly virus from developing, but we can put the capability in the hands of the healthcare community to help contain it in its tracks.

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