Information and Communication Technologies

EPIWORK

Developing the Framework for an Epidemic Forecast Infrastructure

http://www.epiwork.eu

Project no. 231807

D8.9 Dissemination, collaboration and exploitation report

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Lead contractor for this deliverable: ISI Foundation

Work package participants

The following partners have taken active part in the work leading to the elaboration of this document, even if they might not have directly contributed writing parts of this document:

- ISI
- FGC-IGC
- TAU
- MPG
- AIBV
- SMI
- KULeuven
- CREATE-NET

Change log

Version	Date	Amended by	Changes
1	**20/08/13**		

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1 Project communication tools

One of the main goal of WP8 is to make sure that the results achieved by the project are widely disseminated and can constitute the basis of other research across the scientific and engineering communities.

Project website

The ***visual identity*** of the project has been defined by the choice of the Epiwork logo and the project website layout. The project web site (constituting the **deliverable D8.2**) has been setup and it is continually updated. It gives an overview about the project and compiles press material and publications.
This website is located at

http://www.epiwork.eu

The web site is hosted by seeweb s.r.l. (http://www.seeweb.it).
This web site is promoted by links from the partners web sites as well as from the Cordis web site (see D8.2 for technical details).
During the whole duration of the project, the website has been enriched by the enormous amount of heterogeneous material produced by all the Consortium partners.

Home: http://www.epiwork.eu/ a very brief introduction to the project and a diagram highlighting the main components of the Epiwork project and their integration to reach the overall aim of the project. The home page is form of a blog, therefore, under the project introductions, it displays news and update about the project, the work packages and the partners.

Publications: http://www.epiwork.eu/publications/ List of editorial material, scientific publications and international conferences and seminars by consortium members which are linked to Epiwork. The Editorial material section contains links to dissemination movies, dedicated features in international journals etc. The Dissemination section is dedicated to those tools developed in the scope of the project to reach the general public with scientific results and outcome from the project.

H1N1: http://www.epiwork.eu/2009-h1n1-flu/ This page is dedicated to the progress made by the several teams during the H1N1 2009 pandemic.

Resources: http://www.epiwork.eu/resources/ This page contains a subset of pages illustrating demos and prototypes developed in the scope of the different Work Packages:

WP2: Spatially structured models and human mobility
http://www.epiwork.eu/resources/wp2-spatially-structured-models-and-human-mobility/
WP3: Epidemic Marketplace
http://www.epiwork.eu/resources/wp3-epiwork-epidemic-marketplace/
WP4: Computational Modelling Platform
http://www.epiwork.eu/resources/wp4-computational-modeling-platform/
WP5: ICT monitoring and reporting systems
http://www.epiwork.eu/resources/wp5-ict-monitoring-and-reporting-systems/
WP6: Reporting systems comparative analysis and evaluation
http://www.epiwork.eu/resources/wp6-reporting-systems-comparative-analysis-and-validation/

Events: http://www.epiwork.eu/events/ This page contains announcements about international events organized by the several partners participating to the Epiwork project.

2 Publications, conferences and seminars

The project puts great emphasis on publication in high impact scientific communication channels such as papers and major conferences. It also envisions communicating results at top international conferences. During the third year of life of the project the scientific outreach is simply stated by the sheer numbers of publications (about 70 papers in peer reviewed journals) and presentations at conferences (about 80 talks, lectures and seminars).

Publications

1. Kershenbaum A., Stone L., Ostfeld RS., Blaustein L. Modelling transmission of vector-borne pathogens when vector feeding sites are limited. PLos ONE (2012) [Epiwork contrib. 60%]
2. Huppert A., Barnea O., Katriel G., Yaari R., Roll U. and Stone L. Modeling and Statistical Analysis of the Spatio-Temporal Patterns of Seasonal Influenza in Israel . PLoS One, 7: e45107, (2012). [Epiwork contrib. 60%]
3. Katriel G & Stone L. Attack rates of seasonal epidemics. Mathematical Biosciences 235: 56-65 (2012). [Epiwork contrib. 60%]
4. Uziel A and Stone L. Determinants of periodicity in seasonally forced epidemics. Journal Theoretical Biology 305:88-95 (2012) [Epiwork contrib. 60%]
5. Lachiany M and Stone L. A vaccination model for a multi-city system. Bulletin Mathematical Biology 74:2474-2487 (2012). [Epiwork contrib. 60%]
6. Molina, C. and Stone L. Modelling the spread of diseases in clustered networks. Jnl Theoretical Biology 315:110-118 (2012). [Epiwork contrib. 60%]
7. Yaari R, Katriel G, Huppert A, Axelsen JB, Stone L (2013) Modelling seasonal influenza : the role of weather and punctuated antigenic drift. Journal of The Royal Society Interface 10. doi:10.1098/rsif.2013.0298. [Epiwork contrib. 60%]
8. G. Katriel, Stochastic discrete-time age-of-infection epidemic models. Int. J. Biomath. 06 (2013) 1250066 [Epiwork contrib. 60%]
9. G. Katriel, Existence of periodic solutions for the periodically forced SIR model, Nonlinear Oscillations, accepted (2013). [Epiwork contrib. 60%]
10. Schwartz N. & Stone L. Exact epidemic analysis for the star topology. Phys. Rev. E (2013) accepted [Epiwork contrib. 60%]
11. Gomes MGM, Aguas R, Lopes JS, Nunes MC, Rebelo C, Rodrigues P, Struchiner CJ (2012) How host selection governs tuberculosis reinfection. *Proc R Soc Lond* B 279: 2473-2478. [Epiwork contrib. 30%]
12. Parisi A, Lopes JS, Nunes A, Gomes MGM (2013) Heterogeneity in antibody range and the antigenic drift of influenza viruses. *Ecological Complexity* 14: 157-165. [Epiwork contrib. 30%]
13. Mayer BT, Eisenberg JN, Henry CJ, Gomes MGM, Ionides E, Koopman JS (2013) Successes and shortcomings of polio eradication: A transmission modeling analysis. *Am J Epidemiol* 177: 1236-45. [Epiwork contrib. 30%]
14. Pessoa D, Hoti F, Syrjänen R, Sá-Leão R, Tarja Kaijalainen, Gomes MGM, Auranen K (2013) Comparative analysis of *Streptococcus pneumoniae* transmission in Portuguese and Finnish day-care centers. *BMC Infectious Diseases* 13: 180. [Epiwork contrib. 30%]

