More and more countries are considering using drones or Unmanned Aerial Vehicles (UAVs) to transport health products, from medicines, vaccines, and lab samples to blood and supplies needed in medical emergencies. Drones have the potential to disrupt health supply chains, filling transportation gaps at the last mile of healthcare delivery. Drones can reach remote villages, busy urban spaces, or areas cut off from regular distribution routes by insecurity or natural disasters, which can result in shortages of lifesaving products or delays in disease diagnosis.

Drone manufacturers and operators, as well as types of drones, are evolving rapidly. Each of these options comes with their own hardware and software, transport mechanisms, performance and safety profile issues. Additionally, there are implications for cost, operational feasibility, and sustainability. At the same time, standards and regulations for unmanned aviation are also evolving, in terms of aircraft certification, safety and airspace access.

In 2019, VillageReach issued two independent global requests for proposals (RFPs) to select a drone service provider for demonstration flights in DRC and Mozambique. This document discusses two important questions that came into consideration for the selection:

What should governments or organizations look for in a drone delivery partner?

What are the criteria that needs to be considered to meet the current health system needs?

This guidance assumes that the drone company will, at least initially, operate the flights, with certifications and permissions from the national aviation authority and other authorities.
First of all, the selection process was influenced by the intended use of drones and the setting. In DRC, the primary purpose was transport of vaccines and supplies, while in Mozambique it was transport of tuberculosis (TB) sputum samples for laboratory analysis. The process was defined in collaboration with relevant government agencies and stakeholders in country, to identify local needs and technology requirements. Independently, both country teams selected the same drone company. The company went on to conduct more than 50 successful flights in 5 days in 2019 in DRC, followed by a first round of successful test flights a year later in Mozambique.

### DRC SELECTION PROCESS

**USE CASE**
Delivery of vaccines, other immunization products and essential medicines; return with reports, lab samples, product order forms.

**SETTING**
Drone flights between urban vaccine distribution center and remote health centers.

**RFP DEVELOPMENT**
With DRC Ministry of Health (MoH) at national and provincial levels.

**RFP DISSEMINATED GLOBALLY**
March 2019 was the date of dissemination; applicants could submit questions or request calls for clarification; applicants had three weeks to apply.

**RFP RESPONSES RECEIVED**
Seven (of which four were electric, fixed-wing drones with vertical take-off and landing).

**PRE-SELECTION**
Evaluation of written applications, flight videos and follow-up questions; scored by three VillageReach team members and two from WeRobotics and Cyclops Air (combining health and aviation expertise); discussion by reviewers to agree on rankings.

**SHORTLIST EVALUATION**
For top two candidates: conducted interview, reference checks or visited their manufacturing and testing facility.

**FINAL SELECTION**
By DRC Aviation Authority, with MoH and National Security input, after presentation of options and submission of technical and safety application by top candidate.

### MOZAMBIQUE SELECTION PROCESS

**USE CASE**
Delivery of TB sputum samples for diagnosis; other products transported and test results returned as needed.

**SETTING**
Drone flights between rural health centers and laboratory at urban district level.

**RFP DEVELOPMENT**
With National Health Institute (INS) and MoH.

**RFP DISSEMINATED GLOBALLY**
July 2019 was the date of dissemination; applicants could submit questions and responses were published; applicants had four weeks to apply.

**RFP RESPONSES RECEIVED**
Four (of which three were electric, fixed-wing drones with vertical take-off and landing).

**PRE-SELECTION**
Evaluation of written applications and flight videos; scored by four VillageReach team members and one from Cyclops Air (combining health and aviation expertise); joint discussion by reviewers to agree on rankings.

**SHORTLIST EVALUATION**
Due to small number of candidates, all advanced to next stage. Top candidate was one we had prior experience working with.

**FINAL SELECTION**
By committee composed of Mozambique Aviation Authority, MoH, Ministry of Defence and Amovant (local drone association) who reviewed proposals and asked clarifying questions of Cyclops Air and VillageReach.

