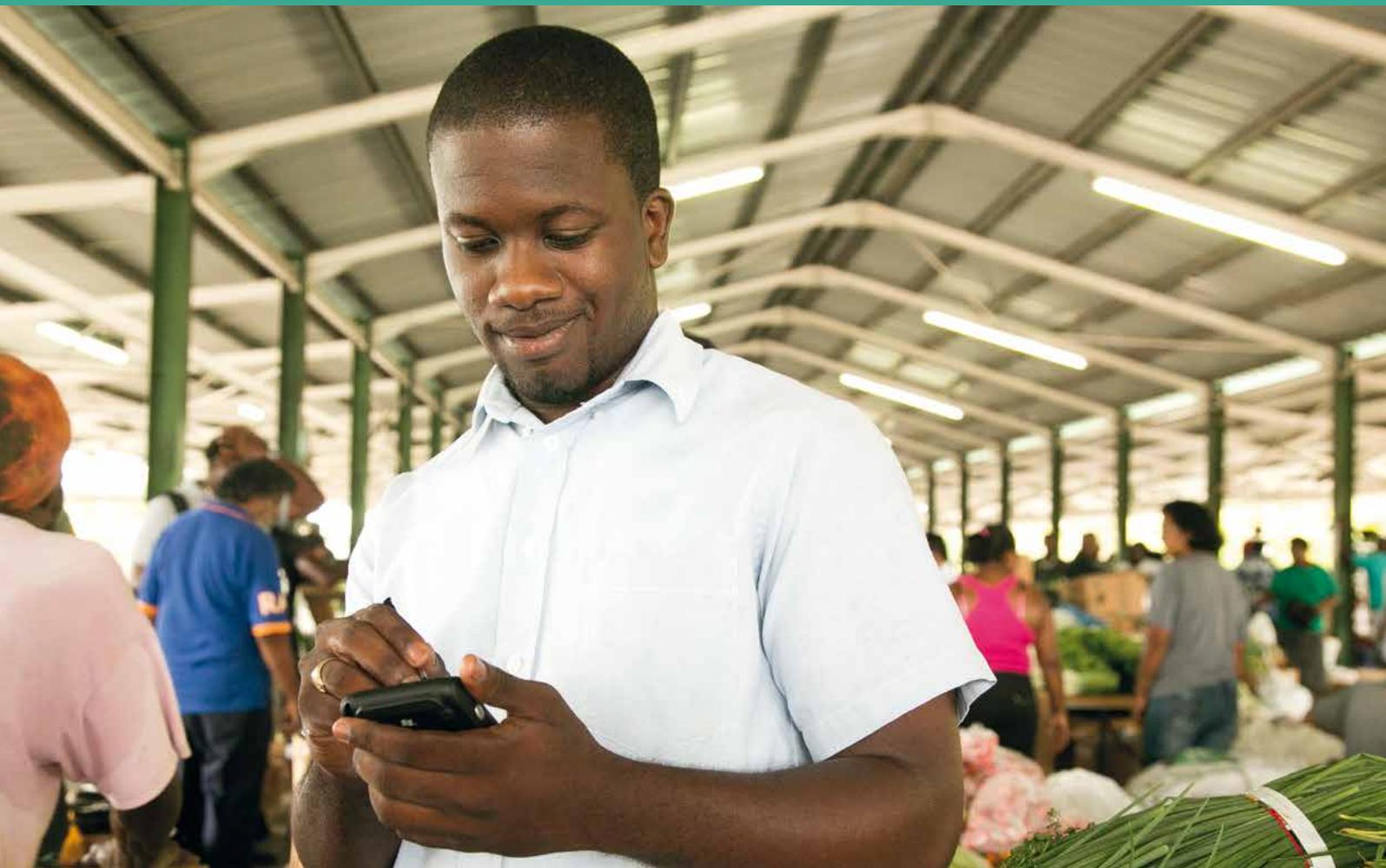




# INNOVATE FOR AGRICULTURE

Young ICT entrepreneurs overcoming  
challenges and transforming agriculture



*“The young innovators featured in this publication are role models who can inspire others and encourage them to innovate for agriculture. Their stories are a testimony of how young people are already contributing to transforming agricultural value chains through their innovations.”*

**Michael Hailu,  
CTA Director**

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Interviews were done mid 2015 and most figures relate to the situation of the services offered by the innovators at that time. For more updated information, please contact the innovators.

To the best of our knowledge, the information contained in this booklet is accurate and reliable at the time of its writing. However, CTA does not assume any liability whatsoever for the accuracy and completeness of it.



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# TABLE OF CONTENTS

5 FOREWORD  
**Transforming agriculture through  
innovations**

6 INTRODUCTION  
**“You just have to start”**

8 CHAPTER 1  
**Production**

36 CHAPTER 2  
**Access to finance**

52 CHAPTER 3  
**Trading, markets, and consumption**

84 CHAPTER 4  
**Overcoming challenges: What young  
entrepreneurs recommend**

93 KEY INITIATIVES

# 20 YOUNG ICT ENTREPRENEURS

INNOVATING ALONG THE AGRICULTURAL VALUE CHAIN



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**Innovate for agriculture**  
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# Transforming agriculture through innovations

The Sustainable Development Goals (SDGs) that the United Nations adopted in September 2015 urge all stakeholders to take necessary actions to end hunger (Goal 1), double agricultural productivity of small-scale food producers by 2030 (Goal 2, Target 2.3) and promote policies that support entrepreneurship (Goal 8, Target 8.3).

