

Visualising the societal acceptance and the planning reality of Urban Air Mobility (UAM): Digital Participation Tool Medifly

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Abstract:

In the Medifly research project, test flights of drones are being carried out to transport medical goods in Hamburg. When time-critical tissue samples or medicines have to be transported from a hospital to a laboratory, the use of drones should save time and thus improve medical care. Part of the project is a participation process whose goal it is to measure and increase the societal acceptance of Urban Air Mobility (UAM) (Fraske et al. 2021) and to increase the transparency of the route planning process. In this paper we describe the participation tool U_CODE - Urban Collective Design Environment in the use case Medifly, with which users can plan routes themselves by regarding the real restrictions. We will integrate the planning reality in our geovisualization to inform the users about the drone routes restrictions in a more understandable way in the city in terms of avoidance of larger crowds, mostly public amenities such as schools and parks or avoidance of taller buildings, distance to air traffic or distance from infrastructure such as big streets. Finally, to measure the societal acceptance of citizens we will analyse the collected data through the participation tool. To conclude, the digital participation tool can provide more acceptance and increase transparency by route planning of Medifly drones (Figure 1) to improve medical care and urban health for the future.



Figure 1. Medifly-Drone. © Aerial Robotics.

Participation Tool Processing Overview

Societal acceptance plays an important role for city planners and politicians in the implementation of such projects like Medifly. In the build-up of the technical and legal issues, for Medifly also the importance of citizen participation is clear. Our team from the Digital City Science Chair at HafenCity University is therefore conducting a two-part participation process (Figure 2) in cooperation with U_CODE from the Technical University of Dresden.

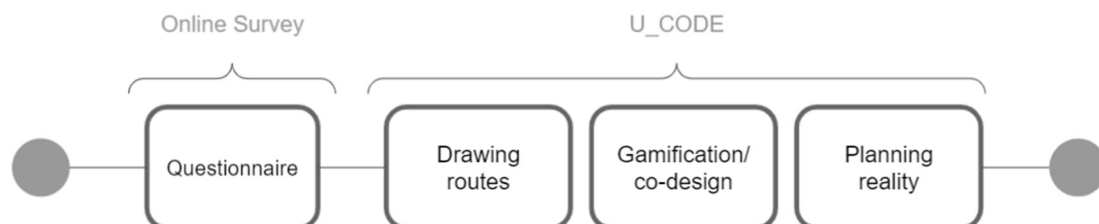


Figure 2. Processing Overview. Own representation.

The first part consists of an online survey that revolves around the assessment of drones in different areas of application, hopes and expectations as well as fears regarding the use of drones. With the online survey we have been trying to answer the question: “What is the level of societal acceptance towards drones in Hamburg among citizens?”

In the second part of the participation process, the citizens themselves can go on a mission and draw routes for the Medifly drone under the applicable restrictions for the planning of routes. This is to sensitise them to the planning restrictions and to ask for their opinion on the restrictions. So, with the online participation tool U_CODE (Figure 3), the users can explore and evaluate the routes according to the restrictions. In a way of gamification, they can try out, where and why the routes can be drawn between hospitals or laboratories in the city and they can solve fictive tasks to carry out time-critical tissue transports. Here we focus also on qualitative data collected and analysed using this 3D co-creative online tool. The use case of Medifly in the tool is currently under development by TU Dresden and HafenCity University. With the online participation tool U_CODE we have been trying to answer the question: “How can the acceptance about the legal restrictions of the Medifly routes by citizens be increased and how can we inform them in a gamified way?”

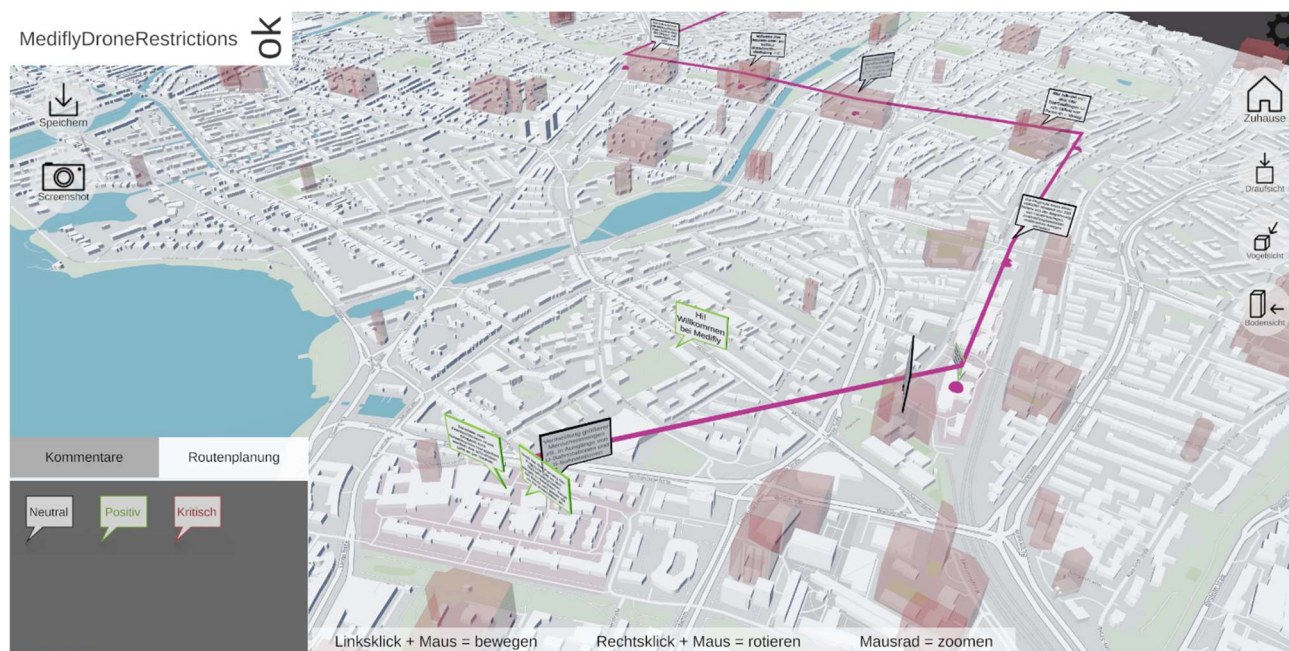


Figure 3. Participation tool (Built up with Unity, Mapbox, WebGL). © U_CODE TU Dresden

In the next steps we will develop the digital participation tool U_CODE for the use case Medifly and set up more geo-visualisations of the restrictions to make the design more attractive and understandable for the citizens, that want to inform themselves in an enjoyable way with help of gamification on different possible routes on the digital participation tool. Test flights of drones for transporting medical goods are being carried out in Hamburg as part of the Medifly research project. A total of six automated test flights were carried out safely and reliably over urban areas and within the control zone of Hamburg Airport (GLVI 2021). Parallel to the test flights the digital participation tool will be anticipated. Finally, the use of drones should save time and thus improve medical care and urban health, instead of time-critical tissue samples or medicines have to be transported from a hospital to a laboratory, by blue-light rides that laboriously make their way through crowded streets, losing valuable time in traffic.

Acknowledgements

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GLVI, 2021. Project website of Medifly. Test flights. URL: <https://medifly.hamburg/testfluege/>