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**Developing an RFP**

RFPs are not the only way to select a drone service provider, but competitive bidding is highly recommended in this field of rapidly-evolving technology and to comply with procurement standards. In addition, competitive bidding can increase the chance of finding a drone partner who can truly deliver a safe, reliable and cost-effective solution in a resource-constrained setting. Regardless of whether an RFP process is used or not, the criteria and principles for selection remain largely the same. In collaboration with Cyclops Air and WeRobotics, VillageReach developed a rigorous, iterative evaluation process that best fit the needs of DRC and Mozambique.

We recommend involving an independent unmanned aviation expert in the selection process to set appropriate safety and performance requirements. This is particularly important when drones will fly beyond visual line of sight (BVLOS), over populated areas, and in airspace used by other aircraft. The expert can also assist the National Aviation Authority in the development of their rules and assessing the safety case.

If you need recommendations for an unmanned aviation expert, you can email the UAV for Payload Delivery Working Group at info@UPDWG.org.
This table provides recommendations for the specific content that should be included in a RFP for drone delivery services

<table>
<thead>
<tr>
<th>SUGGESTED CONTENT</th>
<th>ADDITIONAL INFORMATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cover page</td>
<td>Include project title, main point of contact, and deadline for question period and application submissions.</td>
</tr>
<tr>
<td>Organization overview</td>
<td>Introduce the organization that will be contracting the drone company.</td>
</tr>
<tr>
<td>Project overview and locations</td>
<td>Describe the intended use of drones and summarize services needed. Include information about locations, climate, weather and other factors that might influence drone operations. Based on these requirements, ask the bidders to propose the solution.</td>
</tr>
<tr>
<td>Schedule of events</td>
<td>Describe the steps and timeframe for the vendor selection process, including due dates for questions and submission. Provide contact information.</td>
</tr>
<tr>
<td>Evaluation criteria</td>
<td>Should cover technical capabilities of drone, operational feasibility of implementing a health supply chain project, team experience, availability, business model and potential for sustainability, shared values, as well as budget and prior work references.</td>
</tr>
<tr>
<td>Technical requirements</td>
<td>Drone design, payload weight, dimensions and transport requirements (i.e., cold chain), flight distance, power source, flight and safety mechanisms, weather robustness, and communication system. Give the rationale for each requirement.</td>
</tr>
<tr>
<td>Roles and responsibilities</td>
<td>Specific deliverables and expected timelines, which may include import and flight authorizations, provision of drones and equipment, number of flights or duration and frequency of flight operations, local capacity building, community engagement, and data and information needs.</td>
</tr>
<tr>
<td>Proposal submission requirements</td>
<td>The enclosed RFP examples detail standard information that should appear in the written proposal. Additionally, request on-board flight videos, proposed staff CVs, history of past work and budget. For budget, may want to give a range or ceiling and a template to complete.</td>
</tr>
<tr>
<td>Legal clauses</td>
<td>Consult legal services to add clauses around right of rejection, right of modification or withdrawal, confidentiality of proposals, and/or prerequisites for doing business.</td>
</tr>
<tr>
<td>Annexes</td>
<td>Include any other helpful details about the cargo, drone take-off and landing sites, and context of work (e.g., photos, maps, GPS coordinates, permits needed, and help your organization will provide to the vendor).</td>
</tr>
</tbody>
</table>

Two examples of RFPs, from DRC and Mozambique, are enclosed in this package. They are based on a template developed by VillageReach in collaboration with Cyclops Air and WeRobotics.
Considerations When Developing an RFP

Tips

- State which requirements are mandatory and which are desirable (optional).
- Consider setting minimum requirements for the cargo payload (weight/mass and dimensions H x W x L).
- A drone expert can help you decide whether you want to specify a drone design or keep your options open.
- You can advertise the RFP globally by emailing info@UPDWG.org.

Use plain language and provide detailed requirements so potential bidders know if they can deliver on the requirements.

- Provide details on the project type (e.g., research, short or long-term implementation), key stakeholders, type of cargo, locations, travel, staff time, and timeframe – even if tentative.
- Specify flight distance, and whether for one-direction transport or roundtrip with landing at a remote location.
- It is also wise to ask for the endurance (maximum flight time).

Avoid deeply technical questions that push the limits of intellectual property sharing.