Increasing the productivity and sustainability of agriculture depends, to a large degree, on engaging young people in the sector, drawing on their energy and innovations. This publication, put together by CTA's Agriculture, Rural Development and Youth in the Information Society (ARDYIS) project, in collaboration with Ashoka, shows how this might be achieved.

The booklet presents 20 ICT-enabled entrepreneurial ventures created by young innovators from African and Caribbean countries. The innovations feature the use of mobile phones, social media, websites and a new generation of tractors. Services offered target various segments and facilities along the agricultural value chain, from pre-production to production, financing, marketing, trade and consumption.

The case studies offer analyses, by the young entrepreneurs themselves, of the factors that triggered them to start the initiatives, the challenges they faced and the strategies they put in place to overcome them. Through their stories, the young

entrepreneurs provide useful advice to other young people who might be interested in ICT-enabled agro-entrepreneurship.

Although the ventures presented are still in early stages of development, they already demonstrate successes. Many innovators have launched their companies after winning competitions, or have been acknowledged as successful endeavours and benefited from programmes including CTA's AgriHack Talent initiative and Plug & Play events. Several of them already reach thousands of farmers, young and old. Almost all innovations presented have been tested for at least 2 years.

The young innovators featured in this publication are role models who can inspire others and encourage them to innovate for agriculture. Their stories are a testimony of how young people are already contributing to transforming agricultural value chains through their innovations. They demonstrate that these types of efforts can contribute to increasing employment, and fostering food and nutrition security. A key message that comes out from these stories is the need for all stakeholders to develop holistic strategies that can build youth agribusiness capacities and advance this novel type of agro-entrepreneurship.

I warmly congratulate the changemakers presented in this booklet.

**Michael Hailu**  
CTA Director

## “You just have to start”

**A**gricultural value chains may vary from crop to crop and country to country, but they do have at least one thing in common: they are complex. Because agriculture has many moving pieces and numerous interconnected stakeholders, it takes a nuanced understanding and an innovative mind to begin transforming what has been broken into something that brings better livelihoods for all.

The young agro-entrepreneurs featured in the following pages bring together these complementary qualities. Their solutions come from years of observing missed opportunities and listening to what farming communities want. In many cases, these founders are from the very smallholder farming communities that they seek to help – and so they draw inspiration and drive from parents and grandparents back at home.

These agro-entrepreneurs have intimate knowledge of farmers’ day-to-day lives, but they also bring their experiences with emerging technologies, accompanied by visions for a different agricultural value chain. As David Thomas of D’Market Movers explains: “If you spend a day or two trying to solve a problem, you can lose your crop. If you could ask for advice and get a response in real time – maybe in an hour – that can make the difference between a profit or loss.”

Saving a little bit of time makes a world of difference in agriculture, where farmers race against the clock. When it comes to building a more efficient and equitable value

chain, the potential impact of information communication technologies (ICTs) is more than incremental; it’s catalytic.

Young agro-entrepreneurs are tackling some of the value chain’s biggest challenges, using ICT to improve access to information and inputs, finance and markets for smallholder farmers across the developing world. How are they doing it?

Many are using the speed of ICT to put information into the hands of those who need it most. Take Farmerline, for example, which sends automated, daily SMS messages from extension officers in order to walk thousands of farmers through best practices for cultivation. Edyn, too, is using smart, wireless sensors to decrease water consumption by up to 30%. For farming communities, which often do not have access to the latest research or technological innovation, these technologies are transforming the possibilities for urban-rural, government-village, and researcher-farmer communication.

Other agro-entrepreneurs are taking advantage of high mobile phone penetration to create new ways to connect the rural farmer to the bank. Ensibuuko’s mobile co-banking platform, for example, works with Uganda’s saving societies to facilitate financial access to more than 40,000 rural farmers and encourage a culture of trust. Musoni Services similarly has been pioneering cloud-based microfinance, integrating SMS messaging and mobile money to streamline operations and enable broader financial inclusion for 60,000 farming clients across

East Africa. Traditional finance systems require credit scores, urban centres, and collateral that are out of reach for most smallholder farmers, but these innovative ICTs provide solutions that are changing the game and reducing rural communities' endemic cycles of poverty.

Young changemakers are also creating platforms that allow rural farmers to better connect with their urban consumers, improving incomes and nutrition. Mkulima Young has re-engaged more than 60,000 young people in agriculture by making markets accessible through an online platform, and connecting the next generation of farmers to insights and each other. tech4farmers runs a digital commodity exchange and warehouse receipt system, where farmers can not only sell their products, but also access market intelligence, warehouse locations, and transport services to increase their income by up to 80%. There has been a rural-urban disconnect that privileged opportunistic middlemen but now technology allows for a direct connection, seeding the beginnings of new producer-consumer relationships.

If ICT is the silver bullet to the agricultural value chain, then why is it not more readily used?

“While everyone is using the same platform, each organisation is at a different stage of using technology,” Cameron Goldie-Scot of Musoni Services explains. “It’s a journey, and it’s one that people slowly introduce over time but that we’re always trying to speed up.”

As Cameron describes it, the agricultural community’s adoption of technology follows a particular path. It’s not just a straight transition from zero to one hundred. “You can have the greatest technology in the world, but the key is the relationships – really understanding farmers’ needs and requirements and their



**Young agro-entrepreneurs bring their experiences with emerging technologies, accompanied by visions for a different agricultural value chain.**

© CTA

business. Technology can improve the efficiency of that model, and it can cut out a lot of the bureaucracy, but technology only gets you so far. It’s about the skills of the team on the ground, and the operational practices and measures that you’ve put in place. That’s why it’s not just a case of flicking a switch. It’s about carefully integrating it into the organisations that use it.”

