



Dr.One Periodic Update – December 2015

Dr.One is a concept to improve health care for people living in areas that are hard to reach. It aims to augment the “last mile” in the distribution of (emergency) medication and commodities through the use of small unmanned aircraft (drones).

From February 2015 until February 2016 a Dr.One Proof of Concept (PoC) is conducted in both the Netherlands and the Upper East Region (UER) of Ghana. The PoC is funded by Dutch Ministry of Foreign Affairs and supported by the Ghana Health Service (GHS), the UNFPA and the Netherlands Aerospace Center NLR. This leaflet provides a second periodic update on the Dr.One PoC.

During the PoC a prototype of the Dr.One drone is developed. An accompanying concept of operations is designed that fits into the existing community based health care system. A sustainable business model is sought for and both the regulatory aspects and social acceptance are verified.



Dr.One March visit to the UER Regional Coordination Council

Kick of meeting in Ghana

During the Dr.One visit in March 2015 the team learned a lot about the health system, the Ghanaian medical supply chain in the remote UER. A visit was made to the local partners in the UER, including the Regional Coordination Council (RCC), and the partners in Accra, the capital of Ghana. The visit provided highly useful insights in the context in which Dr.One should operate.

Second visit to Ghana

At the end of November 2015 a second visit to Ghana took place. Aim of this visit was: to perform take-off and landing tests with the Dr.One prototype, to engage with the GCAA and the consortium partners, to interview stakeholders with regard to acceptance, to verify and validate data for a cost efficiency analysis of the use of drones for health care logistics.

Development and testing of the prototype

Dr.One is a relatively small UAV, which is specially developed for the last mile transportation of medical goods. The concept focusses on low cost, robustness and easy to operate. The combination of helicopter (quadcopter) and fixed wing flight of the Dr.One drone aims to enable transport of small medical commodities over 100 km in one hour. Without the need for creating additional infrastructure such as airstrips.



The Dr.One deployment crate after arrival in the UER of Ghana

Leading up to tests in Ghana, a first Dr.One prototype was extensively tested at a test range in the Netherlands. Weeks of development and take-off and landing tests were performed in order to achieve the required level of confidence. The first prototype of Dr.One was then shipped in a specifically developed deployment crate to the UER for test in the environment in which Dr.One is to operate.



Meeting at the Ghana CAA in Accra on the Dr.One test flights

In close coordination with the Ghana Civil Aviation Authorities (GCAA) an Operations Manual (OM) was drafted for the Dr.One test flight operations. The OM contains all information and instructions necessary for safe and effective operations with Dr.One in Ghana. Leading up to the test flights approval was received from the GCAA for the Dr.One test flights in Sandema, in the UER of Ghana.





On the 26th of November 2015 the Dr.One prototype entered the Ghanaian airspace for the first time! The test flights were closely watched by officials of, amongst others, the Ghana Health Service, the police, the fire brigade, the immigration services and the local chief. The Dr.One take-off and landing tests were successfully completed. As part of the activities, a preliminary Concept of Operations was verified with several stakeholders. A debrief meeting was held at the GCAA and agreement on the next series of flight tests was established.



Dr.One take-off from behind the district hospital in Sandema, Ghana

Stakeholder engagement



The Dr.One November visit to the UER Regional Coordination Council

Since local acceptance and ownership is crucial for the success of Dr.One, the knowledge and experience of strong partners as the Ghana Health Service, the UNFPA, the Dutch embassy in Accra, The UER RCC, the GCAA and the Navrongo Health Research Center (NHRC) are of great value. During the PoC focus is put on a smooth integration of Dr.One services into the health system of Ghana.

The Dr.One PoC team also reached out to other similar initiatives as e.g. E-Juba, Matternet, Vayu, Stork and a program of UNICEF in Malawi, in search for synergetic opportunities and for sharing knowledge. Conversations with future possible partners such as the IDA Foundation, STOP AIDS NOW, Riders for Health, Merck, USAID DELIVER, Novartis Foundation, Royal Institute for the Tropics, African Study Center, etc. have provided a much better understanding of the consecutive steps that are required and the options for a viable business model.

Lean Six Sigma

The 'Lean Six Sigma for Dr.One' effort focusses on how drones can complement motorbikes to transport medicaments to remote and less accessible communities. The objective is to establish a solid and self-sustaining Business Case for Dr.One. Five use case scenarios have been developed to analyze the costs and time saved when using a drone instead of the current means of transportation, the motorbike. The NHRC is a crucial partner in this aspect of the project. The results are expected in January 2016.

Beyond the PoC

For the next phase there are many ambitions for Dr.One, e.g. to further develop, test and optimize the technology, to integrate solar panels in the wings and body of Dr.One and to initiate and validate Dr.One operations in one district. Operational experience will allow for the collection of evidence on the impact and savings in time and costs using a small drone to increase access to healthcare. Acquisition of funds for the next phase is currently in the center of attention.



Dr.One after completion of the first test flights in Sandema.

More information

Dr.One is a programme of the social enterprise Drones for Development.

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