

# *iDrone4Ag youth project*

## Executive summary

- ❖ **No one cares about professional precision agriculture service if it does not hold clear direct value while being easy to use.**

Above is the motto we value the most to provide simplified and affordable aerial imagery services to our communities in Africa.

It is high time to frequently hear about the use of *Drones for agriculture*. Indeed, it is good time for our small-scale farmers to transit from analogue farming to digital farming methods. We at **iDrone Services Limited** believe that *drones* are an instrumental ICT4Ag tool to provide excitement and employment to our rural educated youth. The ***iDrone4Ag youth project*** will create *Green Collar* jobs instead of youth migrating to cities for the hunt of *White Collar* jobs.

The project will enable two youth from each farming community to get practical hands-on training for the commercial operations of small RGB camera drones. The primary focus of the five-day training will be on the use of drones for crop mapping. The youth will also acquire relevant exposure on use of drones for the community welfare surveys, which will bring them regular income even after the crop season is over.

The training is highly simplified and tailored specifically for rural educated youth, who will be encouraged to transfer their drone operation skills to other capable members of their community. **iDrone Services Limited** has significant industrial know-how for training, implementation and support for ***iDrone4Ag youth project*** on a regular committed basis.

## Project information

**iDrone Services Limited** was formed in November 2016 in Choma, a small agriculture town in Southern Province of Zambia. The interest of forming the company came through discussions with local farmers who are hesitant for adapting to the new digital farming methods. For two years we invested and conducted several case studies on *drone imaging* using expensive drones and multispectral sensors. Our study and exposure in Zambia concluded that there are hardly any UAV4Ag solutions, which are designed and marketed for small-and medium-scale farmers. The currently available, expensive crop-mapping solutions are mostly marketed by *Silicon-Valley giants* for corporate data management companies and big agriculture firms. And unfortunately they are not open for peasant farmers.

In the above context, we have passionately organized and equipped our company to train youth and provide efficient and affordable aerial crop-imaging services to farmers for implementing variable rate technology (VRT) to reduce expensive crop inputs and to improve their yield.

Our ***iDrone4Ag youth project*** goal is to improve agriculture by optimizing crop inputs. We achieve this by training educated rural youth on efficient farm data management by providing simple and reliable crop aerial imaging services to small- and medium-scale farmers for taking wise and actionable decisions.

Lot has been said and almost every week there is an article on improving agriculture by using Drones or Remote Pilot Aircraft System (RPAS)...but again these solutions may be well for *corporate farmers* who can afford the expensive mapping systems and data processing software. Hence, there is need for an efficient and affordable solution for our rural African farmers.

IF YOU CAN USE A SMART PHONE YOU CAN FLY AN IDRONE  
SIMPLE TECH

RESULT FROM A \$200 DRONE VS RESULT FROM A \$20,000 MULTI-SPECTRAL DRONE

INDUSTRIAL DRONE THE APPROPRIATE ICT-UAV4AG TECHNOLOGY

iDRONE MANUAL FIELD ZONES TO IMPLEMENT VRT

TO MAKE A SIGNIFICANT COST SAVING AND IMPROVE YIELD, THE TECHNOLOGY THAT ANSWERS OUR AFRICAN QUESTIONS, IN AN AFFORDABLE & SCALABLE MANNER.

WHAT WORKS IN LOS ANGELES MAY NOT WORK IN LAGOS, WHAT WORKS IN ATHENS MAY NOT WORK IN ACCRA.

INSTEAD OF WHITE COLLAR JOBS, THE TIME IS RIPE FOR OUR EDUCATED RURAL YOUTH TO GET GREEN COLLAR JOBS.

FOR SMALL- AND MEDIUM-SCALE FARMS

NO ONE CARES ABOUT PRO SERVICE IF IT DOES NOT HOLD CLEAR DIRECT VALUE WHILE BEING EASY TO USE.

UAV4Ag

ICT4A

**iDrone Services Limited** in Zambia propose to offer training to rural educated youth, who can fly small drones to *just capture the birds eye view* (HD & 4K resolution images). We then interpret these images for farmers to make it an actionable data to implement variable rate applications to optimize, reduce crop inputs by 30% and increase yield.

### Our Mission

iDrone Services, improves the efficiency and productivity of farms by empowering growers with unprecedented agronomic knowledge, timely intelligence, and situational awareness of their crops. By providing drone-enabled imagery collection and analytic services, we deliver key information to make informed crop management decisions. We stay on the cutting edge of UAS and precision agriculture technology so our growers don't have to. As it adjusts and changes over time, our goal is to stay ahead of the curve and bring our growers with us.