15. Lopes JS, Marques I, Soares P, Nebenzahl-Guimaraes H, Costa J, Miranda A, Duarte R, Alves A, Macedo R, Duarte TA, Barbosa T, Oliveira M, Nery JS, Boechat N, Pereira SM, Barreto ML, Pereira-Leal J, Gomes MGM, Penha-Goncalves C (2013) Mycobacterium tuberculosis genetic diversity in Portugal and Northeast Brazil. *Infection, Genetics and Evolution* 18: 238–246. [Epiwork contrib. 30%]
16. X. Huang, I. Vodenska, S. Havlin, H.E. Stanley, Cascading Failures in Bi-partite Graphs: Model for Systemic Risk Propagation, Scientific Reports **3**, 1219 (2013) [Epiwork contrib. 30%]
17. X. Huang, S. Shao, H. Wang, S.V. Buldyrev, H.E. Stanley, S. Havlin, The robustness of interdependent clustered networks, Europhys. Lett. **101**, 18002 (2013) [Epiwork contrib. 30%]
18. Q. Li, L.A. Braunstein, H. Wang, J. Shao, H.E. Stanley, S. Havlin, Non-consensus Opinion Models on Complex Networks, J. Stat. Phys. **151**, 92 (2013) [Epiwork contrib. 30%]
19. D. Rybski, S.V. Buldyrev, S. Havlin, F. Liljeros, H.A. Makse, Communication activity in a social network: relation between long-term correlations and inter-event clustering, Scientific Reports **2**, 560 (2012) [Epiwork contrib. 30%]
20. T Emmerich, A Bunde, S Havlin, Diffusion, annihilation, and chemical reactions in complex networks with spatial constraints, Physical Review E **86**, 046103 (2012) [Epiwork contrib. 30%]
21. A Garas, F Schweitzer, S Havlin, A k-shell decomposition method for weighted networks, New Journal of Physics **14**, 083030 (2012) [Epiwork contrib. 30%]
22. LK Gallos, D Rybski, F Liljeros, S Havlin, HA Makse, How people interact in evolving online affiliation networks, Phys. Rev. x **2**, 031014 (2012) [Epiwork contrib. 30%]
23. L.K. Gallos, P. Barttfeld, S. Havlin, M. Sigman, H.A. Makse, Collective behavior in the spatial spreading of obesity, Nature Scientific Reports **2**, 454 (2012) [Epiwork contrib. 30%]
24. Mark Dickison, Shlomo Havlin, HE Stanley, Epidemics on interconnected networks, Phys. Rev. E **85**, 066109 (2012) [Epiwork contrib. 30%]
25. Wei Li, Amir Bashan, Sergey V. Buldyrev, H. Eugene Stanley, and Shlomo Havlin, Cascading Failures in Interdependent Lattice Networks: The Critical Role of the Length of Dependency Links, Phys. Rev. Lett. **108**, 228702 (2012) [Epiwork contrib. 30%]
26. Jianxi Gao, Sergey V. Buldyrev, H. Eugene Stanley, S Havlin, Networks formed from interdependent networks, NATURE PHYSICS **8**, 40-48 (2012) [Epiwork contrib. 30%]
27. CM Schneider,T Mihaljev,S Havlin,HJ Herrmann, Suppressing epidemics with a limited amount of immunization units, Phys. Rev. E **84**, 061911 (2011) [Epiwork contrib. 30%]
28. Jianxi Gao, S. V. Buldyrev, S. Havlin, H. E. Stanley, Robustness of a Network of Networks, Phys. Rev. Lett **107**, (2011) [Epiwork contrib. 30%]
29. D. Li, K. Kosmidis, A. Bunde, S. Havlin, Dimension of spatially embedded networks, Nature Physics **7**, 481-484 (2011) [Epiwork contrib. 30%]
30. Y. Hu, Y. Wang, D. Li, S. Havlin, Z. Di, Possible Origin of Efficient Navigation in Small Worlds, Phys. Rev. Lett. **106**, 108701 (2011) [Epiwork contrib. 30%]
31. C. M. Schneider, A. A. Moreira, J. S. Andrade Jr., S. Havlin, H. J. Herrmann, Mitigation of malicious attacks on networks, PNAS **108**, 3838 (2011) [Epiwork contrib. 30%]

32. R. Parshani, S.V. Buldyrev, S. Havlin, Critical effect of dependency groups on the function of networks, PNAS **108**, 1007 (2011) [Epiwork contrib. 30%]
33. R. Parshani, S. Carmi, S. Havlin, Epidemic Threshold for the Susceptible-Infectious-Susceptible Model on Random Networks, Phys. Rev. Lett. **104(25)**, 258701 (2010) [Epiwork contrib. 30%]
34. Rocha, F., Aguiar, M., Souza, M., & Stollenwerk, N. (2013) Time-scale separation and center manifold analysis describing vector-borne disease dynamics, accepted for publication in Int. Journal. Computer Math., IJCM
35. Mateus, L., Stollenwerk, N., & Zambrini, J.C. (2013) Stochastic Models in Population Biology: From Dynamic Noise to Bayesian Description and Model Comparison for Given Data Sets, accepted for publication in Int. Journal. Computer Math., IJCM
36. Maira Aguiar, Nico Stollenwerk and Bob W. Kooi. (2012). Describing dengue Epidemics: Insights from Simple Mechanistic Models. AIP Conference Proceedings: Numerical Analysis and Applied Mathematics - ICNAAM 2012, 1479, 1307–1310.
37. Urszula Skwara, Jos´e Martins, Peyman Ghaffari, Ma´ıra Aguiar, Jo˜ao Boto and Nico Stollenwerk. (2012). Applications of Fractional Calculus to Epidemiological Models. AIP Conference Proceedings: Numerical Analysis and Applied Mathematics - ICNAAM 2012, 1479, 1339–1342.
38. Peyman Ghaffari and Nico Stollenwerk. (2012). Evolution of N- Species Kimura/Voter Models Towards Criticality, a Surrogate for General Models of Accidental Pathogens. AIP Conference Proceedings: Numerical Analysis and Applied Mathematics - ICNAAM 2012, 1479, 1331–1334.
39. Rocha, F., Skwara, U., Aguiar, M., Stollenwerk, N. (2013). Understanding dengue fever dynamics: study of seasonality in the models. Proceedings of the 12th International Conference on Mathematical Methods in Science and Engineering - CMMSE 2013, pp 1197-1209 ISBN: 978-84-616-2723-3, edited by Jesus Vigo et al., Almeria.
40. Nico Stollenwerk, Maira Aguiar, Filipe Rocha, Urszula Skwara. (2013). Testing particle filters for dengue fever studies via sim- ple reinfection models. Proceedings of the 12th International Conference on Mathematical Methods in Science and Engineering - CMMSE 2013, pp 1262-1277 ISBN: 978-84-616-2723-3, edited by Jesus Vigo et al., Almeria.
41. Nico Stollenwerk, Davide Masoero, Urszula Skwara, Filipe Rocha, Peyman Ghaffari, Maira Aguiar. (2013). Semiclassical approximations of stochastic epidemiological processes towards parameter estimation. Proceedings of the 12th International Conference on Mathematical Methods in Science and Engineering - CMMSE 2013, pp 1278-1289 ISBN: 978-84-616-2723-3, edited by Jesus Vigo et al., Almeria.
42. Urszula Skwara, Filipe Rocha, Maira Aguiar, Nico Stollenwerk. (2013). Superdiffusion in epidemiological models. Proceedings of the 12th International Conference on Mathematical Methods in Science and Engineering - CMMSE 2013, pp 1250-1261 ISBN: 978-84-616-2723-3, edited by Jesus Vigo et al., Almeria. Book published on EPIWORK relevant topics:
43. N. Stollenwerk and V. Jansen (2011) Population Biology and Criticality: From critical birth–death processes to self-organized criticality in mutation pathogen systems (Imperial College Press, World Scientific, London).

44. Aguiar, M., Peyman Ghaffari, Luis Mateus, Filipe Rocha, Urszula Skwara, Alexandra Symeonides and Nico Stollenwerk. (2013). Biomatem´atica: Novos desafios para a matem´atica do Planeta Terra. Parte I, Parte II Mathematics of Planet Earth, IST Press, Edited by Jorge Buescu et. al. Contribution in writing of two book chapters for ”Mathemat- ics of Planet Earth”, a collection of different aspects of Mathematics and Mathematical Modelling, for the general public and 20 undergraduate students, in Portuguese. Our chapters give an introduction of mathematical modelling relevant to epidemiology.
45. João D. Ferreira, Catia Pesquita, Francisco M. Couto, Mário J. Silva, Bringing epidemiology into the Semantic Web. International Conference on Biomedical Ontologies (ICBO) 2012.
46. Francisco M. Couto, João D. Ferreira, João Zamite, Carlos Santos, Tiago Posse, Paulo Graça, Dulce Domingos, Mário J. Silva, The Epidemic Marketplace Platform: towards semantic characterization of epidemiological resources using biomedical ontologies. International Conference on Biomedical Ontologies (ICBO) 2012.
47. Catia Pesquita, Francisco M. Couto 2012: Predicting the Extension of Biomedical Ontologies. PLOS Computational Biology 9(8), e1002630.
48. João Ferreira, Daniela Paolotti, Francisco Couto, Mário J. Silva 2012: On the usefulness of ontologies in epidemiologic research and practice. Journal of Epidemiology and Community Health.
49. Tiago Grego, Francisco Couto. Enhancement of Chemical Entity Identification in Text Using Semantic Similarity Validation. PLOS ONE 5(8), e62984. 2013.
50. Tiago Grego, Francisco Pinto, Francisco Couto, LASIGE: using Conditional Random Fields and ChEBI ontology. Proceedings of the International Workshop on Semantic Evaluation (SemEval). 2013.
51. João Zamite, Dulce Domingos, Mário J. Silva, Carlos Santos. Group-Based Discretionary Access Control for Epidemiological Resources. HCist'2013 - International Conference on Health and Social Care Information Systems and Technologies. To be published on Procedia Technology, Elsevier. October 2013.
52. Catia Pesquita, João Ferreira, Vera Carvalho, Francisco M Couto, Mário J Silva. Epidemiological resource identifiers and their semantics, where are they? Submitted to PLOS One, June 2013**.**
53. Catia Pesquita, João D. Ferreira, Francisco M. Couto, Mário J. Silva. The Epidemiology Ontology: an ontology for the semantic annotation of epidemiology resources. Submitted to JBMS Special Isuue on Ontology, May 2013.
54. Michele Tizzoni, Paolo Bajardi, Chiara Poletto, José J. Ramasco, Duygu Balcan, Bruno Gonçalves, Nicola Perra, Vittoria Colizza, Alessandro Vespignani, Real-time numerical forecast of global epidemic spreading: case study of 2009 A/H1N1pdm, *BMC Medicine* **10**, 165 (2012).
55. Apolloni, C. Poletto, V. Colizza, Age-specific contacts and travel patterns in the spatial spread of 2009 H1N1 influenza pandemic, BMC Infectious Diseases 13, 176 (2013)
56. C. Poletto, A. Apolloni, V. Colizza, Y. Moreno, A. Vespignani, Host mobility drives pathogen competition in spatially structured populations, PLOS Computational Biology, PLoS Comput Biol 9(8): e1003169. doi:10.1371/journal.pcbi.1003169
57. Piero Poletti, Marco Ajelli, Stefano Merler, Risk perception and effectiveness of uncoordinated behavioral responses in an emerging epidemic, Mathematical Biosciences, Volume 238, Issue 2, August 2012, Pages 80-89.