The agricultural sector has not yet fully integrated ICT technology, but we’re already starting to see the impact of innovative ICTs, and the results are becoming catalytic.

Here are the stories of more than 20 innovators from nine countries (other innovators are mentioned in the *Key Initiatives*, plus information about how to connect with them. As Peris Bosire, co-founder of FarmDrive says, “You’re always going to have limited resources and tricky challenges. You just have to start.” ■



© Neil Palmer/CIAT

Across many ACP countries, farming communities struggle to gain access to the information that could boost productivity.

# Production

**Agro-entrepreneurs are using the speed of ICT to put information into the hands of those who most need it**

Across many ACP countries, farming communities struggle to gain access to the information that could boost productivity. For some farmers, this means not knowing about the latest advances in scientific research or technological innovations that would increase their yields with minimal additional cost. However, the majority is often disadvantaged by a fundamental lack of awareness about which crops are available, and how they are best cultivated.

This gap is especially prominent in rural areas, where the combination of limited education and connectivity make outside communication difficult. Ministries of Agriculture around the world employ extension officers who are responsible for filling this gap, but they do not always have strong lines of communication with research institutions and are often severely outnumbered.

Several young changemakers are using ICT tools to connect smallholder farmers to extension officers so that they can access basic information about cultivation: Farmerline sends automated, daily SMS messages from extension officers in order to walk farmers' through best practices in cultivation; SavaNet uses audio conference platforms, podcasts, and SMS messaging to streamline Q&As; M-shamba offers farmers

SMS connections to extension officers, local services, and online marketplaces; and CropGuard is building a mobile app that will help farmers access research and extension services that are specifically related to pest control.

Other social innovators are using the power of ICT to make old technologies 'smart'. Edyn is a smart, wireless sensor that measures soil and agro-climatic conditions, and then automatically notifies farmers when they need to take action. Hello Tractor has retrofitted old tractors so that farmers can request their services via SMS, while owners can track their location and productivity.

Animal husbandry is also ripe for innovation, and agro-entrepreneurs are using ICT to increase yield for small producers of livestock. DARAL Technologies tags cattle with trackable nose rings to prevent disease epidemics and discourage theft, avoiding losses that amounts to millions of dollars. ESSEX LTD (formerly Retronics) is developing an egg incubator that simulates natural conditions to increase production six-fold.

Agro-entrepreneurs are radically improving rural livelihoods by creating channels for more effective expert-farmer communication, empowering farmers with 'smart' technologies, and innovating in livestock production.

## STORY 1

# Farmerline — One message a day

## Daily SMS messages spread farming best practices to tens of thousands

 **ALLOYSIUS  
ATTAH**

 Ghana  
 <http://farmerline.org/>  
 Farmerline  
 @farmerline  
 Alloysius Attah

### PROBLEM

*“I’ve seen her struggle to access the market. I’ve seen her lose fertiliser and seeds because she didn’t know how to read the weather.”*

A young man in Ghana, Alloysius grew up watching the challenges his aunt faced as a small-scale farmer. “I’ve seen her struggle to access the market. I’ve seen her lose fertiliser and seeds because she didn’t know how to read the weather,” he attests. “All these things are happening to her which, somehow, affects the amount of money she makes from her farming venture.”

Alloysius met his co-founder Emmanuel, who had faced similar experiences growing up and realised the need and opportunity to provide access to critical information about cultivation best practices across Ghanaian villages. Access to this information is highly valued by farmers because it affects income earned and their immediate families.

In Ghana, like many other countries across the continent, government extension officers are responsible for providing agricultural information to farmers. “Each extension officer has to work with about 2,000 farmers,” Alloysius explains. “And because there is always a very low budget, the officers aren’t able to travel to these villages as often as they are supposed to.”

### SOLUTION

*“Basically, we provide timely and accurate agricultural information to small-scale farmers and we also help food companies and businesses to better manage small-scale farmers in a very cost-efficient way.”*

The natural first step in improving information access was to provide information to those who needed it: the farmers. Farmerline works with a variety of farmers, including fish farmers who need to heavily monitor the diets of their fish. “Because the farmers feed the fish three times a



Farmerline provides timely and accurate agricultural information to small-scale farmers.

day, we send them information in the morning, afternoon, and evening.” This reminds them to pour a certain amount of feed into the water three times a day.

These reminders are not only timely, but they are also provided in the local language to increase usability. In doing so, Farmerline streamlines and lowers the cost of the information transfer process, easing the workload of the extension officers.

Farmers are not the only customers Farmerline caters to. Alloysius explains how the Farmerline business model also helps to lower costs for institutional partners. “Basically, we provide timely and accurate agricultural information to small-scale farmers and we also help food companies and businesses to better manage small-scale farmers in a very cost-efficient way,” he says.

## IMPACT

*“50% increase in income because the extension officers are able to send timely and accurate information to farmers in a language that they understand.”*

As one of the first organisations to send out informative agricultural SMS messages, Alloysius refers to Farmerline as a pioneer in West Africa. The platform is not only leading the field, but is also generating tremendous returns for its farmers. “There is a 50% increase in income because extension officers are able to send timely and accurate information to fish farmers in a language that they understand.” Fish are a staple in the Ghanaian diet. The potential economic impact of Farmerline is huge.