- Drone companies may find it risky to share such information (e.g., system power or electrical load, autopilot used, and location of all air data sensors, antennae, radios, and navigation equipment) before a contract and a Non-Disclosure Agreement (NDA) has been signed. A drone expert can advise on what information may infringe on intellectual property sharing.

Highlight anticipated challenges so the drone company can properly assess their own capabilities and propose viable mitigation strategies.

- Provide details on the geographical operating conditions, including: bodies of water, dense forests, areas of insecurity, wind conditions, altitude, rain, and places with known interference to GPS or radio signal.

Advertise the RFP widely to get a strong pool of applicants.

- Allow at least four weeks for candidates to respond.

Encourage the submission of clarifying questions to make the RFP a two-way conversation.

- Allow at least two weeks for questions to be submitted, then post the anonymized questions and answers publicly.
- The date when the answers would be issued and where they would be posted should be specified in the RFP.
- To minimize bias, once the RFP is open, information shared with one applicant should be shared in the same manner with all applicants.
Consider whether to specify a response format.

• Although a **standardized list of objective evaluation criteria** is needed so that the selection committee can evaluate the bids systematically, there are advantages and disadvantages to specifying the bid format.

• Providing applicants with a response template makes it easier to compare applicants, but allowing applicants to submit in their own format may encourage more applications, especially if the due date is tight.

Weigh the advantages and disadvantages of specifying the budget upfront.

• Providing a ceiling or range will help the drone companies better assess their willingness to engage in the project, but may also lead to companies competing on cost or trying to match the range or ceiling without consideration for feasibility.

• If you do not set a budget ceiling or range, drone companies may present a more realistic budget, but it may exceed the amount of financing available.

If providing a **budget template**, the line items should be general to allow for different types of technology and staffing structures.

• For example, include a line item that says “equipment costs”, but allow applicants to propose what will fall in this category.

Make it easier to compare budgets across applicants.

• Ask for assumptions and what items are covered in each budget line, to spot items that perhaps were missed or not included.

• Ask applicants about complementary funding or pro-bono services that are included in the price to ensure that when you are comparing candidates, it is an apples-to-apples comparison.

• Once a partner has been selected, be prepared to help them develop a more comprehensive and realistic budget to ensure the project’s success.

### Recommended Budget Categories

**Personnel costs**: Number of local and/or international staff, roles, estimated level of effort, and salaries

**Domestic travel**: Transport, accommodations, per diem

**International travel**: Visas, vaccinations, airfare, per diem

**Equipment**: Any costs related to drones, batteries and other hardware and software to be used for the duration of the project, including spare parts or estimated maintenance and repair costs, import and customs fees and taxes

**Other direct costs**: Obtaining flight authorizations, liability insurance, participating in community sensitizations, training local workforce

**Overhead**, if applicable

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**An example of a user-friendly budget template comes from WeRobotics.**
SELECTING A DRONE SERVICE PROVIDER

The selection process should take into account any donor rules or regulations on procurement best practices. Allow ample time, at least four weeks from the application due date to contract signature, potentially longer if in-person evaluation of drone providers is planned. Ensure that you take notes and document the steps and outcomes of the selection process for accountability and learning purposes.

While options may be limited, organizations should do everything to encourage applications and prioritize the selection of drones made in low and middle-income countries.

SUGGESTED 3-STEP PROCESS

1. Pre-selection: Initial review of proposals and flight videos
   - The goal of this first step is to narrow down the pool of candidates; those who do not meet minimum RFP requirements, such as for payload capacity or distance, should be disqualified from the start.
   - Follow up with applicants to clarify the merits of their technology, operational feasibility of their implementation plan, and team experience. This is key as the proposals could contain technical specifications observed in ‘ideal’ or ‘testing’ environments and not in real-world conditions. Standard follow-up questions can be sent to all candidates.
   - Each member of the selection committee should independently score the proposals based on standard merit criteria, but then the group should discuss to reach consensus on a final ranking/score. The group exchange is important since each person/institution alone might not be able to comprehensively assess the proposal.

