UNLOCKING THE POTENTIAL OF SMALL-SCALE FARMERS IN AFRICA USING SPACE TECHNOLOGIES

A pathway to enhancing Precision Agriculture for Food Security and Poverty Alleviation

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Locate Limited Whatever, Whenever, Wherever Presented By:

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THE COMPANY

LocateIT Ltd is a Geo-ICT company that offers unmatched cutting-edge Space and Geomatics driven products, services and solutions.

All the Space and Geomatics You Need



mission

to provide highly sophisticated yet simple location-based ICT products and services that positively **impact** society

vision

to be a premier company that <u>transforms</u> communities in Africa through provision of innovative Geo-ICT solutions



WHAT WE OFFER:

Space-driven products & services
Geomatics products & services
Integrated Geo-ICT solutions
Environmental and developmental modeling services
(Climate change, REDD+, Land degradation, Suitability modelling for socio-economic planning & development,

LULC change mapping & prediction, Early warning systems for food security & disasters, Monitoring & Evaluation services, etc)

OVERVIEW OF AGRICULTURE IN AFRICA



- Agriculture is the least digitized sector in Africa yet it accounts for the largest portion of Africa's GDP
- Small-scale farmers constitute about 96% of the total population (Farming on less than 1/2 hectares of land)
- SDG 2 seeks to end hunger, achieve food security, improve nutrition and promote sustainable agriculture
- Space technologies are playing a fundamental role in supporting the growth of the African economy and boosting the global food and agricultural production



Majority of small-scale farmers have weak linkages and little or no access to information and external inputs

Advanced technologies are prohibitive to small-scale farmers due to cost.

Q: Are current PA technologies feasible in Africa?



APPLICATION OF SPACE TECHNOLOGIES IN AGRICULTURE



Risk Management System for insurance purposes: climatic indexes/parameters across geographical areas used as variables for insurance policies

Locate

- Precision Agriculture and Precision Livestock
- Early warning and response systems
- Drought monitoring
- ➢Irrigation management
- Biodiversity protection

PRECISION AGRICULTURE FOR SMALLHOLDER FARMERS IN AFRICA



- Precision farming originally developed for large farming units
- Precision agriculture is about optimizing returns on inputs while optimizing resources.
- Management concept based on sensing, measuring and assessment
- Precision farming enables farmers to determine the state of their crops and other variables needed for optimum crop production using satellites and their sensors to monitor land.

Small v/s large farm Precision Agriculture Small Farm PA Large Farm (Farm, Watershed,... Focus) PA Wind Erosion (Individual Field Focus) an Chemicals oil Erosion Runoff 1000 Terrain Leaching Leaching Leaching Soils Yield ----Potassium 3-dimension ----Flows / 22 Cycles CIR Image Interconnected Perspective Isolated Perspective

Precision Agriculture Focus:



- Crop monitoring: ie. crop condition assessments using NDVI
- Production estimates: early season crop acreage estimation to support timely production forecasts
- Yield Estimation: Crop-specific growth parameters to support improved crop yield forecasts
- Early warning eg. Soil moisture mapping to monitor both extremes (drought & flooding)
- Disaster mapping: assessing the damage extent



Problem = Knowledge Poverty + Small scale farms + low inputs



County Agricultural Management Information System (CAMIS)



Farmer-centric agriculture information management platform.

Ecosystem of tools and information services that enable real time stakeholders connectivity and 360degree situation awareness of the full Food Production cycle.

Unified data flow of food production - enable stakeholders reliably forecast pre and in-season crop production as well as trace food production system.

Manage the Production Cycle

Locate 1



Tea Farms, Nandi County, KENYA (Pleiades Satellite, November 2017)

Carlo a

the tomput



Joel Amaya Humphrey Ndengu

Benard Karioki Otieno

Peter Ot

Ofs Festo Lwal

Olando Washington

Jane Oneya

Sella Atsetse

-1 . .

Samuel Odinga

Antony Makabila

Olando Washingtone

wale



As A farmer, I can...



Opt-in to CAMIS

camis RGU#30218977#Juma#Abdala Salim#male

> Dear Juma, you've been registered with CAMIS. You can add your farms by sending farm details via SMS like this: [camis RGF#your id#size#place name#type]. For example, RGF#30218977#3.5#N-GONG ROAD#commercial.

Add my farms

camis RGF#30218977#4.1#Malaba Kwhisero#subsitence

> Farm registered successfuly. The farm code is: Juma/ 9770 Use this code to add he crops you're planting in this farm by sending SMS with the crop details. For example, [camis RGC#Juma/9770#BEANS#-MAIN#LONG#1.6]

> > 19:12 Safaricom

add my crops via SMS or USSD

camis RGC#Juma/ 9770#BEANS#MAIN#-LONG#1.6

19:13 Safaricom

Crop registered successfully. You can update crop details later.

19:13 Safaricom



More capabilities...



WAY FORWARD



- Develop Decision Support Systems(DSS) to provide site specific fertilizer requirements
- Investment in data (creation, compilation, analysis)
- Crowd-sourcing: Farmers can be a good source of information
- Increased access to fertilizers and credit (adoption of modern production practices)
- Investment in rural infrastructure and people-centered development (gaps in infrastructure ie. scarcity of roads, market centers can cause agricultural systems to fail or influence post-harvest losses.
- Innovative services and products

WAY FORWARD



Call for partnerships with other agriculture industry players

- Geo-ICT
- □ Insurance
- □ Micro-finance institutions,
- □ Agro-chemical stores
- □ Spin-off Technology companies

Together Let's Feed the Future ...