Because agricultural products are widely consumed by the general public, Farmerline wants to make sure that farmers are getting

the most amount of money for their products. For example, Alloysius explains that fish should reach their maximum potential size before being sold so that farmers can earn more. In using Farmerline’s platform, fish farmers can provide the right amount of feed to grow the fish to their highest potential and generate a greater revenue.

Alloysius continues proudly, “You see a lot of stories about some of the farmers who have used our services and the impact that they’ve seen.” One such success story is Appiah Kubi’s — a small-scale farmer, husband, and father of seven. With Farmerline’s approach, Appiah has increased his earned income and scaled his production. He can now pay for his children’s school fees, including those of his son Joseph, who dreams of becoming a doctor. By increasing farmers’ production, Farmerline is improving incomes that support better lives for farmers’ loved ones.

## BUSINESS MODEL

*“They pay us for training and also access to information for their farmers because their interest is making sure that these farmers do well.”*

To maintain its success, the Farmerline team is working towards improved sustainability. “90% of our revenue comes from the food companies, exporters, the big buyers, the businesses that are working with farmers,” Alloysius explains. Instead of charging the farmers for access to information, Farmerline derives revenue from the businesses that want their supplier farmers to succeed.

Such a model has resonated with many key players in the value chain. Alloysius describes “All these guys are our clients because they pay us to train and send information to their farmers. They want to make sure that their



**50%**

**increase in income  
for farmers who  
use Farmerline’s  
services**



## Access to credits and loans would drive an immense transformation throughout the agricultural sector, helping smallholder farmers increase their income”

farmers do well by increasing yield and quality.” Farmerline’s creative business model aligns farmers’ interests with that of other value chain stakeholders, ensuring that increased value for one improves income for the other.

Down the line, Alloysius hopes that farmers will be both their customers and users. “I would like to see farmers who are entrepreneurial and are willing to pay for such services because they see the value in it,” he explains.

### ON THE HORIZON

*“There’s a lot of opportunity down there for MFIs to give credit facilitated to farmers.”*

While Farmerline focuses on access to information, Alloysius believes a huge area for growth lies in farmers’ access to finances. “There’s a lot of opportunity lying down there for MFIs (microfinance institutions) to give credit to farmers to help them get their inputs by the start of the season,” he describes. “Some of the farmers have a lot of land, but they are just not able to cultivate it all because they don’t have the funding to be able to do it at the beginning of the season.” Access to credits and loans would drive an immense transformation throughout the agricultural sector, helping smallholder farmers increase their income.

### LESSONS LEARNED

*“When I started Farmerline, another definition of success came up. It was trying to support people — not giving them money directly, but by helping them be stable in their work.”*

When he began, Alloysius saw many challenges in the agricultural sector that he wanted to tackle. Since Farmerline, Alloysius says he now sees success beyond just making money. “When I started Farmerline, another definition of success came up. It was trying to support people — not giving them money directly, but by helping them be stable in their work.” As Farmerline continues to touch farmers and their families, its founders have seen the significance in providing capacity building, knowledge sharing and value-added technological solutions to communities.

Moreover, Alloysius now appreciates the concept of entrepreneurship: “I didn’t even know entrepreneurs existed when we started. It was just us being foolish and stupid enough to think that we are able to achieve our hearts’ desires — that is helping our families and making a small change in our communities.” Now that he identifies as an entrepreneur, he sees the incredible impact such a mindset can have in transforming value chains around the world. ■

#### HOW TO PARTNER

For partnership inquiries, contact Alloysius Attah at [alloysiusattah@gmail.com](mailto:alloysiusattah@gmail.com)

#### COLLABORATION WITH CTA

Farmerline has been involved in CTA’s Plug & Play events in Kigali, 2013 and Arusha, 2014. CTA is partnering with Farmerline for the Apps4Ag Learning Opportunities.

## STORY 2

# SavaNet — Q&A at the speed of light

## Audio conference platforms, podcasts, and SMS transform farming communities

### PROBLEM

*“If we want to develop sustainable food and cash crop value chains, we need to develop vibrant young farmer networks.”*

In Ghana, the farmer population is aging. Many young people are not interested in agriculture because they do not see it as a sustainable livelihood. Ghana’s vast and fertile agriculture land is therefore underutilised. Its farmers are not able to engage the most recent ICT innovations and other technologies to maximise their yield.

“We went to the field one day,” Moses recalls from when he was working with the US development agency, USAID. “We were looking for large quantities of maize, rice and soybeans for a company in our value chain. It was impossible. Most farmers were working on less than 1 ha in a production season. I also couldn’t help noticing how old they all were.”

Moses remembers hearing the farmers talk about their challenges — most of them a yield of less than 10 bags (50 kg). This was a result of poor access to farming innovations and a growing decline in the engagement of young people in the farming sector. “That’s when it hit me,” he adds. “If we want to develop maize, soya bean, and rice value chains, we need to develop vibrant young farmer networks.”



© Karen Kasmauski/Corbis

**Ayaniga Atimbea, member of a women savings club in Ghana, is raising goats to provide an income for her family.**

### SOLUTION

*“The platforms build innovative ways for farmers to connect with both agricultural experts and fellow farmers to obtain up-to-date information about farming.”*

To build these vibrant young farmer networks, SavaNet integrates ICT innovations into its agricultural extension services, market access, and the dissemination of agriculture research findings. In doing so, the platforms created offer an innovative way for farmers to connect

**MOSES  
NGANWANI TIA**

-  Ghana
-  [www.savanet.org](http://www.savanet.org)
-  Savannah Young Farmers Network - SavaNet-Ghana
-  @Sava\_Net
-  Moses Nganwani Tia

with both agricultural experts and fellow farmers, obtaining up-to-date information about farming.

