

Request for Proposals:

Cargo Drone Technology for the Transportation of Patient Samples and Essential Medicines in Cameroon

October 17, 2019

I. Organization Overview

WeRobotics is a not-for-profit organization that co-creates Flying Labs to promote and enable local expertise, local participation and local leadership in technology for good projects. WeRobotics is funded by multiple donors including the Gates Foundation, the Rockefeller Foundation, Hewlett Foundation, Autodesk Foundation, Jansen Family Foundation, World Bank, USAID, DFAT and IADB, for example. Flying Labs are local knowledge hubs run entirely by local experts who access professional trainings, drone technologies and new opportunities through WeRobotics. Flying Labs operate across 25+ countries in Africa, Asia and Latin America. They are directly connected to each other and to their local ecosystems including key actors in government, industry and civil society.

WeRobotics and Flying Labs have previously led cargo drone projects in Peru, Brazil, Nepal, Fiji, Papua New Guinea and Dominican Republic, whilst also supporting a separate cargo drone project in the Democratic Republic of the Congo (DRC). As such, we already have 3+ years of operational, technology, training and policy experience in cargo drone projects. We also believe that local experts are best placed to implement “technology for good” projects. They have the local knowledge, understand the local language, are closely connected to their ecosystem and know their country better than outsiders. This is what we refer to as “The Power of Local”.

Cameroon Flying Labs already has a strong track-record in the use of drones and AI for agriculture. As such, drone pilots at Cameroon Flying Labs are already experienced pilots. The Flying Labs also has an excellent track record in securing flight permissions and in the importation of drone technology into the country. In addition, Cameroon Flying Labs has secured a formal partnership agreement with the national post office of Cameroon to collaborate on cargo drone projects. Furthermore, Cameroon Flying Labs received the green light from the World Health Organization and multiple hospitals across the countries to move forward on this cargo drone project in Cameroon. Upon completion of the project described in this RFP, Cameroon Flying Labs will continue to operate the drones with the National Post and others.

II. Project Overview

WeRobotics and Cameroon Flying Labs are partnering with the Center for Disease Control and Prevention (CDC) and the World Health Organization (WHO) on a joint cargo drone project supported by the Gates Foundation. The purpose of the joint cargo drone project in Cameroon is to determine whether the use of affordable and locally-operated cargo drones can sustainably reduce delays in the testing of patient samples for polio to improve health outcomes for children in Cameroon. The purpose of this Request for Proposals (RFP) is to identify an appropriate Technology Partner for the joint project in Cameroon.

While this cargo drone project is grant funded and thus necessarily has a start and end date, it is important to understand that WeRobotics and Cameroon Flying Labs are using this project to build long-term cargo drone expertise and capacity in Cameroon to enable independent cargo drone deliveries over the long term. To be sure, Cameroon Flying Labs has already set up a formal partnership with Cameroon's National Post Office to facilitate the expansion of a cargo drone delivery network across the country.

Key parameters of the cargo drone project in Cameroon:

- **Flight route:** 60km over water and marshland from the rooftop of a new technology hub in a small town to the courtyard of a clinic on a remote island.
- **Duration, frequency and mode of delivery:** 3 months of locally-led deliveries, multiple times per week including routine and just-in-time deliveries. Outbound flights carry medicines while inbound flights will carry patient samples as needed.
- **Cold chain requirement:** Polio stool samples must be kept at 4-8°C during transport. Other samples and select essential medicines may have similar cold chain requirements.
- **Drones:** 2 drones will be required, preferably hybrid/VTOL models.
- **Final report:** Must include cost-benefit analysis of deliveries.
- **Start date:** January/February 2020 (starting with knowledge and technology training).
- **End date:** May/June 2020 (ending with final report).

This RFP is based on the same template developed with VillageReach for the DRC project for which VillageReach contracted WeRobotics to provide guidance on the development of the RFP along with the evaluation of the resulting proposals and other key deliverables.

III. Schedule of Events

WeRobotics will evaluate all responses to this RFP in consultation with Cameroon Flying Labs and the CDC. The current estimated timetable for the selection process is summarized below.