58. Poletti P, Melegaro A, Ajelli M, del Fava E, Guzzetta G, et al. (2013) Perspectives on the Impact of Varicella Immunization on Herpes Zoster. A Model-Based Evaluation from Three European Countries. PLoS ONE 8(4): e60732.
59. Giorgio Guzzetta,Piero Poletti, Emanuele Del Fava, Marco Ajelli, Gian Paolo Scalia Tomba, Stefano Merler and Piero Manfredi. Hope-Simpson's Progressive Immunity Hypothesis as a Possible Explanation for Herpes Zoster Incidence Data. American Journal of epidemiology (2013) 177 (10): 1134-1142.
60. M. Ajelli and S. Merler. Transmission Potential and Design of Adequate Control Measures for Marburg Hemorrhagic Fever. PLOS ONE 7(12): e50948, 2012.
61. Yannick Vandendijck, Christel Faes, Niel Hens: *Eight years of the Great Influenza Survey to monitor inuenza-like illness in Flanders*, PLoS ONE 8(5): e64156. doi:10.1371/journal.pone.0064156
62. M. Debin. C. Turbelin, T. Blanchon, I. Bonmarin, A. Falchi, T. Hanslik, D. Levy-Bruhl, C. Poletto, V. Colizza Evaluating the feasibility and participants' representativeness of an online nationwide surveillance system for influenza in France PLOS One, in press (2013).
63. Merk H, Kühlmann Berenzon S, Bexelius C, Sandin S, Litton JE, Linde A, Nyrén O. The validity of self-initiated, event-driven infectious disease reporting in general population cohorts. PLoS One. 2013 Apr 17;8(4):e61644.
64. Joao S. Lopes , Isabel Marques, Patricia Soares, Hanna Nebenzahl-Guimaraes, Joao Costa, Anabela Miranda , Raquel Duartec, Adriana Alves, Rita Macedoe, Tonya A. Duarte, Theolis Barbosa Martha Oliveira, Joilda S. Nery, Neio Boechat, Susan M. Pereira, Mauricio L. Barreto, Jose Pereira-Leal, Maria Gabriela Miranda Gomes, Carlos Penha-Goncalves SNP typing reveals similarity in Mycobacterium tuberculosis genetic diversity between Portugal and Northeast Brazil Infection, Genetics and Evolution 18 (2013) 238–246

65. How much complexity is needed to describe the fluctuations observed in dengue hemorrhagic fever incidence data? Maı́ra Aguiar, Bob W. Kooi, Filipe Rocha, Peyman Ghaffari, Nico Stollenwerk, Understanding the effect of vector dynamics in epidemic models using center manifold analysis, Ecological Complexity ECOCOM-361 (in press)

66. Filipe Rocha, Maíra Aguiar, Max Souza, and Nico Stollenwerk, Parameter estimation and model comparison for stochastic epidemiological processes in a Bayesian framework, Luis Mateus, Nico Stollenwerk, and Jean Claude Zambrini, AIP Conf. Proc. 1479, 1327 (2012); doi: 10.1063/1.4756400

67. Dynamic noise, chaos and parameter estimation in population biology, N. Stollenwerk, M. Aguiar, S. Ballesteros, J. Boto, B. Kooi and L. Mateus, Interface Focus 2012 2, 156-169 first published online 1 February 2012 doi: 10.1098/rsfs.2011.0103

Scientific Events

- Workshop DSABNS 2013 organized: ”Fourth Workshop Dynamical Systems Applied to Biology and Natural Sciences” Lisbon, Portugal, 13-15 February 2013, Organizer: Nico Stollenwerk

- Mini-symposium organized at ICNAAM 2012, Kos, Greece: 6th Mini-symposium “Biomathematics”, 19-25 September 2012, Organizer: Nico Stollenwerk

- Mini-symposium organized at CMMSE 2012, Mur- cia, Spain: 5th Mini-symposium “Biomathematics”, 2-5 July 2012, Organizer: Nico Stollenwerk

- International Workshop on Participatory Surveillance, Amsterdam, April 15-17. Organizer: Ronald Smallenburg

- International Workshop “Public Health in the Digital Age”, in joint organization with the World Wide Web Conference 2013, Rio de Janeiro (http://www.digitalhealth.ws/), 14 May 2013, Organizer: Daniela Paolotti

- International Workshop “Digital epidemiology” (http://www.isi.it/workshop_digital_epidemiology), 30-31 May 2013, Organizer: Daniela Paolotti, Alessandro Vespignani, Vittoria Colizza

- "Heterogeneity in host-pathogen systems", IGC, Oeiras, Portugal, April 2013. Organizer: Gabriela Gomes.

- Participary disease surveillance in Latin America, Fundação Getúlio Vargas, Rio de Janeiro, Brazil, May 2013. Organizers: Gabriela Gomes and Flávio Coelho.

- Workshop at Fiocruz, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil, September 2012. Organizer: Gabriela Gomes.

This year the project has finalized the organization of the final project workshop **“ Digital Epidemiology”** that took place in Torino, at ISI Foundation, on May 30-31 2013. This workshop consisted in a major event gathering most of the relevant stakeholders interested in the Epiwork project. The aim of the workshop was to explore how web-based systems, on-line information streams and mobile devices have revolutionized the way we monitor large-scale communities to detect real-time public health relevant signals. The availability of real-time Big Data from social networks, blogs, games, participatory web platforms provide a constant stream of situation-aware information which, in joint action with cutting edge Computer Science and ICT allow for prompt data harvesting and analyses to respond to public health threats. The workshop brought together public health professionals working in public health and epidemic intelligence services in WHO, ECDC, CDC and researchers in on line data mining, crowdsourcing and social media to raise awareness on the critical global issues related to public health, user participation and risk communication. The workshop detailed presentation is reported in the specific deliverable D8.4.

International Conferences and seminars

Gabriela Gomes, "Mathematical models for the biological control of vector-borne diseases", Desenvolvimento e avaliação de novas tecnologias e estratégias de vigilância e controle de Aedes aegypti no Brasil, Fundação Oswaldo Cruz, Rio de Janeiro, Brazil, August 2012 (invited talk).

Gabriela Gomes, "Asymptomatic infections and malaria control in Africa", XVIII International Congress of Tropical Medicine and Malaria, Rio de Janeiro, Brazil, September 2012 (invited talk).

Gabriela Gomes, "Measuring partial resistance in host-pathogen systems", Systems Biology Program, Universidade de Aveiro, Portugal, October 2012 (invited talk).

Gabriela Gomes, "Strategies for biological control of diseases, based on modified insects", IV Encontro Regional de Pesquisa Operacional do Nordeste, CIMATEC, Salvador, Brazil, June 2013 (invited talk).

Gabriela Gomes, "Heterogeneity and the potential for tuberculosis transmission", IV Encontro sobre Pesquisas e Inovação em Tuberculose na Bahia, Universidade Federal da Bahia, Salvador, Brazil, July 2013 (invited talk).