To improve agricultural extension services, SavaNet provides an audio conferencing platform where farmers can call in to get the latest information about their agriculture production. Traditionally, meetings would be held in-person, so farmers would have to leave their farms to attend the sessions. With this dial-in platform, the farmers are able to take the phone call from anywhere: home, the market, or on the farm. In addition to the audio conference platform, SavaNet has a podcast series focused on topics that directly benefit farmers. SavaNet also has an agricultural GPS data service for farmers who want to better understand the geography of their farms.

In addition, SavaNet works to improve farmers' market access by providing market prices through SMS. In collaboration with the Ministry of Food and Agriculture, SavaNet aggregates early morning prices from local markets, and then sends them to interested farmers via SMS. In doing so, farmers can be sure to get the best prices instead of being cheated by unfair middlemen or bargaining shoppers.

To ensure that all of these services stay current, SavaNet works closely with Ghanaian research institutions like CSIR (Council for Scientific and Industrial Research) and SARI (Savanna Agricultural Research Institute) to disseminate relevant research to farmers. Always finding new techniques, varieties, and strategies for improving crop yield, these research institutions have valuable information for farmers — but prior to SavaNet's interventions they had no reliable way to get the information to those

who need it. Now, SavaNet ensures that these findings are disseminated through its innovative ICT4Ag innovations; so that farmers have the most up-to-date information to inform their practices.

### IMPACT

*“Through SavaNet, he obtained technological and agribusiness support services, connected with the government's block farming initiative and won the 2014 best regional maize farmer award.”*

In 2014, SavaNet worked with 5,222 farmers, who largely engaged in food crop, ruminant, and poultry production. Most of SavaNet's farmers use the audio conferencing extension service as they see it as a one-stop-shop to all their agriculture information needs. Many farmers also listen to SavaNet's regular podcast as well as access its GPS services.

But who are these farmers? And what does their engagement mean? The majority of the SavaNet farmers are between 15-35 years of age, and about 75% are male. As SavaNet expands its food and cash crop value chains, these demographics are expected to balance. SavaNet's engagement with young farmers has led to the formation of primary, secondary and tertiary farmer groups at the community, district and regional level. These organised farmer groups are contributing immensely in actively engaging young people in farming as a business and to provide a sustainable livelihood.

Moses shares the success story of a young farmer who joined the SavaNet platform in 2012. He had previously migrated to the south to do menial jobs. Disappointed, he returned to his farming community with a renewed



**5,222**

farmers worked  
with SavaNet in  
2014

interest in taking to farming as a business. Under SavaNet's innovative young people in agriculture development initiatives, he received the much needed technological and agribusiness support service, as well as technical assistance from the government's block farming project. He increased his income exponentially and, in 2014, won the best regional maize farmer award. His story marks the incredible impact that SavaNet is making on young people, re-engaging them with farming.

### BUSINESS MODEL

*“Commercial farming under nucleus and outgrower schemes as well as farmer group financing.”*

SavaNet's operations are centred on a farmer network-funded model, whereby the farmer groups support the venture. Its commercial farming, under nucleus and outgrower schemes, also supports the organisation's business operations. “They support the work we do,” Moses shares. SavaNet uses a membership, cost-sharing model whereby farmer groups pay group levies for the services the organisation provides. Because SavaNet is also supported by grants and other philanthropic partners, the farmer groups' levies are subsidised so that the fees are affordable.

### WHAT'S NEXT

*“We'll continue to work with more farmers each season, such that by next year, we'll be working with 15,000 farmers – 15,000 young farmers.”*

Over the next few years, Moses sees SavaNet expanding rapidly. “We'll continue to work with more farmers each season. By next year, we'll be working with 15,000 farmers – 15,000 young farmers.” Moses has high hopes for this next cohort, with dreams to create more



**Organised farmer groups are contributing immensely in actively engaging young people in farming as a business and to provide a sustainable livelihood”**

young farmer groups who can offer support and encouragement to each other. “I think if other young people see their peers re-engaging in farming, they'll join them. The best way for us to get young people involved in agriculture is to highlight the young people who are already in agriculture.” ■

#### HOW TO PARTNER

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#### COLLABORATION WITH CTA

SavaNet has been involved in various workshops and conferences organised by CTA; has won the 2014 “Family Farming” category” prize for Youth in Agriculture Blog Competition (YoBloCo Awards) and has been regularly interacting with CTA's ARDYIS network since 2010.

## STORY 3

# M-shamba — Three-in-one

## SMS connects farmers to agronomic information and local services



© Calvin Okello

M-shamba bridges the information gap between research institutions and smallholder farmers.

 CALVINCE OKELLO

 Kenya  
 [www.mshamba.net](http://www.mshamba.net)  
 M-Shamba  
 @MshambaKE  
 Calvin Okello

### PROBLEM

*“It hit me that there was a communication gap between farmers and traders in various parts of the country.”*

“I remember we were watching the 7 pm news,” Calvin begins. “They were saying that there was extreme hunger in the eastern part of the country and, at the same time, there were extreme harvests in the western part of the country; in fact crops were rotting. That’s when it hit me that there was a communication gap between farmers and traders in various parts of the country.”