Milestone	Completion Date
Release RFP publicly	October 15, 2019
RFPs submitted to WeRobotics	November 15, 2019
WeRobotics selects preferred Technical Partner	December 1, 2019
Contract signed by all parties	December 15, 2019

In addition to submitting an application in response to this RFP, prospective Technology Partners should submit on-board videos that show their drones covering the same distance and similar topography as described in this RFP. WeRobotics may reach out with clarifying questions regarding application materials or proposed technology. WeRobotics reserves the right to make any changes to the events and schedule at their discretion.

IV. RFP Questions

Questions regarding this RFP are encouraged and should be submitted by Email to the address listed below in advance of the submission deadline. Should a prospective partner perceive any material ambiguity, conflict, discrepancy, omission, or other error in this RFP, the partner should send a question to confirm or clarify the information in question. The partner may request a meeting or conference call with WeRobotics to clarify the requirements of this RFP.

Subject header: Cameroon RFP Question
Email: humans@werobotics.org

V. Evaluation Criteria

All proposals will be evaluated based on standardized criteria, summarized as follows and described in further detail below:

- **Values and Growth:** The Partner must share our values on The Power of Local and thus consider honesty, integrity and respect as fundamental to any working relationship. We are particularly interested in cargo drone partners who want to grow with us and the Flying Labs network over coming years. To be sure, Flying Labs are increasingly approached by Ministries of Health and international organizations in their countries to set up cargo drone projects. Technology Partners from the Global South are highly encouraged to reply to this RFP.
- **Business Model:** The Partner's service offering must include training local experts on how to operate their technology safely and responsibly, technology transfer to local experts, and the provision of remote technical support to local experts as needed. The partner's business model should enable long-term sustainability in future phases of implementation.
- **Flexibility, Adaptation and Availability:** The partner must be willing to make adjustments to meet the project's needs. The partner must also be available to participate in the various phases of the project within the required timeframe.
- **Platform and Flight System:** Robust, reliable, user-friendly and appropriate to the context and environment in Cameroon. Note that the cargo drone system must be affordable, locally operable and locally repairable. Please use your best judgment to determine what constitutes as being affordable. A cargo drone that costs the same as a Mercedes is unlikely to qualify as affordable.
- **Proposed Budget:** Cost-effectiveness of budget proposed.
- **Professionals References:** Positive assessment of previous work performance.

VI. Location of Services Required

WeRobotics seeks the short-term services of a dedicated partner to provide the technology and associated services needed to conduct the delivery of patient samples from a remote health facility to on Manoka Island to a new technology hub in the town of Edea approximately 60 kilometers away. Manoka Island was selected by the World Health Organization (WHO) as a priority area for this project. The drone corridor connecting Manoka and Edea is marked on the map below. The airspace around Manoka Island is restricted given that the area is listed as a wildlife reserve. Cameroon Flying Labs has already filed the necessary paperwork with the Civil Aviation Authority to operate in Manoka.



The region of Douala has a tropical climate, with the wettest months being between April and October. July is the wettest month while December the driest. Between January and May, temperatures tend to range from 24 to 33 degrees Celsius. Drone deliveries will occur when weather conditions permit, and all flights will occur during daylight in open spaces. **Wind speeds are expected to be low.** The area to be flown over is mostly ocean and flat marshlands, thus close to sea level. Electricity is available on Manoka Island and at the technology hub in Edea. In addition 3G/Internet is available in Manoka and Edea. Mobile phone network connectivity is unlikely to be available throughout the flight route between these two points. As such, the preferred partner will be able to operate using satellite navigation and will not rely solely on 2G/3G connectivity. Douala International Airport is 16+ kilometers away from the Manoka - Edea flight route.

Patients with Acute Flaccid Paralysis (AFP) may or may not have polio. Doctors at local clinics collect stool from AFP patients so that these patient samples can be tested for polio at the National Lab. As such, the samples need to be transported from local clinics to the National Lab for testing. Patient samples for polio testing need to be maintained at a controlled temperature of 4 to 8 degrees Celsius. **Annex A presents illustrative payloads.**

VII. Technical Specifications

WeRobotics and Cameroon Flying Labs will conduct evaluations of each finalist prior to final selection of the preferred Technology Partner. WeRobotics and Cameroon Flying Labs seek cargo drones that meet or exceed the specifications below. Companies that respond to this RFP must demonstrate with appropriate data and other forms of evidence that their drone meets or exceeds these specifications.

