Local governments are facing a considerable challenge of accurately verifying cities and the citizens' needs while considering human mobility. The purpose of this policy is to plan and provide appropriate transport networks adapted to modern travel trends. All new solutions are oriented towards the improvement (modernisation) or the incorporation of completely new transport solutions. However, the investments and operations related to transport are time-consuming and cost-intensive, and they are planned several years in advance. Unfortunately, it sometimes happens that the previously planned investment does not correspond to the space users' new needs. This is usually due to the dynamically emerging, innovative products or threats, which contribute to changes in transport habits while having not been considered in long-term planning, transport policies, or development programmes.

Today's travellers in functional urban areas are changing the way they travel with the technological development and availability of innovative, environmentally-friendly, and more flexible solutions being in line with the "Smart city" idea. Moreover, they adapt to the variable determinants in the field of health and security (the air quality, safety on roads, or epidemiological threat, currently posed by e.g. the COVID-19 pandemics). The unpredictability of the variety of emerging transport threats, resulting from environmental, climatic, sanitary, or technical determinants, hinders planning activities. Hence, it is particularly important to examine the current travel behaviour and urban mobility needs. There is also a need for the identification and classification of factors that have an effect on the passengers adapting to the changing conditions.

The scientific objective of the project is to create an algorithm for monitoring the dynamics of travel behaviour based on a comprehensive list of determinants that temporarily or permanently change travel behaviour in functional urban areas (FUAs). The extensive list of variability determinants will, in particular, take into account technological innovations (opportunities) and threats that have an effect on current changes in travel behaviour.

Current scientific activities focus on repeatability, and do not analyse the factors causing change in a comprehensive manner. Besides, these studies are usually conducted on samples of random people, and rely on their declarative answers non-recurring in a longer period. It is important to examine changes by repeating surveys on the same group of respondents, and giving them a spatial context, which determines the innovativeness of the algorithm we propose.

For the purposes of the project, a hypothesis was formulated that geomatic tools, including geographic information systems (GIS) and geosurveys are effective in monitoring the travel behaviour. For the research into social behaviours and needs, the most recent geomatic tool i.e. geosurveys will be used, as they enable the spatial analysis of phenomena without tracking people on a permanent basis. This will be an alternative approach to examining residents' movement by their mobile phone activity (location services, network login zones, application activities, etc.). The proposed solution will not use identification data for mobile devices.

The obtained study results, along with the original authors' algorithm, may have an effect on the development of other scientific disciplines e.g. those related to internal security. Full knowledge of the current transport habits will facilitate the establishment of new security standards and systems, particularly in the case of emergency response operations due to floods or terrorist attacks. In the transport-related disciplines, the study concerned may be useful in developing a concept of the optimisation of the use of various means of transport, with environmentally-friendly transport being preferred. The knowledge of travellers' transport habits will be of importance in improving and sustainable organisation of transport systems in terms of economic efficiency, health safety, optimal support for these system users' mobility, natural environmental protection oriented towards the smart management of urbanised areas and suburbia. In the spatial management or urban planning-related disciplines, the application of the algorithm for monitoring transport habits will help develop new planning indices for transport areas.

The final effect of this research project will be the development of a universal (to be used for the purposes of monitoring travel behaviour in each FUA), easy-to-use (GIS analytical skills are sufficient), and economical (low-cost) geomatic algorithm to monitor transport behaviours and habits.