Growing up in a farming village, Calvin has seen how this communication gap persists. “My grandmother used to grow one particular crop every year,” he shares. “It was only maize and she would mix it with beans. She would refuse even to use the fertiliser on the farm because she believed that fertiliser would deplete soil.” While his grandmother continued to grow crops that were brought by the missionaries and colonialists, well-established research institutes were discovering and creating new varieties of crops, fertilisers, and technologies every day and she never knew.

“That’s why M-shamba was created,” Calvin explains. “To bridge this information gap between research institutions and smallholder farmers so that they are able to learn how to grow new crops effectively, learn how to adapt to various climate change issues, and adapt to new technologies. That’s why we got started.”

### SOLUTION

*“M-shamba provides three services to farmers: how to grow a particular crop, who the service providers are in your area, and market access.”*

“In a nutshell, M-shamba provides three services to farmers,” Calvin states. “One, you get to know how to grow a particular crop, from land preparation to production, to harvesting, to harvest handling and, if possible, value addition.

Two, you are able to know who the service providers are in your area for input, transport, or extension services. Three, you are able to post your product for sale and query the product price in your location.” All of these services are available via SMS mobile app, USSD (unstructured supplementary service data), and the M-shamba web platform.

M-shamba begins by identifying a new group of farmers who would like to access its services. “Because of the logistical issues we work with farmer groups or we group the farmers in a particular location, so we can go to that area and do mapping.” After identifying the location, M-shamba takes a lot of time to collect and structure all of the data necessary to provide these services: local service providers, extension officer locations, expatriates’ advice, research institutions’ current knowledge, local supermarkets and business and, of course, the farmers’ basic information.

With all of the data collected, M-shamba then shows the farmers how to search for local services and prices. The platform automatically sends this information to their mobile device. M-shamba’s location-based services are particularly useful because they are more specific than providing the city/town, which could have an overwhelming number of options. “Once we take them through all this then, depending on the date, they have indicated they are planting, the system now automatically walks them through the crop life-cycle based on expert advice.” If a farmer wants more specialised, personalised attention, however, they are able to search for local extension officers and get the numbers of both government and young, private experts who will be able to assist them.

## IMPACT

*“Since 2012, M-shamba has grown to provide services to 15,000 farmers with 3,400 vendors.”*

Since 2012, M-shamba has grown to provide services to 15,000 farmers. Together with its partnerships with universities and major supermarket brands, the platform has trained more than 7,000 farmers in a new rice technology and enabled 2,480 transactions between buyers and sellers. But it doesn’t stop there – in 2015, M-shamba is set to work with more than 25,000 farmers, many of whom are producing sorghum.

## BUSINESS MODEL

*“We realised SMS is a powerful tool, and there are many service providers who would like to be in contact with farmers.”*

Thanks to lots of brainstorming and using frameworks such as the Business Model Canvas (a business management and entrepreneurial tool), M-shamba has reached financial sustainability. “It was a long journey,” Calvince reflects. “And we learned it quite late... But now we are financially sustainable and a little profitable.”

“We realised that SMS is a powerful tool, and there are many service providers who would like to be in contact with farmers,” says Calvince. They pay an annual fee between US\$ 8-15 depending on the service and population density of the areas. “We also receive a transaction fee from the financial institutions that are directly connected to our farmers.”

M-shamba has also introduced a cashless order and delivery system for farmers and traders. With this system, a farmer can easily order for an input via SMS and pay using mobile money when the



**2,480**

**transactions  
between buyers  
and sellers  
enabled by  
M-shamba**

“

**When we empower traders with this kind of money, then they are able to go out and buy more from the farmer and then sell more, because they are now able to move to different locations. This will, in time, benefit the farmer”**

commodity is delivered. Likewise, traders are also able to order and pay for the farmers’ produce on delivery. This platform will improve convenience and efficiency among farmers and traders.

In addition, individual farmers pay an annual subscription of US\$5 for the services; organisations working with farmers can opt to either pay for an annual licence fee or sponsor their farmers to access M-shamba’s services. M-shamba provides these organisations with an interactive tool that improves how they interact with farmers and are able to get feedback from these farmers in real time, which greatly improves service delivery to farmers and eventually farmers’ productivity.

With all these services, M-shamba has invested more on its communication infrastructure and is already generating revenue, hoping to break-even by 2016.

#### WHAT’S NEXT

*“We aim to make M-shamba a one-stop shop for every farming need in the country.”*

“We aim to make M-shamba a one-stop shop for every farming need in the country,” Calvince says matter-of-factly. “We want to be involved

in the most valuable services to the farmers — planting, harvesting, distributing, transporting, selling, we want to bridge the communication gaps effectively.” With services across the entire value chain, M-shamba would be able to encourage and facilitate young people’s engagement in the sector.

M-shamba is interested in empowering every agent in the supply chain to transform the sector. Its next project involves creating investment funds for traders. Why the traders? “When we empower them with this kind of money, then they are able to go out and buy more from the farmer and then sell more, because they are now able to move to different locations. This will, in time, benefit the farmer.”

With this full picture of the value chain, Calvince has numerous ideas about what M-shamba will pursue in the next few years. “The opportunities are so, so many in the agricultural sector in Kenya,” he exclaims. “We can’t explore them all now. There is just too much.”

And now we have set our eyes in other African nations. By the year 2017, they hope to be active in two other African states. ■

#### HOW TO PARTNER

For partnerships, please contact Calvince Okello at [calvomondi@gmail.com](mailto:calvomondi@gmail.com).

#### COLLABORATION WITH CTA

M-shamba has been involved in CTA’s Plug & Play event during the CTA International Conference ICT4Ag in Kigali, 2013.