Erida Gjini, "Wolbachia diversity, invasion and evolution", 7th International Wolbachia Conference, Oleron, France, June 2012 (presentation).

Ana Franco, "Controlling malaria using livestock-based interventions", XVIII International Congress of Tropical Medicine and Malaria, Rio de Janeiro, Brazil, September 2012 (presentation).

Sander van Noort, "Influenzanet: influenza-like illness surveillance based on self-reporting volunteers on the internet", Workshop on Public Health in the Digital Age, Rio de Janeiro, Brazil, May 2013 (presentation).

Lewi Stone, Dept. of Epidemiology & BioStatistics, Hong Kong University, June 25, 2012. Modelling the Seasonal Dynamics of Influenza in Israel: Unbelievable predictability" (invited).

Lewi Stone, Dept of Epidemiology, University of Melbourne: August 16 2012 Title: The Magic Flu (invited).

Lewi Stone, Dept. of Mathematics, RMIT University, 19 April 2013. Title: Adventures in BioMathematics: Ecology, Disease and Dynamics (invited).

Lewi Stone, Ort Braude Interdisciplinary Conference, Israel. October 2012. Title: Attack rates of seasonal epidemics (invited).

Lewi Stone, Ort Braude College and Safed Medical School researchers, July 2013. Title: Characterizing influenza dynamics in Israel using mathematical models (invited).

Lewi Stone, 7th meeting of the Eastern Mediterranean Region International Biometric Society (EMR- IBS) Tel Aviv, April 2013. Title: Modeling and Statistical Analysis of the Spatio-Temporal Patterns of Seasonal Influenza in Israel" (invited).

Lewi Stone, Biodiversity, climate change, and infectious diseases 2013. Title: "The effects of biodiversity on vector-borne disease (invited).

Shlomo Havlin, Sixth International Conference on self-Organizing Systems: March. 15-16, 2012, Delft, The Netherlands. Title: Vulneabilty of Network of Networks (invited).

Shlomo Havlin, Frontiers in Statistical Physics and Complex Systems: June 2-5, 2012, Catania, Italy Title: Percolation and Immunization of Network of Networks (invited).

Shlomo Havlin, NetSci 2012, Networks of Networks: Systemic Risk and Infrastructural interdependencies, June 18-22, 2012, Chicago, USA Title: The Extreme Vulnerability of Network of Interdependent Networks (invited).

Shlomo Havlin, International Symposium: Economics in comlex world: networks, agents and people: September 27-28, 2012, Madrid, Spain. Title: The Extreme Vulneabilty of Network of Networks (invited).

Shlomo Havlin, DAMES 2012: Data analysis and modeling in earth sciences: October 8-10, 2012, Title: Epidemics in complex networks (invited).

Shlomo Havlin, NetSci 2012, Networks of Networks: Systemic Risk and Infrastructural interdependencies, June 18-22, 2012, Chicago, USA Title: The Extreme Vulnerability of Network of Interdependent Networks (invited).

Shlomo Havlin, International Symposium: Economics in complex world: networks, agents and people: September 27-28, 2012, Madrid, Spain Title: The Extreme Vulneabilty of Spatially Embedded Network of Networks (invited).

Shlomo Havlin, DAMES 2012: Data analysis and modeling in earth sciences: October 8-10, 2012, Potsdam, Germany Title: Networks as a tool for detecting climate dynamics (invited).

Shlomo Havlin, New Views on Extreme Events: October 25-26, 2012, Zurich, Switzerland Title: Extreme Vulneabilty of Network of Networks"" (invited).

Shlomo Havlin, Nonlinear Data Analysis and Modeling: March 21-22, 2013, Zurich, Switzerland Title: From Single Networks to Network of Networks (invited).

João D. Ferreira, Catia Pesquita, Francisco M. Couto, Mário J. Silva, Bringing epidemiology into the Semantic Web. International Conference on Biomedical Ontologies (ICBO) 2012 (presentation).

Francisco M. Couto, João D. Ferreira, João Zamite, Carlos Santos, Tiago Posse, Paulo Graça, Dulce Domingos, Mário J. Silva, The Epidemic Marketplace Platform: towards semantic characterization of epidemiological resources using biomedical ontologies. International Conference on Biomedical Ontologies (ICBO) 2012 (presentation).

João D. Ferreira, Francisco M. Couto, Semantic Similarity in the Biomedical Domain. Braga, Portugal. Poster @ Bioinformatics Open Days 2012. 2012.

Catia Pesquita, João D. Ferreira, Francisco M. Couto, Mário J. Silva, Semi-Automated Annotation of Epidemiological Resources. Turin, Italy. Poster @ Epiwork International Workshop "Digital Epidemiology", May 2013.

Carlos Santos, Dulce Domingos, João Zamite, Paulo Graça, Mário J. Silva, Access Control for Shared Epidemic Datasets. Turin, Italy. Poster @ Epiwork International Workshop "Digital Epidemiology", May 2013.

João Zamite, Dulce Domingos, Mário J. Silva, Carlos Santos. Group-Based Discretionary Access Control for Epidemiological Resources. HCist'2013 - International Conference on Health and Social Care Information Systems and Technologies. To be published on Procedia Technology, Elsevier. October 2013 (presentation).

Nico Stollenwerk, “Modeling and model evaluation on empirical data in epidemiology: dynamic noise, chaos and predictability, PLENARY TALK at 13th International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE), Almeria, Spain, June 27, 2013

Nico Stollenwerk’s group, “Kâi lêuat ók” is everything: 26, 27, 66”, at 13th International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE), Almeria, Spain, June 27, 2013

Nico Stollenwerk’s group, “Understanding dengue fever dynamics: study of sea- sonality in the models”, at 13th International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE), Almeria, Spain, June 26 2013.

Nico Stollenwerk’s group, “Semiclassical approximations of stochastic epidemiological processes towards parameter estimation”, at 13th International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE), Almeria, Spain, June 26 2013.

Nico Stollenwerk’s group, “Superdiffusion in epidemiological models”, at 13th International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE), Almeria, Spain, June 26 2013.

Nico Stollenwerk’s group, June 26: “Testing particle filters for dengue fever studies via sim- ple reinfection models, at 13th International Conference on Com- putational and Mathematical Methods in Science and Engineering (CMMSE), Almer´ıa, Spain.

Nico Stollenwerk, “Modelling and model evaluation on empirical data in epidemiology: dynamic noise, chaos and predictability”, PLENARY TALK at Mathematical Methods and Modeling of Biophysical Phenomena, Cabo Frio, Brazil, March 08 2013.

Nico Stollenwerk, “Descriptive and predictive models of dengue epidemiology: Part I”, at Fourth Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 13 2013.

Nico Stollenwerk’s group, “The role of seasonality in vector-borne disease dynamics”, at Fourth Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 13 2013.

Nico Stollenwerk’s group , “Evolution towards critical fluctuations in a system of accidental pathogens”, at Fourth Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 13 2013.

Nico Stollenwerk, “Modelling and model evaluation on empirical data in epidemiology: dynamic noise, chaos and predictability”, PLENARY TALK at Fourth Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 13 2013.

Nico Stollenwerk’s group, “Descriptive and predictive models of dengue epidemiology: Part II”, at Fourth Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 14 2013.

Nico Stollenwerk’s group, “Superdiffusion and epidemiological, at Fourth Work- shop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 15 2013.

Nico Stollenwerk, “Modeling Infectious Diseases Dynamics: Dengue Fever, a Case Study”, at Trat Hospital, Trat, Thailand, January 30 2013.

Nico Stollenwerk, “Modeling Infectious Diseases Dynamics: Dengue Fever, a Case Study”, at Secretaria Municipal de Sau de de Belo Horizonte, Brazil, November 29 2012.

Nico Stollenwerk, “Applications of fractional calculus to epidemiological models”, at 10th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Kos, Greece, September 21 2012.

Nico Stollenwerk’s group, ‘Parameter estimation and model comparison for stochastic epidemiological processes in a Bayesian framework”, at 10th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Kos, Greece, September 21 2012.

Nico Stollenwerk’s group, “Descriptive and Predictive models of dengue epidemiology: an overview”, at 10th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Kos, Greece, September 20 2012.

