IBM Intensifies Fight Against Zika

Shares cloud and analytics technology and expertise with science and public health community

ARMONK, NY - 27 Jul 2016: IBM (NYSE: IBM) today announced that it is committing powerful resources, technology and pro bono expertise to help scientists, the public health community, and humanitarian agencies in the fight against the Zika virus. As part of its IBM Impact Grant programs, IBM is providing technology and talent to Brazil's Oswaldo Cruz Foundation (Fiocruz), a research institution affiliated with the Brazilian Ministry of Health and one the most prominent science and technology health institution in Latin America. Fiocruz plans to help track the spread of Zika by using technology developed by IBM to analyze clues ranging from anecdotal observations recorded by the general public on social media, to official data about human travel patterns.

Insights From Travel Patterns and More

To that end, researchers from IBM's Research Laboratories in San Jose, California and Brazil will train Fiocruz scientists to use STEM (Spatiotemporal Epidemiological Modeler), software that models and visualizes the spread of infectious diseases. STEM can help public health officials and epidemiologists analyze the effects of responses that take into account factors like geography, weather, the passage of time, human travel patterns, roadways, and airports. The STEM modeling platform, developed by IBM and donated to the Eclipse Foundation, a steward of open source technology, has been used to study and help predict the spread of infectious diseases like influenza and Ebola, and mosquito-borne diseases such as malaria and dengue fever.

Online Chatter

Also as part of the IBM Impact Grant, IBM will work with Fiocruz to identify and understand citizen concerns by analyzing public, Portuguese-language Twitter postings that discuss the incidence of Zika, dengue, and Chikungunya, as well as the appearance of the Aedes aegypti mosquito, the species mainly responsible for these illnesses. After Fiocruz defines search parameters, IBM's Research Lab in Brazil will then put IBM's cloud-based sentiment analytics technology to work to harvest and interpret anonymized data. The report IBM produces for Fiocruz will enable it to make actionable recommendations directly to public health officials. IBM researchers applied similar technology at the 2014 World Cup in Brazil, analyzing nearly 60 million social media posts. The researchers developed sophisticated algorithms to analyze large volumes of posts on social networks in near real-time.

Weather Data Offers Clues

In addition, IBM plans to donate a one-year subscription feed of highly local, daily rainfall, average temperature and relative humidity data from The Weather Company to the U.S. Fund for UNICEF, which supports UNICEF's work, and other efforts in support of the world's children, through fundraising, advocacy and education in the United States. IBM intends for UNICEF to use the information from The Weather Company, an IBM business, to better understand patterns of the spread of Zika, with a special focus on Brazil. Outputs from the platform will allow UNICEF and other agencies to more rapidly understand our increasingly complex world. Rainfall,

temperature and humidity play key roles in the development of Aedes aegypti larvae, the primary mosquito that carries Zika. Over 20,000 of these weather-related data points spread across Brazil can provide daily information used to help estimate the larvae's proliferation.

Help from Programmers

Marshaling assistance from the programmer community, IBM will support a hackathon at Fiocruz this fall in Brazil, at which 70 approximately software developers will be challenged to develop health apps. These might include apps that enable people to more easily identify or report mosquito larvae or update public health officials on a local virus outbreak, and other issues related to health. IBM will help to identify appropriate software programmers and will provide its Bluemix cloud technology used for developing the applications.

Data for Social Good

IBM Research is collaborating with the Cary Institute of Ecosystem Studies to collect and mine biological and ecological data from mosquitoes and primates. The team will build cognitive algorithms that can determine which primates are carriers for the Zika virus. This information will allow government and ecological organizations to better identify and target which primates are candidates for viral surveillance and management. This project is part of IBM's "Data for Social Good" initiative, which uses science and technology to help address the world's most challenging problems.

Virtual Supercomputer Seeks Cure

Other Zika-related efforts supported by IBM include the OpenZika project running on IBM's World Community Grid, a virtual, crowdsourced supercomputer that IBM created. A free app is available for download that automatically provides to researchers the unused computing power on volunteers' computers or Android devices. Through this philanthropic initiative, scientists in Brazil and the U.S. now have the ability to screen millions of chemical compounds to identify candidates for treatments to combat the Zika virus. In the first two months of the study, more than 50,000 volunteers from all over the world have enrolled and donated the equivalent of over 4,000 years of computing time and performed more than 20,000 virtual experiments, saving researchers $1.5 million in equivalent computing resources. To enroll your device, and assist in the study, please click here. To view one researcher's account of the project with English dialogue, please visit here. For a Portuguese-language version of the video, please go here.

Virus-Preventing Macromolecule

Finally, IBM is already collaborating with organizations to develop resources that might prevent infections in the first place. For example, IBM Research and Singapore's Institute of Bioengineering and Nanotechnology recently announced that they have identified a macromolecule that could help prevent deadly viral infections such as Zika.