D5.5 Workshop with policymakers III

Project acronym: *CIMPLEX*

Project full title: Bringing CItizens, Models and Data together in Participatory, Interactive SociaL EXploratories.

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18.12.2017	1.0	DP	initial form	Draft
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1. Executive Summary

This workshop has been organized in the scope of WP5 which is dedicated to "Real World Contagious Processes and Epidemics". The goal of this workshop was to have stakeholders feedback for work done in the epidemics use case and on the availability, accessibility and intelligibility of the information provided to end users.

The event gathered experts from many diverse fields such as physics, computer science, biology, epidemiology, information technologies, social science together in a dialogue with public health officials and policy makers. Besides exploring the opportunities given by the exploitation of novel data streams and new technologies for global health threats and issues, the main activities and discussions of the workshop have revolved around the following goals:

- identify and discuss strengths and weaknesses in novel surveillance methods
- promote critique and development of already existing digital surveillance tools
- characterise the future of Digital Epidemiology as an established branch of Public Health

All the presentations of the invited speakers are available at: http://delve2017.weebly.com/program.html

2. DELVE2017 – Digital Epidemiology and Surveillance

CCS2017 Satellite Workshop - http://delve2017.weebly.com/

2.1 Organizing and Scientific Committee

Organizers

Daniela Paolotti, ISI Foundation, Turin, Italy
Michele Tizzoni, ISI Foundation, Turin, Italy
Alessandro Vespignani, Northeastern University, Boston, USA

Scientific Committee

Alain Barrat (University of Marseille, France)
Nicola Perra (Greenwich University, UK)
Bruno Goncalves (New York University, USA)
Ricardo Mexia (Instituto Nacional de Saúde Dr. Ricardo Jorge, Portugal)*
Philip Abdelmalik (Public Health Canada, Canada)*
James Duggan (National University of Ireland, Galway, Ireland)
Sandro Meloni (University of Zaragoza, Spain)

* Public Health Official

2.2   Programme of the workshop

9:15-10:00	Keynote	Elaine Nsoesie, Using Deep Learning to Predict Obesity Prevalence
10:00-10:30	Oral Contributions	Eugenio Valdano, Cattle Trade Networks in Europe
10:30-11:00	Coffee break	
11:00-11:45	Keynote	Johan Bollen - The role of online social networks in human

		well-being: implications for emotional and mental health.
11:45-12:45	Oral Contributions	Vincent Wong, Daniel Cooney and Yaneer Bar-Yam Beyond, Contact Tracing: Community-Based Early Detection for Ebola Response Nicholas Generous and Mauricio Santillana, Quantifying human mobility in Brazil and its impact on mosquito-borne disease outbreak timing
13:00-14:30	Lunch	
14:45-15:30	Keynote	Ciro Cattuto - High-Resolution Contact Networks: from sensor data to targeted interventions
15:30-16:00	Oral Contributions	Paolo Bosetti, Piero Poletti, Bruno Lepri, Stefano Merler and Alessandro Vespignani, Modeling the spread of awareness during epidemic threats
16:00-16:30	Coffee Break	
16:30-17:00	Oral Contributions	Elisa Omodei, Suad Al Darra, Vedran Sekara, Ivan Dotu, Alex Rutherford and Manuel Garcia Herranz, An operational approach to epidemic response: validation and integration of real-time computational models.
17:00-17:45	Keynote	Mauricio Santillana, Combining Internet-based data sources for near real-time tracking and forecasting of disease activity

2.3 Profiles of the Keynote Speakers

Elaine Nsoesie – Institute for Health Metrics and Evaluation University of Washingtong, Seattle (WA), USA
https://globalhealth.washington.edu/faculty/elaine-nsoesie

Mauricio Santillana – Harvard University School of Engineering & Applied Sciences, Boston (MA), USA
https://scholar.harvard.edu/msantillana

Johan Bollen – Indiana School of Informatics, Computing and Engineering, Indiana University, Bloomington (IN), USA
https://www.sice.indiana.edu/all-people/profile.html?profile_id=168

Ciro Cattuto – Data Science department, ISI Foundation, Turin, Italy
http://www.cirocattuto.info/

3. Recommendations of the Public Health Officials

Besides the scientific discussions inspired by the Workshop speakers, the interaction of our team from ISI with the policy makers and public health officials present at the workshop has focused on two main objectives, as described also in T5.5 in GA Annex 1:

(i) evaluating the adequacy of the Modeling Computational Platform architecture to meet the needs of public health officials in terms of timing, data accessibility and intelligibility, to support the decision-making processes during a possible public health emergency;

(ii) assessing the quality of the Modeling Computational Platform predictions over a range of real world case studies based on historical epidemiological data. This interaction has taken place during dedicated slots of time during the duration of the workshop not open to the public and thus not present in the official workshop program.

Methods and Results presented to public health officials participating to the Workshop have been described in detail in D5.2 – Methods and Results II.

In particular, in this Worksop III we have presented the final results of the Modeling Computational Platform applied to realistic scenarios of epidemic

spreading during the Zika emergency and published on PNAS (Spread of Zika virus in the Americas, Q. Zhang, K. Sun, M. Chinazzi, A. Pastore Y Piontti, N. E. Dean, D. P. Rojasc, S. Merler, D. Mistry, P. Poletti, L. Rossi, M. Braya, M. E. Hallorang, I. Longini, A. Vespignani, **PNAS** 114 ,22 (2017).

Policymakers recognized the fact that projecting the spread of Zika is rather more difficult than doing so for Ebola or the flu. That is because the disease is primarily transmitted through mosquitoes to people, most often the species *Aedes aegypti* but also *Aedes albopictus,* both of which carry the dengue and yellow fever viruses as well. Thus, data on human mobility, socio-demographics, and temperature changes must be compounded with data on the mosquitoes, much of which is uncertain, such as their travel patterns, abundance, and lifecycle depending on temperature. In addition, relatively little is known about Zika itself, for example, precisely when and where the virus arrived in Brazil, the length of the incubation period in humans and mosquitoes, and whether humans can develop immunity to the virus. Given all the uncertainties, the researchers cautioned that their findings are here "projections," rather than "forecasts."

The modeling results presented to policy makers should be interpreted cautiously but the framework emerging from them is crucial for the interpretation of the data that provide a baseline for the understanding of the magnitude and timing of the epidemic and can help plan a response to outbreaks in the Americas. Public Health officials agreed that modeling results should be interpreted cautiously in light of the assumptions and limitations inherent to the approach, but nevertheless the framework emerging from the numerical results may help in the interpretation of data and provide indications of the magnitude and timing of the epidemic, as well as aid in planning for international and local outbreak response, and for the planning of phase III vaccine trial sites.