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Objective Monitoring and Analysis of the Obesogenic Behaviour in Relation to the Local Environment. A Tool Facilitating Decisions by Public Health Authorities

Abstract

The way we eat and what we eat, the way we move and the way we sleep significantly impact the risk of becoming obese. These three aspects of behaviour decompose into a long list of personal behavioural elements including our food choices, eating place preferences, transportation choices, sleeping periods and duration etc. Most of these elements are highly correlated in a causal way with the conditions of our local urban, social, regulatory and economic environment. In this presentation we will examine technological solutions that have been developed in order to (a) objectively monitor a matrix of obesogenic behavioural elements, (b) acquire information related to the local environment conditions. The first rely mostly on signals captured by very simple wearable devices (accelerometers, gyroscopes, GPS) embedded in smart phones and smart watches while the latter resort to public sources, like maps, and to the data of statistical authorities. Based on this infrastructure, we are ready to link the obesogenic behaviours with the local environment; this creates a wealth of evidence for medical experts, epidemiologists, urban designers, obesity experts and public health authorities. Apart of the acquisition technologies that will be presented, we will investigate (i) The scalability of population engagement approaches that rely on the citizen scientist concept in order to collect behavioural and use of urban resources data in an efficient and still accurate and representative way. (ii) How, possibly causal, relations between behaviours and local environment can be modelled in a way that permits (a) Aetiology, i.e., what are the local causes of obesogenic behaviour and (b) Prediction, i.e., simulation of the expected change of behaviour as a result of a planned intervention. Both Aetiology and Prediction functionalities are expected to offer evidence support to the public health authorities that influence the (re)design of our smart cities.

Most of the technologies to be presented are being developed within BigO (bigoprogram.eu) Horizon 2020 project.