2. Shortlist evaluation: A more in-depth or second round of review, often for the top two to four ranked candidates
   - This round of review may involve additional institutions, or may involve interviews with the top ranked candidates. The drone expert should be present for all of these discussions to ensure proper ‘translation’ of the technical issues. If interviews are held, this should be stated in the RFP, and interview questions should be standardized across applicants so that evaluations are objective.
   - It is recommended that a drone expert assess the drone technology, the staff, and the business through an in-person visit. This assessment is not just about the drone technology, but also whether the company is capable of conducting the task.
   - If the assessment setting is very different from where the drone will ultimately be used, there will still be limitations to this assessment. If you are evaluating companies with similar capabilities, a key differentiating factor would be if one has proven experience flying in conditions similar to the project location, or if they can go demonstrate their ability to fly at the project location.
   - If the applicant already has proven experience transporting a similar payload and in a similar setting, then references and flight data can be used instead, saving time and money.

3. Final selection: Choose top candidate
   - Ensure a multi-sectoral committee is involved in the final selection of the drone partner, including local stakeholders. For medical cargo drones, it should be comprised of health, supply chain experts, as well as unmanned aviation experts.

A drone leaves Mbandaka, Equateur to deliver vaccines, Democratic Republic of Congo; Credit: Henry Sempangi Sanyulye
**Considerations for your Selection Committee**

**Tips**

- Even if Civil Aviation is represented on the selection committee, an unmanned aviation expert is still recommended as drones are new, even for aviation authorities.

- Ensure the selection committee is familiar with the goals of the project and key requirements of the RFP.

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**A multi-sectoral selection committee with local stakeholders will enhance ownership and engagement.**

- The committee should include a reasonable number of people representing three to five institutions, depending on complementary skills, and be ethnically and geographically diverse.

- Representatives of the National Aviation Authority, MoH, and the Ministry of Defense or Security are highly recommended. Early involvement of all relevant authorities will ensure you are selecting a company that is able to obtain approvals later on.

**Allow experts to evaluate the sections of proposals they are most comfortable with, and knowledgeable about.**

- For example, the MoH may have an opinion about payload capacity, product packaging and cold chain conditions, while Civil Aviation may assess flight safety and drone pilot or operator certifications.

**Content of proposals should remain confidential even after a final drone candidate has been selected.**

- Members of the selection committee should commit in writing to respect the confidentiality of proposals, and proposal files should be placed in a restricted folder marked confidential.

- This is especially important in the nascent and competitive drone industry. Drone companies may have patents pending or may not want competitors to find out about technical features they could then copy.
We recommend **scoring the applications based on merit alone** at the pre-selection phase. Suggested merit criteria appear in the table below. Once a company or drone type has been shortlisted based on merit, consider the budget as some companies – or drone types – may not provide a cost-effective or financially sustainable solution. Note that cost may be negotiable.

### SUGGESTED MERIT CRITERIA FOR PRE-SELECTION

<table>
<thead>
<tr>
<th>Technological capability of the drone platform</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Suggested weight:</strong> 40% of total score</td>
</tr>
</tbody>
</table>

**Key follow-up questions to ask during the shortlist evaluation:**

- How many drones are operating in the fleet?
- Is this drone a prototype or has it been used in similar conditions before?
- How many hours has the whole fleet flown?
- Confirm flight distance possible while carrying a given payload and in actual (not ideal) conditions
- What steps have you taken to reduce the likelihood of radio interference to command links, telemetry links and GNSS?
- What significant accidents have you suffered?

<table>
<thead>
<tr>
<th>SUB-TOPICS TO ASSESS</th>
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<tbody>
<tr>
<td><strong>Categories to compare across applicants:</strong> cargo drone design, payload capacity (weight and volume), one-way flight distance possible (without recharge), power source, autonomous flight, safety mechanisms, communication system (radio, 2G/3G, satellite), weather robustness (rain, wind thresholds), cold chain maintenance, transport of dangerous goods, airworthiness/risk assessment.</td>
</tr>
<tr>
<td><strong>Remember to differentiate criteria by mandatory versus desirable,</strong> as done in the RFP, to ease scoring and eliminate non-compliant proposals.</td>
</tr>
<tr>
<td>Focus on selecting the most appropriate technology for the <strong>local needs and setting.</strong> Think of cost-efficiencies and how you might be able to scale up in the future, including ongoing costs of maintenance, and repairs and ease of adoption of the technology locally. Overly capable drones might not be the answer to your specific needs and might not be sustainable in the long run.</td>
</tr>
</tbody>
</table>