## STORY 4

# CropGuard — Pests no more

## Mobile app unlocks pest management

### PROBLEM

*“There is a real urgency in the agricultural sector around pest control. There are complaints from farmers, and the research shows that this is a growing problem.”*

Troy and Mortimer met through their farmers’ cooperative, a collective of farmers, agriculturalists, and businessmen innovating new solutions to entrenched agricultural problems. They formed a team around the CTA AgriHack Caribbean competition to combat one of the collective’s main challenges: pest control.

While it may not be the most exciting agricultural issue, pest management has been a struggle for both farmers and researchers for decades. “There is really an urgency in the agricultural sector,” Troy shares. “There are complaints from farmers, and the research shows that this is a growing problem.” The collective includes farmers working in the very rural areas of Barbados that are extremely vulnerable to environmental challenges. With such economic instability, the threat posed by tiny creatures is enormous — pests can wipe out an entire crop in a matter of days leaving rural, smallholder farmers with no other income options.

### SOLUTION

*“We connect government administrators, extension services, and research with the farmers who need the information the most.”*

Enter CropGuard, a mobile app designed to help farmers protect against pests. The app aggregates information about pest management into one database that farmers can access by asking questions. “It’s a knowledge management system,” Troy explains. “We connect government administrators, extension services, and research with the farmers who need the information the



© CTA

**CropGuard is a mobile app designed to help farmers protect against pests.**

 TROY WEEKES AND MORTIMER SEALE

 Barbados  
 <http://cropguard.addisalemcoop.com/>  
 CropGuard  
 @cropguardtweets  
 Troy Weekes



70%

of the cooperative members are farmers

most.” The database even includes information from the entomology and pathology departments within the Ministry of Agriculture.

Farmers can use the app to diagnose their pest problem — by searching the database, using the app to get a visual diagnosis, or submitting a photo to an attending extension officer all via a web-dashboard. Instead of wasting precious time waiting for a response, the farmer is able to get a quick solution for how to deal with their problem. “We’re establishing a real-time channel,” Troy continues. “The extension officer can see what the farmer is seeing and offer much better help in solving the issue.”

### IMPACT

*100 farmers have tested the app thus far. “They’ve verified the initial idea and are giving feedback on the prototypes, along with the extension officers.”*

Though still in the development stage — the app is yet young with only six months of prototyping — CropGuard is already getting very positive feedback from both farmers and specialists. “The Head of Extension Services in the Ministry of Agriculture was very impressed,” Troy shares. “In our first presentation, he mentioned that the app presented tremendous insight into the challenges extension officers

face, and that he could see how this real-time information would dramatically improve their service to farmers. We were ecstatic.” A researcher from McGill University also saw the app at a convention and gave it “tremendous compliments,” Troy says humbly. “He said it was the most outstanding, most innovative display.”

The app has not only received great feedback, but the CropGuard team has also made sure that its development process is responsive to this feedback. “At least 70% of the cooperative members are actually farmers,” Troy explains, referencing the 100 farmers who have tested the app thus far. “They have verified the initial idea and are giving feedback on the prototypes, along with the extension officers.” CropGuard has presented to the Ministry of Agriculture, in addition to an organic farmer group and pest control group. “That’s our philosophy of development,” Troy adds. “It’s really important to us that we engage all the different stakeholder groups to get their input from the beginning.”

### BUSINESS MODEL

*“We need to figure out how to convert that value into a sustainable revenue model.”*

Still in its pilot phase, CropGuard is currently financed by external stakeholders who see its immense potential. While the focus is on developing the app, the team is also using this pilot period to test market demand for its services. “Every interaction is valuable to the person that’s using the platform, whether it’s the farmer or the researcher. We need to figure out how to convert that value into a sustainable revenue model.”

### WHAT’S NEXT

*“We’re developing an open data API so other developers and systems can connect to our data; the possibilities are endless.”*



**We’re developing an open data API (application programming interface) so other developers and systems can connect to our data. The possibilities are endless, and we want to keep all our options open”**

While continuing to hone its initial concept into a strong product, getting user feedback has also opened up other opportunities the CropGuard team would have never originally imagined. “We were approached by a teacher who was so excited by the app because she saw it as an educational tool for her students,” Troy shares. The students had seen the app at a convention and were now recalling the names of the crops because the platform was so engaging. “She was beaming with excitement,” he remembers. “It was incredible — we had never thought of using the app as an interactive game before and, suddenly, this teacher was sharing this whole other usage that could have tremendous impact on the engagement of young people in the sector.”

The educational quiz idea is just one of many that CropGuard is thinking of pursuing in the next few years. The team is also intrigued by the possibility of using the app for research tools, such as tracking temporal distributions of pest infestations country-wide. Data opens up countless opportunities and the team is making sure it can quickly adjust. “We’re developing an open data API (application programming interface) so other developers and systems can connect to our data,” Mortimer adds, noting the resulting potential in revenue models. “The possibilities are endless, and we want to keep all of our options open.”

Geographic expansion is also top of their mind as CropGuard considers testing its language capability in Jamaica and Suriname. “Eventually, we hope to go worldwide, at least in regions with similar climate zones,” Troy says smiling. “But first, we’ve got to get our product right.”

## ON THE HORIZON

*“We want to be able to see how our products can function together. We want to offer a more comprehensive solution.”*

“We are really stuck on information and data,” Troy reflects. “We need to increase access so that farmers can be empowered by this knowledge.” Take the example of excess produce in the market — if farmers knew how much they were overgrowing, they would better be able to adjust their production to match market demand.

