

## Health Datathons OSF 2017 Brief Report

Organisers:

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The “Three O” strategic objectives of the European Commission include Open Innovation, Open Science and Open to the World. The vision for open science represents a new approach to the scientific process, based on cooperative work and new ways of sharing knowledge with digital technologies and new collaborative tools. When applied to real world health data, the principles of open science have the potential to advance medical practice, validate scientific research outcomes, and offer powerful tools for improving patient services and public health planning. However the ethical, legal and organisational challenges of health data analytics pose major obstacles, requiring a multidisciplinary approach and a special regulatory framework. Based on the innovative legacy of hackathons, “datathons” have helped to promote collaborative research and foster dialogue around open science. This interactive workshop spans several themes of the Open Science Fair. We will demonstrate how open science can facilitate collaborative, reproducible research; highlight how open clinical data can be used to educate the next generation of researchers; and introduce tools and techniques for analysing freely-available clinical data.

The last decade has seen huge advances in the scale of data we routinely generate and collect in pretty much everything we do, as well as our ability to use technology to analyze and understand it. Healthcare is no different. The amount of healthcare data is growing every second. In general, the healthcare model is witnessing significant changes in response to the impact of several factors including the confluence of globalization, mobility and social networking which are raising concerns about several aspects such as the increasing cost of health care or medical errors. In the era of Big Data, healthcare industry is being challenged to develop better techniques, skills and tools to deal competently with the flood of patient data and its inherent insights. Modern big data technologies can play an effective role to tackle this challenge and change the future for improving our lives. Healthcare organizations need to continuously discover useful and actionable knowledge and gain insight from big data for various purposes such as saving lives, reducing medical errors, increasing efficiency, reducing costs and improving patient outcome.

Challenges and opportunities of the “3Os” policy regarding the analysis of real-world health data in Greece.

Acknowledging the role research and innovation have in preserving the health of citizens and socio-economic sustainability, the role of Open Science/Open Access in the Health sector is considered promising. To introduce effective new scientific contributors to the culture of EU “3Os” strategy (Open Innovation, Open Science and

Open to the World) in the health care, the concept of “datathon” or “hackathon” model has been proposed.

A major leap forward factor for the real world data analytics in the health sector in Greece was the introduction of the electronic prescription platform of the National Organization for Health Care Services Provision (EOPYY) in 2010, that since 2014 includes 95% of the prescriptions dispensed to the entire Greek population.

A new regulatory framework was introduced in February 2016 based on the Law 4368/2016 for the use of real world data of EOPYY for research purposes. In accordance to the legislation introduced, the Universities can sign framework agreements with EOPYY and a special multidisciplinary committee was established within EOPYY to deal with the review of the research protocols submitted from the Universities' research teams. The process is also reviewed by the Data Protection Authority of Greece. The national e-prescription system of Greece is already a valuable source of planning, control and transparency data for the Greek healthcare system. The support of open access and open science policies regarding the use of its databases could foster its further use for research and innovation.

Target audience of the workshop

Academic researchers, industry scientists, healthcare workers, policy makers, biomedical publishers, and research funders.

AGENDA of the workshop

- \* Welcome and introduction (5'), George E. Dafoulas - Medical School, University of Athens,
- \* Big data and evidence based medicine in Greece (10'), Lefteris Thireos - Member of the National E-Health Board of Greece
- \* Introduction to MIMIC, the eICU Collaborative Research Database and datathons (15'), Tom Pollard - MIT
- \* Analysing MIMIC-III (interactive session) (45'), Tom Pollard - MIT
- \* A health datathon in Greece? Summary and round-up (15'), Haralampos Karanikas- Secretary General of the Executive Board of Hellenic Society of e-Health Services and Education, Centre for Technological Research of Central Greece

Lessons learned from the workshop

In recent years, there has been a growing focus on the unreliability of published biomedical and clinical research. To introduce effective new scientific contributors to the culture of health care, MIMIC MIT group propose a “datathon” or “hackathon” model (1) in which participants with disparate, but potentially synergistic and complementary, knowledge and skills effectively combine to address questions faced by clinicians. The continuous peer review intrinsically provided by follow-up datathons, which take up prior uncompleted projects, might produce more reliable research, either by providing a different perspective on the study design and methodology or by replication of prior analyses.

Next Steps and Recommendations.

A Health Datathon was proposed a follow up initiative of the workshop. A collaboration between the Health Data providers (Ministry of Health, Hospitals, EOPYY), the data scientists (Research centers and Universities) and other

stakeholders (patients' associations, private sector, SMEs) , could lead to a Health Datathon in Greece next year based on the Open Data policy.

References:

1. Jérôme Aboab et al. A “datathon” model to support cross-disciplinary collaboration, *Science Translational Medicine* 06 Apr 2016: Vol. 8, Issue 333, pp. 333ps8  
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