Design

- Hybrid design (VTOL) preferred (but not required)
- Meet professional standards for reliability and minimize human and technological error

Payload

- Capable of carrying a minimum of 1kg - 2kg payload
- Cargo compartment offers flexibility of weight disbursement and balance
- Cargo compartment must meet cold chain requirements (4-8 degrees Celsius) at all times during the flight operations
- Enable temperature monitoring either as part of the cargo compartment or by using external data logger inserted into cargo compartment
- Removable cargo compartment preferred (but not required)

Range

- Nonstop 60km range (aerial distance) with 1kg - 2kg payload

Power

- Rechargeable batteries preferred (but not required)

Flight

- Vertical takeoff and landing is preferred (but not required)
- Fully autonomous take-off, flight, and landing along GPS way-points is required
- Boomerang feature is preferred (but not required)¹

¹ Coined by WeRobotics in 2016, a boomerang feature in cargo drones is a one-tap return home function post cargo delivery. Boomerang-enabled cargo drones are able to land at the delivery location, have their cargos and batteries swapped, and then with a simple tap on a tablet at the delivery location are able to return autonomously to their departure point. Boomerang features include pre-flight checklists.

- Route selection, pre-flight checks, dispatch, flight monitoring, and troubleshooting must be available through a logical user interface on a laptop, tablet or phone device
- Automatic collision avoidance function for fixed obstacles is preferred (but not required)
- Reliable Fail-safe functions that avoid high speed impact to the ground are required

Climate

- Robust for general environmental conditions, including ability to fly in reasonable weather conditions (for example, winds of 5 m/s and slight rain)

VIII. Specific Roles and Responsibilities

The selected Technology Partner will provide necessary documentation and information as requested by WeRobotics.

1. Participate in the review of standard operating procedures around flight safety, payload delivery, and any document required for successful implementation of the deliveries.
2. Provide WeRobotics with a risk analysis of the system in the context of the project, including identification of the critical failure modes of the aircraft, mitigations implemented and detailed emergency procedures as part of the standard operating procedures.
3. Provide WeRobotics with any customs documentation needed for Cameroon Flying Labs to obtain permission to import the drones
4. Provide WeRobotics with any documentation of the technology needed for Cameroon Flying Labs to secure permission to fly the drones in-country
5. Provide photographs, videos and/or other collateral materials for use in educational materials about drones for community outreach
6. Provide sharable cost information including leasing costs and operational costs

Conduct trainings and handover to Cameroon Flying Labs in January or February 2020.

1. Meet with relevant authorities from the Cameroonian Ministry of Health, Civil Aviation Authority and other partners as requested.

2. Provide hands-on professional training and technology transfer to Cameroon Flying Labs in partnership with WeRobotics. The Technology Partner will focus on the technical side of how to operate their cargo drones safely and effectively while WeRobotics will provide professional training on best practices and lessons learned in medical cargo drone operations. This combined training will take approximately 1 week in total and will be followed by 1 week of setup and co-deliveries in partnership with Cameroon Flying Labs.

During this second week, the Technology Partner will set up the delivery route with Cameroon Flying Labs and complete at least 20 deliveries with Cameroon Flying Labs. During this time, the Technology Partner will be responsible for conducting any required repairs onsite.

3. Cameroon Flying Labs will then takeover cargo drone deliveries from week 3 onwards through to week 14 (making a total of 3 months of live deliveries). During this time, the Technology Partner will provide remote technical support to Cameroon Flying Labs as needed while keeping WeRobotics fully informed. This includes providing the Flying Labs with any required technical support regarding maintenance and repairs.
4. Provide all data and metrics mutually agreed upon for analysis, which is expected to include performance and telemetry data (duration of each flight, distance travelled, speed of flight, battery voltage at launch and landing, operational flight range, safety data, temperature logs, etc.).