### Why Drone/UAV/UAS/RPAS?

Drone technology is quickly disrupting traditional means of technologies, which we were using till now. Drones are non-piloted but controlled aerial vehicle. Recently, people have started building and using drones to carry out surveying of huge farm fields, for delivery of goods across difficult terrains, to survey and count livestock, for search and rescue operations, for monitoring pipeline faults, for commercial photography and aerial film production. Before this Tech start-up, iDrone directors and team has acquired the below knowledge base, skills and understanding;

- Remote Piloting skills on manual and autonomous drone flying
- Knowledge base on multi-spectral sensor mapping applications
- Processing Orthomosaics and NDVI-GIS imagery
- NIR mapping and crop stress data interpretation
- Implementation techniques on Variable Rate Technology (VRT)

### Business Overview

Aerial mapping is about taking pictures of ground from an elevated position. Platforms currently in use for aerial photography include plane, helicopters, drones, balloons, mounted poles on a vehicle, etc. Drone business opportunities pays off well if executed strategically. Air-borne Agronomy is all about capturing and measuring crop status using RPAS for better crop data management.

We intend and wish to scale up *iDrone4Ag youth project* in all the provinces and communities of Zambia in the future. Below is the brief training program and the ROI tabulation for a clear understanding on the viability of the project.

Five-day intensive training course for:

**Use of Drones for Agriculture and Community Development**

|  |
|--|
| Day1: Introduction to Industrial Drones and ZCAA regulations for commercial compliance |
| Day2: Agriculture crop mapping algorithms, processing and farm data management         |
| Day3: Remote pilot drone operations and aerial surveying techniques                    |
| Day4: Practical demonstrations for iDrone4Ag youth project and manual piloting skills  |
| Day5: Individual Test flights. Aerial image calibration and Data interpretations       |

**iDrone Services Limited** has professional capacity and Zambia Civil Aviation Authority (ZCAA) ROC licenses to conduct the RC pilot training and operate RPAS in a commercial environment. Our classroom, equipment and flight training ground are conducive for professional drone pilot training.

**Return of Investment, ROI for iDrone4Ag Youth Project in ZMW**

|                                    |                 |   |                 |
|------------------------------------|-----------------|---|-----------------|
| Weeks in Farming Season            | 20              | <u>Fixed costs (per year per drone)</u> |                 |
| Flying Days per Week               | 3               | People per Drone                        | 2               |
| Total Flying Days per Season       | 60              | Work Hours per Day                      | 8               |
|                                    |                 | Days Per Week                           | 5               |
| <u>REVENUES (Per Drone)</u>        |                 | Wage per Hour                           | K5              |
| Charge per Hectare                 | K10             | Wages for the season                    | K8,000          |
| Fixed Charge per Flight            | K250            | Drone kit Purchase                      | K15,000         |
| Avg Field Size in Hectares         | 25              | Training                                | K5,000          |
| Flights per Day                    | 5               | ZCAA Compliance                         | K3,500          |
| Hectares to Fly per Day            | 125             | Sales & Marketing                       | K700            |
| Revenues per Day per Drone         | K2,500          | Insurance                               | K500            |
| Revenues per Season per Drone      | <b>K150,000</b> | Overhead costs                          | K2,000          |
|                                    |                 | Total annual fixed costs                | <b>K34,700</b>  |
| <u>Transport &amp; Subsistence</u> |                 |   |                 |
| Avg. Kms Driven per Flying Day     | 30              | <b>Total Costs per Season</b>           | <b>K44,900</b>  |
| Cost per Km                        | K5              |   |                 |
| Mileage Costs per Flying Day       | K150            | <b>Total Profit per Season</b>          | <b>K105,100</b> |
| Other Variable Costs               | K20             | (1 US\$ =~10 ZMW)                       | USD10,510       |
| Variable Costs per Season          | <b>K10,200</b>  | <b>ROI</b>                              | <b>134%</b>     |

The goal of *iDrone4Ag youth project* is to increase crop yield of small-scale farmers, co-operatives and community farms. This is possible by the regular transfer of skills to the youth who will share and multiply to more youth from their respective communities. In effect the out come of this project will help retain the youth to work in rural farm areas instead of migrating to cities.

Apart from training and implementing **Drones for Agriculture** to the educated youth this project also intends to expose our youth for the use of drone surveys for their own community utility purposes. For example: Land boundaries, sewage, water use & waste management and also for other general Boma/Council surveys.

*Investing in job creation for young people in Africa.*

*"ICT4Ag is a game changer in agricultural transformation in Africa, and young ICT4Ag entrepreneurs are making a difference for smallholder producers,"*  
*said CTA Director Michael Hailu.*

**Technical Centre for Agricultural and Rural Cooperation, CTA is our partner organisation to promote and develop Drones for Agriculture in Zambia.**