

Proposal of reorganization in airspace structure and other facilities for the needs of future Unmanned Aircraft services

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Abstract:

The development of Unmanned Aircraft was another milestone towards the enhancement of transportation sector, especially in highly congested areas. In crowded airspace, Unmanned Aircraft could substitute some tasks of Manned Aircraft, thus reduce air traffic. This kind of vehicle offers a wide range of opportunities that might be crucially beneficial for the society, as well as contribute to saving a human life or mitigate the influence of current urban traffic on environment. Apart from visualizing and gathering traffic information that might be useful for future land traffic flow organization, another potential application worth of attention is medical industry: transport of vaccines, blood or organs for transplantation. Unmanned Aircraft might crucially facilitate the whole process by lowering costs and time of transport.

However, the complexity of airspace structure over highly populated and congested Polish cities, absence of a clear regulatory framework at European Union, extended waiting time for the approval of Unmanned Aircraft operations in Controlled Airspace boundaries or lack of infrastructure and proper Unmanned Aircraft traffic monitoring systems prevent that sector of transportation from dynamic development of a proper market for Unmanned Aircraft services.

The fundamental concept of the article is to examine the present situation regarding the airspace structure over the congested area and in the vicinity of the airport of a highly populated and urbanized city as well as to analyze currently existing facilities for Unmanned Aircraft in that area. For the examination, Warsaw, the most populated and urbanized city in Poland as well as having the most complex airspace structure for unmanned aircraft, was chosen. Additionally, present Polish regulations regarding Unmanned Aircraft Operations were reviewed.

The performed analysis and its extrapolation to other highly urbanized areas in Poland indicates, that significant changes in airspace structure and regulations need to be conducted in order to implement Unmanned Aircraft services in the future and fully exploit high potential of

that market. Thus, the paper also includes a proposal of solutions regarding airspace reorganization to accommodate Unmanned Aircraft traffic along with Manned Air Vehicles, more efficient flight approval system, potential changes in regulations enabling Unmanned Aircraft to perform their services as well as elements of infrastructure and monitoring systems that would prevent present level of safety from deterioration or even improve it.