IX. Proposal Submission Instructions

A prospective partner should prepare any offer simply and economically, providing a straightforward, concise picture of that partner's ability to satisfy the requirements of the RFP. Expenses incurred in the preparation of the partner's Information in response to this RFP are the partner's sole responsibility. Interested partners are requested to submit an application, which includes a description of how the applicant will adhere to the above, as well as provide:

- Drone manufacturer (legal name, address, contact, and any certifications)
- Proposed drone type, model and total cost
- Physical dimensions of the drone and the cargo box
- Pictures, design, and dimensions (including drawings) of the drone, cargo box and cold chain solution
- Cargo compartment weight and volume capacity, maximum distance, and key metrics of performance

- Plan to achieve a distance of 60 km minimum to a remote island in Cameroon
- Number and type of batteries or amount of fuel required for the distance proposed
- List of other equipment needed for flight operations in addition to the drone
- Weight of drone in-flight, including batteries
- Required distance for take-off and landing, as well as mechanism for take-off and landing
- Software used and data transmission from the flight system
- Flight safety mechanisms (including fail-safe functions that avoid high-speed impact to the ground)
- History of past work and references
- Key personnel to be assigned to this project and their CVs or qualifications
- Itemized budget for the work proposed, including 1 return trip to Cameroon of approximately 15 days along with appropriate remote technical support. [Please use this budget template](#) (Excel file).
- Any other information that responds to the requirements outlined in this RFP

Each prospective partner shall include a statement in the documentation that the entire document (including scope and prices) contained therein are firm for not less than three months from the date of the quotation. All submissions will be accepted electronically in advance of the date listed in the schedule of events at the following address:

Subject: Cameroon RFP Application
Email: humans@werobotics.org

X. General Conditions

This RFP is not an offer to contract. The issuing of this RFP does not commit WeRobotics to award a contract to any partner, even if all requirements stated in this RFP are met, and will not limit our right to negotiate in our best interest. This RFP will be made publicly available and also sent to multiple prospective partners. WeRobotics reserves the right to enter into separate contracts with multiple partners if it desires to do so. Partners shall not be responsible or liable in any manner for any risks, costs, or expenses incurred by any prospective partner in responding to this RFP, including but not limited to the selected partner(s).

XI. Right of Rejection

WeRobotics reserves the absolute right to reject any and all offers for any reason or for no reason whatsoever. We reserve the right to reject any response either completely or in any part. Without limiting the generality of the foregoing, WeRobotics may reject any offer which fails to

follow the RFP Information outline, which is submitted on forms that contain printed terms of stipulations, which is conditional, qualified or incomplete in any manner or which contains any irregularities of any kind.

XII. Right of Modification or Withdrawal

WeRobotics reserves the absolute right to withdraw this RFP at any time or to modify this RFP by one or more addenda issued through the same methods as the original RFP release to whom WeRobotics issued this RFP. WeRobotics shall incur no liability whatsoever to prospective partners by reason of such withdrawal or modifications. We reserve the right at any time to discontinue the RFP process, and enter into discussions and/or negotiations with any one partner if such action is in our best interest. WeRobotics reserves the right to modify any estimated requirements prior to signing the Agreements with the selected partner(s). No prospective partner shall have a claim on WeRobotics in the event any estimated requirements are modified for whatever reason. Any quantities of equipment or other information referenced herein are estimates and do not constitute a commitment.

XIII. Confidentiality of Proposals

WeRobotics routinely handles all information submitted in response to an RFP with care, uses it only for evaluation purposes, and restricts access to a minimum number of persons. WeRobotics assumes no obligation and shall incur no liability regarding confidentiality of all or any portion of a quotation or any other material submitted in response to this RFP unless WeRobotics has expressly agreed in writing to protect specifically identified information. In the RFP Response, the responses must be clearly stated. The evaluation team will not search for answers and explanations.

XIV. Prerequisites for Doing Business

All partners responding to this RFP must understand and accept the following WeRobotics requirements. Any partner entering into a business partnership with WeRobotics must:

- Be stable and financially healthy
- Be ethical and have a demonstrated track-record of integrity and transparency
- Have adequate personnel to provide responsive service and quality maintenance and support
- Provide adequate warranties or other legal recourse upon product or service failure
- Partner payment will be linked to performance according to achievement of project milestones.

Annex A: Illustrative Payload

The information below displays the “triple packing” used for courier shipment of specimens. The total weight of each stool sample is expected to be <20g for each specimen: 8-10g for stool and ~7g for the specimen container.

Triple Packing involves placing the samples in three separate and sealed containers:

1. Stool specimen container



2. Plastic bag and/or plastic container with a screw-top



3. Specimen carrier or shipment box



- END -