Nico Stollenwerk's gropu, "Rich dynamics in multistrain models: nonlinear dynamics and deterministic chaos in dengue fever epidemiology", at 10th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Kos, Greece, September 20 2012.

Nico Stollenwerk's gropu, "Understanding the effect of vector dynamics in epidemic models using center manifold analysis", at 10th Interna- tional Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Kos, Greece, September 20 2012.

Nico Stollenwerk's group, "Evolution of nspecies Kimura/voter models to- wards criticality, a surrogate for general models of accidental pathogens", at 10th International Conference of Numerical Analysis and Applied Mathematics (ICNAAM), Kos, Greece, September 20 2012.

Nico Stollenwerk, "'Rich dynamics in multistrain models: nonlinear dynam- ics and deterministic chaos in dengue fever epidemiology", at The Society for Mathematical Biology Annual Meeting and Conference (SMB), Knoxville, Tennessee, USA, July 25 2012.

Nico Stollenwerk, "Descriptive and Predictive models of dengue epidemi- ology: an overview", at 12th International Conference on Com-putational and Mathematical Methods in Science and Engineering (CMMSE), La Manga, Mu´rcia, Spain, July 05 2012.

Nico Stollenwerk's group, "Fractional calculus and superdiffusion in epidemiology: shift of critical thresholds", at 12th International Conference on Computational and Mathematical Methods in Science and Engineering (CMMSE), La Manga, Mu´rcia, Spain, July 04 2012.

Nico Stollenwerk's group, "Evolution towards critical fluctuations in a system of accidental pathogens", at 12th International Conference on Com- putational and Mathematical Methods in Science and Engineering (CMMSE), La Manga, Mu´rcia, Spain, July 04 2012.

Nico Stollenwerk'group, "Mosquitos do not matter dynamically in some vector borne disease epidemiologies", at 12th International Conference on Computational and Mathematical Methods in Science and Engi- neering (CMMSE), La Manga, Mu´rcia, Spain, July 04 2012.

Nico Stollenwerk's group, "Dynamic noise, chaos and parameter estimation in pop- ulation biology", PLENARY TALK at 12th International Confer- ence on Computational and Mathematical Methods in Science and Engineering (CMMSE), La Manga, Mu´rcia, Spain, July 03 2012.

Nico Stollenwerk, "Rich dynamics in multi-strain models: non-linear dynamics and deterministic chaos in dengue fever epidemiology", Double PhD defense at Vrije Universiteit Amsterdam, The Netherlands, April 23 2012.

Nico Stollenwerk, "Rich dynamics in multi-strain models: non-linear dynamics and deterministic chaos in dengue fever epidemiology", at Gulbenkien Institute of Science, EAO Seminar, Oeiras, Portugal, April 02 2012.

Nico Stollenwerk, "Rich dynamics in multi-strain models: non-linear dynamics and deterministic chaos in dengue fever epidemiology", at Theoretical Biology Department, Vrije Universiteit Amsterdam, The Netherlands, March 15 2012.

Nico Stollenwerk, “Stochastic Models for Population Biology: From Dynamic Noise to Bayesian Description”, at Third Workshop Dy- namical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matem´atica e Aplicac¸˜oes Fundamentais (CMAF), Lisbon University, Portugal, February 08 2012.

Nico Stollenwerk, February 08: “Evolution towards critical fluctuations in a system of accidental pathogens”, at Third Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matem´atica e Aplicac¸˜oes Fundamentais (CMAF), Lisbon Univer- sity, Portugal.

Nico Stollenwerk, “How much complexity is needed to describe the fluctuations observed in dengue hemorrhagic fever incidence data?”, at Third Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 10 2012.

Nico Stollenwerk, “Dynamic noise, chaos and parameter estimation in population biology”, PLENARY TALK at Third Workshop Dynamical Systems Applied to Biology and Natural Sciences (DSABNS), Centro de Matemática e Aplicações Fundamentais (CMAF), Lisbon University, Portugal, February 10 2012.

Vittoria Colizza, SIMID workshop on Simulation Models of Infectious Disease Transmission and Control Processes, Antwerp, Belgium, April 17-18, 2013 (invited).

Vittoria Colizza, Annual Meeting of German Physical Society, Socio-Economic Division, Regensburg, Germany, March 11-15, 2013. *[prize talk]*

Vittoria Colizza, French National Meeting on Complex Systems 2012, Montpellier, France, Oct 2, 2012 (invited).

Vittoria Colizza, ECCS2012 Satellite Meeting “*Complexity paradigm for smart, green, and integrated transport 2012*”, Brussels, Belgium, Sept 6, 2012 (invited).

Vittoria Colizza, SCOR “*Pandemic Risk Conference*”, Paris, France, July 9-10, 2012, (invited).

Daniela Paolotti, Determinants of active participation in internet-based surveillance systems IMED2013 (Vienna) February 15-18, 2013 (presentation).

Daniela Paolotti, Determinants of active participation in internet-based surveillance systems ISIRV (International Symposium on Influenza and other Respiratory Viruses) 3 September 2012 (presentation).

Daniela Paolotti, Determinants of active participation in internet-based surveillance systems, Medicine2.0, September 15th 2012 (presentation).

Annasara Carnahan, poster @ ESCAIDE conference, Edinburgh, Scotland, October 2012

Annasara Carnahan, National Medical Conference and Exhibit (Medicinska riksstämman) in Älvsjö, Sweden, November 2012

Courses:

Gabriela Gomes, "Mathematical models and control strategies of infectious diseases", II Southern Summer School on Mathematical Biology, ICTP-SAIFR, Sao Paulo, Brazil, January 2012.

Daniela Paolotti, “Complexity in Social Systems”, Physics Department, University of Torino, April 15 – June 25, 2012,

3 Outreach to the public and popularization

The project has been very active in organizing outreach activities targeting the large public and aimed at popularizing the project and its results to the non-experts.

Press releases, media coverage

All the teams involved in the management of Influenzanet national platforms have sent press releases at the end of flu season 2011/2012 and the beginning of flu season 2012/2013. About 25 newsletters in six different languages were produced. Almost each team maintains a Facebook page and a Twitter page.

Facebook Pages:
http://www.facebook.com/pages/Gripenet/104348942939351
http://www.facebook.com/pages/Influwebit/162902929396
http://www.facebook.com/pages/GrippeNetfr/307427382625293
http://www.facebook.com/pages/flusurveyorguk/220599440047
http://www.facebook.com/influenzanet

Twitter pages:
https://twitter.com/Gripenet_pt
https://twitter.com/Gripenet_Es
https://twitter.com/GrippeNet
https://twitter.com/flusurvey
https://twitter.com/influweb
https://twitter.com/Influenzanet

All the teams had coverage and many press hits on the national TVs and magazines. Here are the links to some of the national pages listing the very many press hits for each platform:

France:

https://grippenet.fr/fr/presse/

http://www.liberation.fr/societe/2012/12/26/l-epidemie-de-grippe-a-demarre-en-metropole_870058

http://www.lexpress.fr/actualite/sciences/sante/l-epidemie-de-grippe-saisonniere-a-commence-en-france_1203103.html/

The Netherlands and Belgium:

https://www.degrotegriepmeting.nl/nl/artikelen/de-grote-griepmeting-de-media-2012-2013/

Italy:
https://www.influweb.it/it/news

UK:

