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Knowledge management in the digital transformation (2)

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DIGITAL HEALTH EARTH FOR COVID-19: SIMULATING PANDEMIC EMERGENCY PLAN BY OPEN DATA FROM SPACE APPLICATIONS

Abstract

The challenge of the COVID-19 has brought further evidence of how health data can be represented by mathematical models on disease transmission to formulate 'the so-called "pandemic emergency contingency plan". Further steps are represented by the possibility to simulate how to respond to the emergency at a global or local scale by the design for emergency preparedness. These mathematical models can also be incorporated and visualised from databases into layers of a global digital twin, a 3D visual model of Earth called by the authors Digital Health Earth. By satellite, pictures are possible to predict contagion maps from local endemics. Applications of spatial analysis for disease spread, such as disease mapping, through Geographical Information System (GIS), can be effective tools in research for describing the characteristics of epidemic waves, the spatial variation in ecological risk of infection and potential causes of that variation. Space-based healthcare has undergone great development and testing during the pandemic, given the size and evidence of the health emergency all over the globe. Harvesting data from web-based technologies, such as apps and platforms, can also provide georeferenced data about human and social behaviour, classifying and predicting phenomena in a new way by intuitive interfaces with the possibility to slide time forward and backwards. The use of GIS in epidemic research has a long history. Nevertheless, they have certain inherent limitations of maps. One such limitation is the large-scale dependence of maps, which makes it difficult to analyse processes at different scales. Overcoming this limitation is possible in Digital Earth. The opportunity of usage of open data about Covid-19 is being of support for healthcare professionals, researchers, decision and policymakers, as well as knowledge workers and lay citizens at large. Given a global workflow of real-time data from space about local situations and resources, the Digital Health Earth would constitute a funnel and provider for the analyses and representation of such data from space. This provides a basis for interpreting the health of the human population as a whole, taking into account the geospatial environment. This brings us closer to the creation of a full-scale Digital Health Earth as a replica of the global environment, reflecting the real health situation of humanity and the planet as a whole.