**Consider:**

- Documented **results of prior flights** (speed, range, altitude, weather conditions, etc.), and whether flights were conducted with or without given payload and in ideal or real-world setting.
- **Safety protocols** and features such as a parachute, quad chute, etc.
- **Technologies and procedures** that indicate professionalism – i.e., ADS-B, Digital Elevation Data, Return Home/Lost Link procedures.
- Use of **satellite/relay datalink communications or radio** line of sight.
- **Software and data transmission** mechanism from the flight system.
- **Likelihood of obtaining approvals** from National Aviation Authority, based on presence of safety case, liability insurance, operations and user manual, etc.

A generic example of a **scoring matrix** to help assess technical capabilities is attached. Your own scoring template would depend on the requirements/contract terms outlined in the RFP.

Additional things to watch out for during the selection process are outlined in this WeRobotics Advisory:

[blog.werobotics.org/2019/12/02/safety-advisory-note-on-drone-selection](http://blog.werobotics.org/2019/12/02/safety-advisory-note-on-drone-selection)
Operational plan and feasibility of conducting health product deliveries in the given setting

*Suggested weight: 30% of total score*

Clear, effective and feasible approach to carry out the tasks outlined in the RFP, such as achieving the required flight distance, carrying the required payload capacity, conducting one- or two-way deliveries, maintaining cold chain, or transporting infectious products.

*Consider:*

- **Weight of drone** in-flight, including batteries/fuel.
- Equipment or ground **infrastructure needed** for flight operations in addition to the drone (drone port, catapult, etc.).
- **Required distance** and mechanism for take-off and landing.
- **Power source** (e.g., battery, petrol, solar) feasibility at the designated locations.
- **Packaging and cooling options** for the health products aligned with requirements of the health authorities.
- **Ease of use** and adoption of the technology by local workforce.
- **Communication** between take-off and landing site if operating in an environment without mobile phone/wifi service.
- Plan for how to **recharge the drone**, if the drone needs to stop at intermediary sites before getting to its final destination.
- Commitment to stakeholder and **community engagement**.
- Commitment to **local capacity building** and transfer of skills.
- Plan (and implicitly, cost) for **maintenance and repairs** over time.
- Willingness to provide the necessary **flight and sharable cost data**.

Organizational capability, staff experience, business model, sustainability, and shared values/social mission

*Suggested weight: 30% of total score*

- History of **past or ongoing work** – unless you are planning a research project, always check if the company has delivered a project before. Many drone start-ups are underprepared for low-resource environments or do not have the aviation experience required.
- **Number of staff**, adequacy of team **skillsets**, current capability – consider both **availability and flexibility**, in case timelines shift.
- **Qualifications and experience** of key personnel including drone pilots or operators assigned to project – ask for CVs.
- Prior experience in **humanitarian or health sectors**, or under hardship conditions.
- **Shared values** are important between partners.

*Consider:*

- Business model: Do you want a partner that manages flying operations for you in the future, or do you want to buy the technology and operate it yourselves, or do you want to use a different managed services company? Pricing models and complexities of the relationships will vary greatly.
- Financial viability of the company now and in the future.
- Work references should include a request from at least one previous project; if references will replace an in-person evaluation by a drone expert, ensure at least one reference is provided by an aviation expert.

Budget

Without scoring at the pre-selection phase, check if budget seems reasonable over the proposed project duration for the level of services and quality offered.
An example of a **contract template** from VillageReach is attached; it can be modified based on your organization’s or donor requirements, country of work and type of project.

**Please note: this contract template is solely for informational purposes. Parties seeking to enter into a contractual arrangement should first consult their respective legal counsel.**

Once the selection has been finalized, take the time to thank each applicant and provide tailored feedback – they are still potential future partners.

As you draft a **contract with the drone company**, it is important to agree on intellectual property co-ownership for products developed during the project. In addition, you should decide who will carry liability insurance in case of drone-related incident. Typically, the drone operator will carry such insurance, and therefore, will need to be listed as the operator on any aviation authority paperwork.

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**June 2020**

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