Telegraph	http://www.telegraph.co.uk/health/healthnews/9693482/Daily-commute-doesnt-give-you-flu.html
Labnews	http://www.labnews.co.uk/news/uk-flusurvey-goes-viral/
BBC News UK	http://www.bbc.co.uk/news/health-20452192
Daily Mail	http://www.dailymail.co.uk/news/article-2238237/Does-man-flu-really-exist-Study-finds-men-actually-likely-say-flu-symptoms-vary-according-gender.html
The Scotsman	http://www.scotsman.com/edinburgh-evening-news/latest-news/man-flu-survey-is-not-to-be-sniffed-at-1-2659561
Medical News Today	http://www.medicalnewstoday.com/releases/253168.php
The Belfast Telegraph	http://www.belfasttelegraph.co.uk/news/health/northern-ireland-tops-festive-flu-league-16254456.html
The Scottish Sun	http://www.thescottishsun.co.uk/scotsol/homepage/news/papercolumnists/robingalloway/4673203/Lets-prove-man-flu-is-no-myth.html
The Mirror	http://www.mirror.co.uk/news/uk-news/flu-taking-its-toll-on-schools-with-50-1499633
The Daily Mail	http://www.dailymail.co.uk/health/article-2251519/First-norovirus-came-flu-whooping-cough-figures-9-000-cases-year.html
Financial Times	http://www.ft.com/cms/s/e5bd7e56-5efe-11e2-8250-00144feab49a,s01=1.html
The Guardian	http://www.guardian.co.uk/commentisfree/2013/jan/25/man-flu-preoptic-nucleus?CMP=twt_gu
The Daily Mail	http://www.dailymail.co.uk/health/article-2269340/The-man-flu-myth-New-research-suggests-actually-women-moan-cold.html?ito=feeds-newsxml
The times	http://www.thetimes.co.uk/tto/health/news/article3784812.ece
The Daily Mail	http://www.dailymail.co.uk/health/article-2336979/Want-avoid-getting-flu-winter-Steer-clear-children.html
The Telegraph	http://www.telegraph.co.uk/health/healthnews/10104605/Catching-public-transport-does-not-give-you-flu.html
The independent	http://www.independent.co.uk/life-style/health-and-families/health-news/blasting-a-myth-catching-the-bus-makes-you-no-more-likely-to-catch-the-flu-8647804.html

Sweden:

- SR Ekot (Swedish national radio news program The Echo), 26 nov 2012.
- Swedish Newspapers' Telegram Bureau (TT) picked us up on nov 26, 2012. Spread to many newspapers (see attached).
- Metro (free paper, has the highest number of readers in Sweden), 27 nov 2012
- Svenska Dagbladet (one of the two main national newspapers)

Spain:

homepage of Spanish national TV: http://www.rtve.es/noticias/20121116/temporada-gripe-espana-monitorizada-tiempo-real-traves-internet/574987.shtml

Article on Heraldo D'aragon:
http://www.heraldo.es/noticias/sociedad/2012/11/16/cientificos_universidad_zaragoza_desarrollan_una_aplicacion_para_predecir_epidemias_gripe_europa_212035_310.html

Article on El Periodico (paper magazine).

Unanticipated finding, opportunity etc

The teams at LSHTM, ISI and INSERM have been active in aiding the Health Protection Agency (UK), Istituto Superiore di Sanità (Italy) and Reseau Sentinelles (France) in their efforts to survey influenza in the community providing the weekly incidence data to be compared with the GP-based surveillance on a national scale. The intake and symptoms questionnaires were made available to them to offer an opportunity to validate the web-based method of data collection against other ways of performing community surveillance (the subject of WP6).

The Influenzanet Consortium is also leading a worldwide effort consortiating all the platforms carrying out web-based influenza surveillance, i.e. the European Influenzanet (**www.influenzanet.eu**), Flu Near You (**www.flunearyou.org**) in the United States and Flu Tracking (**www.flutracking.net**) in Australia. During the 2nd International Workshop on Participatory Surveillance (IWOPS II) held in Amsterdam in April 2013 organized by the Skoll Global Threats Fund in collaboration with AIBV, aimed at mapping infectious diseases in both humans and animals, a Letter of Intent on cooperation and data exchange has been concluded between the three systems with the aim to achieve a world-wide disease radar: https://www.influenzanet.eu/en/news/2013/04/29/international-workshop-on-self-reported/
We also plan to extend the IMS surveillance of *other than influenza contagious diseases*
Questionnaires for monitoring dengue have been developed in collaboration with a team of epidemiologists in Brazil. In collaboration with our Brazilian colleagues, the dengue monitoring system (Dengue na web) started to operate in the city of Salvador, Bahia, by October last year. This project got a lot of attention in the community of Portuguese speaking countries by a programme from the Portuguese National Radio in 2011:
http://www.rtp.pt/icmblogs/rtp/cientificamente/?k=Dengue-na-WEB.rtp&post=36828

Along the lines of creating a world-wide disease radar, In May 2013 we organized the **International Workshop "Public Health in the Digital Age"**, in joint organization with the World Wide Web Conference 2013, Rio de Janeiro (http://www.digitalhealth.ws/). The aim of this interdisciplinary workshop was to bring together public health professionals and computer science researches in Big Data mining, crowdsourcing and SM user engagement to raise awareness of one of the most critical global applications: public health, user participation and risk communication.

Exhibitions, interactive and non-interactive media

The project has been very active in organizing outreach activities targeting the large public and aimed at popularizing the project and its results to the non-experts. Among the major successes in this area we list:

- **a visualization application dedicated to the dissemination to a non academic audience of the WP4 research activity**.
  The application, which is called *The Epidemic Planet*, displays the evolution of the 2009 H1N1 influenza pandemic and enables its users to interactively compare and learn about the effect of various intervention scenarios.

The Epidemic Planet setup consists of two screens:

i) a touch screen used to choose the starting conditions, and
ii) a visualization screen used to display the output of computer simulations performed using the GLEaM model.

Two different simulations are shown simultaneously.

For each simulation users can select the following options:

- the geographic origin for the disease, between La Gloria, Mexico, where the pandemic actually originated, and a major European city like Barcelona, Spain;
- the contagiousness of the disease, mild or severe (which corresponds to different values of the reproductive number);
- whether to apply travel restrictions or not, reducing the global airline transportation by a 75% factor;
- whether to suppose a worldwide vaccination campaign or not and, if yes, whether to start it in August or in November.

The dynamical maps show the time evolution of the epidemic for the selected scenarios allowing the users to qualitatively compare them. Visualization maps are provided both for the whole planet and for each continent.

Here is a list of the public appearances of the Epidemic Planet:

- INFECTIOUS: STAY AWAY, Science Gallery, Dublin, April-July 2009;
- International Science Festival, Edinburgh, U.K., April 2010;
- Science beyond Fiction: An Excursion into Future and Emerging Technologies, European Parliament, Strasbourg, France, April 2010;
- CosmoCaixa Mòbil Tecnorevolución, Spain, September 2010;
- International Conference for High Performance Computing, Networking, Storage and Analysis (SC10), New Orleans, Louisiana, USA, November 2010.
- **FET Flagship Pilots Midterm Conference** held in Warsaw on November 25th 2011: http://www.futurict.eu/event/fet-flagships-pilots-midterm-conference http://www.futurict.eu/sites/default/files/docs/newsletters/FuturICT%20Warsaw%2025%20Nov%202011%20%28Opening%20Presentation%202%29.pdf
- Planetarium of Turin, Museum of Astronomy and Space, Exhibit 'La fine del mondo. Consigli per il dopo', May 25 – September 2013.
- CosmoCaixa Barcelona, March 2012 – February 2013: 28 locations in Spain with (http://www.arteenlared.com/archivo/2010/expocaixa-tecnorevolucion-una-

exposicion-para-descubrir-los-avances-en-tecnologias-convergentes.html) and Cosmocaixa ¡Epidemia! (http://www.abc.es/agencias/noticia.asp?noticia=944430).

Here are some more links from media reporting about the event:
http://www.youtube.com/watch?v=ONe6zovtR6g&feature=relmfu

http://www.youtube.com/watch?v=uq7FJbqnps0&feature=related

http://www.youtube.com/watch?v=_Wf8cJHydys

http://obrasocial.lacaixa.es/ambitos/exposiciones/tecnorevolucion4_es.html

The itinerant event was mainly focusing around an interactive exhibition that would invite visitors to discover some technology advances and how they affected the everyday life. In the first part of the exhibition, four different areas were covered: nanotechnology, biotechnology, information technology and communication and cognitive science. In the second part, the most interactive one, visitors could experience first hand these technologies. The Epidemic Planet was included in this section and was meant to show to the public the propagation of a virus on a global scale and how travels and human mobility in general can affect it.

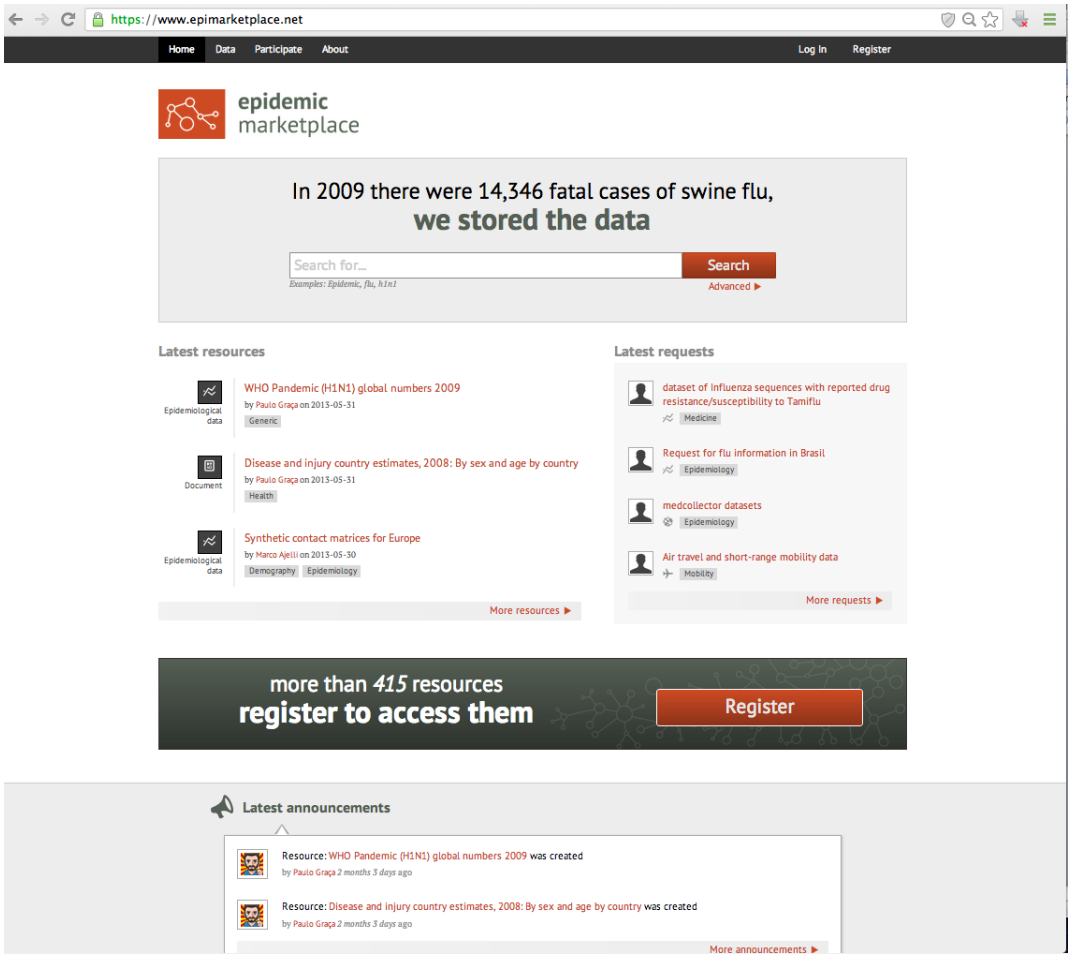
- **production of instructive video clips that convey ideas, methods and results targeted by the project to the general public (WP4 research activity)**:

  Clip: Introductory Video on SPATO software

  This clips is also available on the Epiwork website, together with clips from the previous years: http://www.epiwork.eu/publications

- **the WP3 team has publicly released a new version the Epidemic.** The portal can be found at the address: http://www.epimarketplace.net/.
  Research work on the forth year and extension period of the project was centred on the development of a new version of the software, with improved methods for assisting collaborators in easily find each other and define mutual voluntary agreements for sharing their data, along with intensified work on populating the Epidemic Marketplace with epidemic data using the information collection tools and services developed by the consortium in previous years.
  By means of features on the home page of the portal, users have access to:

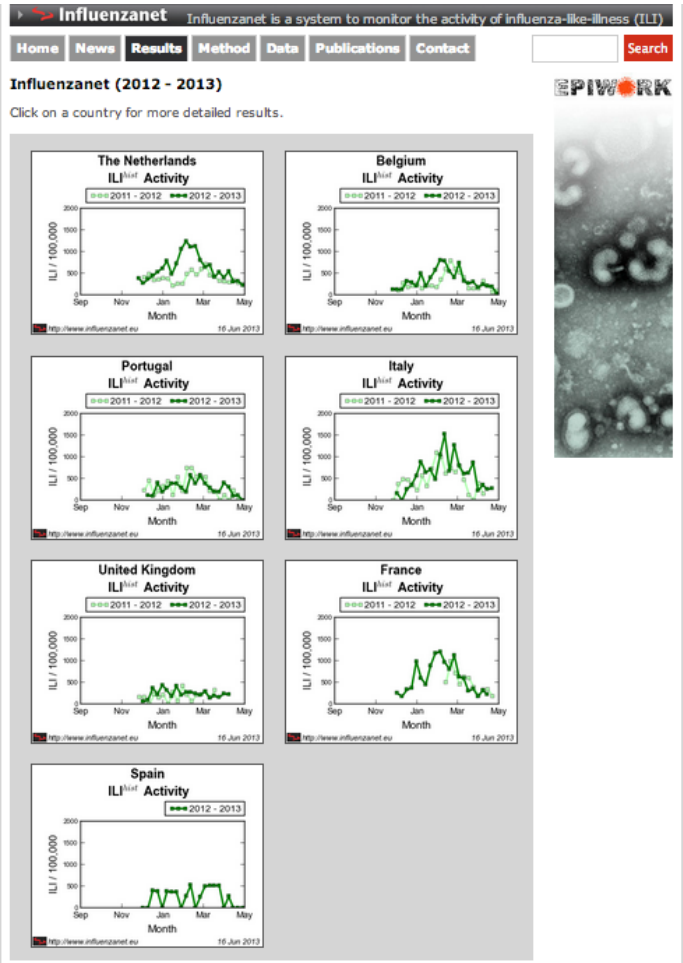
  •registration: visitors to the website are provided a description of the EM and can request an account;
  •upon registration, users have access to the main components of the EM, namely: Data Sets (connects to the Repository), Forum, Web Services (Mediator services) and Data Collection (MedCollector);
  •announcements, information on how to contact the EM developers and about the EM describing its main functions and goals.



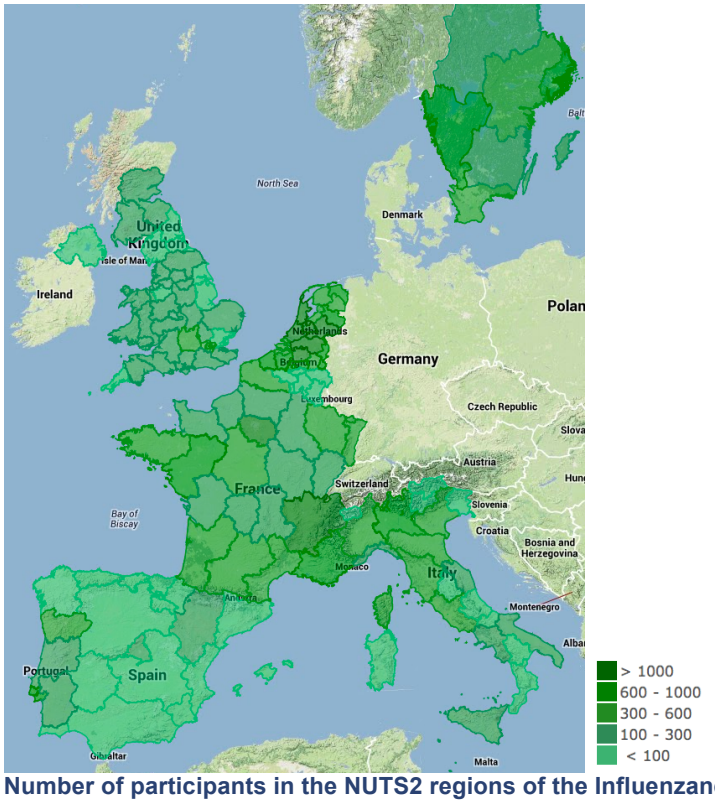
- **The project WP5 is taking particular care in exploiting the potentiality of the IMS recruiting to use the web tool as a podium for advertisement and dissemination of the project results**. At the same time the web tool is being exploited to amplify the public perception on the issue of communicable diseases and as a new media for information and risk awareness campaign. The IMS teams in the several countries have envisioned strategies and campaign to "advertise" the local platform with the national public (see the list of press releases above). In each of the "old" countries, i.e. The Netherlands, Belgium, Portugal, Italy and UK, France and Sweden all the national media have been exploited to make raise the population awareness of the existence of the project. In the new countries, such as Spain, the platform has devised its own campaign to bootstrap the platform and start attracting participants. Denmark and Ireland, the latest countries to join the Influenzanet network are preparing for the next season.

  The WP5 Consortium also carries out dissemination among health care professionals, researchers, policy makers and everybody else, interested in epidemiology, flu surveillance and modeling by means of the Influenzanet corporate website for. Influenzanet.eu presents the project an its results in a reader-friendly way, in order to promote the concept of Internet-based Monitoring Systems in other countries, to expand scientific cooperation with colleagues all over the world and, last but not least, to show interested visitors what flu, vaccination and epidemiology is. It contains an analysis of the collected Influenzanet data so far is presented, with as main and public elements:

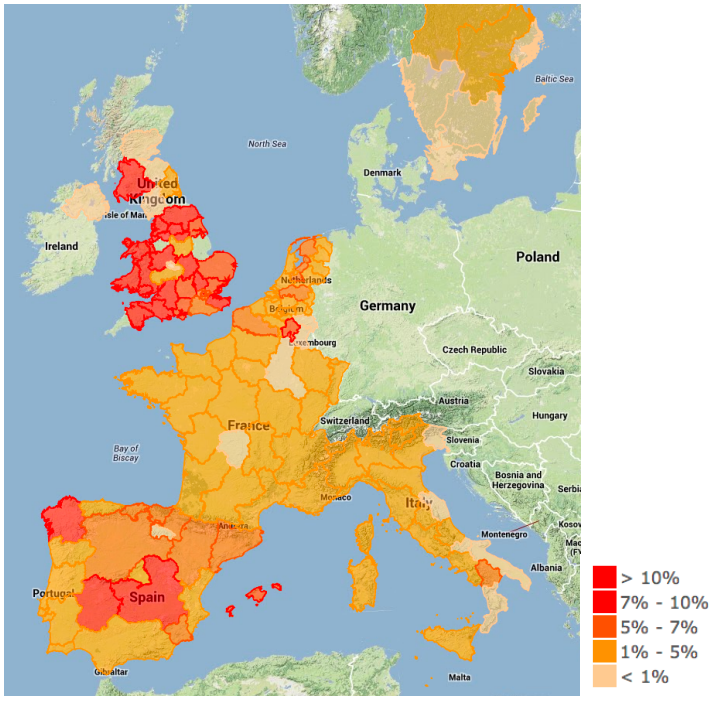
- Graphs and data on flu and cold from all current (10) Influenzanet partners;
- the Netherlands, Belgium, Portugal, Italy and the UK;
- Daily updates from all graphs and data;
- ILI curves, as compared to Google Flu, EISN, Temperature (also interactive);
- Curves of other syndromes and ILI curves within various subgroups;
- Participation data: participants, completed surveys, histograms;
- Week and incidence data, also as CSV files;
- All published articles on IMS and Influenzanet to date;
- A weekly update of modeling and flu surveillance news.



Since February 2013, the Centralized Database storing all the data collected by the national platforms has been used to produce European maps of the flu in the various countries and maps showing the participation on a European scale:



Number of participants in the NUTS2 regions of the Influenzanet Countries



Percentage of ILI cases in the NUTS2 regions of the Influenzanet Countries

4 Effort to engage with policymakers and government agencies

All teams of the consortium have been actively involved in the data gathering, computational analysis and monitoring in close contact with national and International agencies. The project has developed collaborations and interactions with the ECDC, The JRC and the WHO and other international agencies concerning the modeling and computational activities. We are also partnering with the JOINT RESEARCH CENTER (JRC) of the European Commission at Ispra, Italy. The Joint Research Centre is a research based policy support organization and an integral part of the European Commission. The mission of the JRC is to provide customer-driven scientific and technical support for the conception, development, implementation and monitoring of EU policies. As a service of the European Commission, the JRC functions as a reference centre of science and technology for the Union. The objective of the collaboration is to share tools, including the GLEaM paltform to improve models for crisis management and decision making of emerging public health threats. We latest version of the GLEaMviz Simulator has been released to JRC. The project is part of the ECDC discussion group on the formation of a modeling coordinated group and Epiwork has been among the presented project at ECDC Infectious Disease Modeling Meeting, ECDC, Stockholm, Sweden, November 14-15, 2011.
We are also in contact with representative from the WHO for the development of a collaboration within their activities concerning pandemic and highly pathogenic diseases. As mentioned above, Epiwork in Europe has also direct contacts through team leaders with several National Health Institutes:

- Belgian Pandemic crisis team, Belgium
- Health Protection Agency, UK (The Flusurvey data are available to the Health Protection Agency, the national body responsible for infectious disease surveillance, and they produce a weekly summary of the Flusurvey findings for their weekly influenza report.
- National Institute of health (Istituto Superiore di Sanità), Italy
- INSERM, France
- RIVM, the Netherlands

5 Coordination and integration with proactive FET initiatives and projects on science of complex systems for socially intelligent ICT.

The project has been in contact and exchanged information with similar FET projects and the proactive FET initiatives and projects on science of complex systems for socially intelligent ICT.
EPIWORK established several connections with other European funded projects, in particular the ERC project EPIFOR (E.C. ERC Grant Agreement n. 204863), the STREP DYNANETS (E.C. Grant Agreement n. 233847) and the FET Integrated Project MULTIPLEX (EU-FET-317532).
EPIFOR is a one-partner project, hosted by ISI Foundation and whose beneficiary is Dr. Vittoria Colizza, with a duration of 5 years. The aim of the project is to give an answer to many fundamental theoretical questions. How does the complex nature of real world affect our predictive capabilities in the realm of computational epidemiology? What are the fundamental limits in epidemic evolution predictability with computational modeling? How do they depend on the level of accuracy of our description and knowledge of the state of the

system? The present project aims at developing a vigorous research effort along two main directions corresponding to i) the formulation of models for the basic theoretical understanding of multi-scale and agent based approaches and their predictive power; ii) the development of computational approaches and data integration tools that will provide a realistic modeling framework for the analysis of observed epidemic outbreaks and the forecast of patterns of emerging diseases. The two projects, EPIWORK and EPIFOR, share the common goal to advance the ability of the European scientific community of forecasting the unfolding and spreading of already existing and new infectious diseases. In addition to ordinary collaboration, the two projects have co-organized the Workshop that was held in Courmayeur in January 18-20 2012 (See Deliverable 8.3.2).

MULTIPLEX is a project of which ISI is a partner and in which the Consortium wants to use the mathematical framework of Complex Networks and Algorithmics to establish a theoretical basis for the understanding, prediction and possibly control of the Complex Systems. This would be obtained by reconstructing their Dynamics from the huge and heterogeneous datasets available at different levels. The methods used will be derived from the approach developed in Graph Theory, Algorithmics and Statistical Physics. Validated Models will also be proposed.

The FBK team is part of the EU-FP7 FLUMODCONT project that was active from June 2008 to end of May 2011 and aimed at the study of the social acceptability of public health measures during a pandemic, and of the behavioural changes that are to be expected in such circumstances. The Epiwork and Flumodcont projects have continuously shared information and results through the FBK team and cooperated in the organization of the ICCS event.

The project DYNANETS is a consortium of 6 partners from different research areas – from physics to computer science, to HIV clinical studies, etc. – with the aim of investigating, in a unified framework, the dynamic networks underlying natural, social and technological systems. In this direction, interactions between EPIWORK team and DYNANETS team offer new opportunities to characterize the dynamical aspects of human interactions and mobility, relevant to the spread of respiratory infectious diseases.

The consortium actively participated to the life of the ASSYST coordination action that ended in January 2012 and it has been present at the major initiatives in Complexity. The coordination action ASSYST was funded from the FET Proactive initiative Science of Complex Systems for Socially Intelligent ICT (COSI-ICT) and had several goals: promote CS & COSI-ICT research, organise many scientific meetings in Europe, in the new member states, in the candidate states, with the USA and South America, with Japan, China and India, and with Africa, make better connections between complex systems scientists and potential business users of complex systems. Epiwork coordinating team was also present at the ECCS2012 satellite meeting in Bruxelles organized by ASSYST.