Beyond farmers’ access to information, Troy believes there is immense potential for a collaboration network with other developers. “We want to be able to see how our products can function together,” he explains. “We want to offer a more comprehensive solution.” The network he imagines connects developers from different fields — transportation, agriculture, and education. “We want to learn from them, and we think they can learn from us. Let’s build a network for such cross-fertilisation.” ■

### HOW TO PARTNER

For partnerships, please contact [info@addisalemcoop.com](mailto:info@addisalemcoop.com)

### COLLABORATION WITH CTA

CropGuard is a winner (1st runner-up) of the CTA AgriHack Talent programme organised in the Caribbean in 2014. Apart from the cash prize they won, they have incubated for several months in partnership with the National Council for Science and Technology (Government of Barbados) and the company Wi-Connect Mobile and will benefit from other networking opportunities.

## STORY 5

# Edyn — Move over smart phones

## SMART sensors measure soil health and send alerts

 JASON ARAMBURU

 United States,  
Dominican heritage

 <https://edyn.com/>

 Edyn

 @EdynGarden

 Jason Aramburu

### PROBLEM

*“The commercial agricultural moisture sensors and soil sensors were really expensive and they were also really antiquated technology. It felt like living in the Dark Ages.”*

Like many transformational technologies, Edyn\* started as a solution for one organisation — but then became a platform for many. “I actually built the first prototypes that became Edyn when I was in the field with re:char working in western Kenya,” Jason shared. His first organisation, re:char, needed a tool that would collect soil data so that the team could compare

the effect of their biofertiliser to that of others. They have had a hard time finding something that suited their needs.

The existing technologies were not quite right. “The commercial agricultural moisture sensors and soil sensors were really expensive and they were also really antiquated technology. They needed us to buy an old PC because they didn’t have USB connectivity or wireless connectivity. It felt like living in the Dark Ages.”

Dissatisfied with what the market had to offer, the re:char team decided to make their own. “We started experimenting with very simple, programmable microcontrollers and ended up building the first prototypes — mainly for our own internal use, just to keep track of these different trials. We then started getting a lot of interest from both farmers as well as agricultural NGOs in the area who said, ‘I have to keep track of field trials as well. I’m interested in this.’ And that was sort of how it was born.”

### SOLUTION

*“Edyn is a smart sensor, a smart wireless sensor that measures soil moisture, soil nutrition, temperature, humidity and light, and streams all that data to the cloud.”*

“Edyn is a smart sensor, a smart wireless sensor that measures soil moisture, soil nutrition,



© Edyn

Edyn is a solar-powered device that sends all the collected information to a server.

temperature, humidity and light, and streams all that data to the cloud,” Jason shares. “It’s a solar-powered device and sends all the collected information to our server. We process it and send data and recommendations to the user’s smartphone. We provide insights and guidance to farmers and small gardeners about how to improve their crop yield while using fewer resources.”

Once a farmer has the device, she places it in the soil where it will get sun. She connects it to the internet using her smartphone app and then, from there, all the interaction happens on her mobile device. When she’s interested in learning about the status of her crops, she can view the Edyn dashboard and get data on soil and weather conditions, as well as recommendations tailored to her specific crops. Moreover, when her crops need attention, Edyn will send her push notifications with the information that she needs to respond to: soil moisture is low, soil nutrition is low, etc.

Because this visual dashboard is so crucial, Edyn is currently available only on Android and iOS. “We feel that the user gets the best experience when they have a graphical interface. They get the richest data and the richest information.”

When asked why they don’t use SMS technology, Jason puts it simply: “You can’t look at the dominant technology today and build for that because, with hardware, the cycle time is really long. It really takes two years, at least, from idea to production to get a hardware product out there and manufactured so you really have to look 2 to 3 years down the line. We’ve seen how quickly the Android smartphone is being adopted in Africa and in the developing world. We really feel like it’s going to be the dominant platform for connecting people to the internet around the world.”

## IMPACT

*“There’s a theoretical potential to reduce water consumption by 50% without impacting yield.”*

Edyn just sent out its first shipments of sensors earlier this year — a total of 3,200 devices to 2,300 consumers worldwide. “Our next production run is going to be about 13,500 devices and that’s when we’ll start to shift manufacturing over to China, where we can get the absolute best price on the hardware,” Jason explains. With a focus on home gardeners in the US and Europe and larger farms in the developing world, about 225 of the 3,200 devices are being sent to African commercial farmers.

Despite its pilot stage, Edyn has proved that its potential is astronomical. With its smart technology and automation, Edyn is able to reduce water consumption without impacting yield. “We’ve demonstrated up to 30%,” says Jason. “But there’s a theoretical potential to reduce water consumption by 50%.”

How is this possible? “Many growers rely on very inexact data collection methods. If you ask a lot of serious farmers: how do you know how much water you’re using for irrigation, they’ll reply ‘Well, I do the finger test. I stick my finger in the ground and see if it’s wet.’ The reality is you can’t tell the difference between say 70% or 80% water by using your finger. That could make a huge difference for your crops and for your water consumption.” With lower water consumption, Edyn helps farmers lower their costs, while also creating a more environmentally sustainable sector.

## BUSINESS MODEL

*“We wanted to launch with as large of an order as possible so we could get our cost down, really drive down the bill of materials.”*

To fund the initial product development, Edyn used the online, crowdfunding platform Kickstarter. “With hardware, there’s a huge economy of scale. In hardware, we call it the “BOM”, the bill of materials, that’s the cost of the actual device to manufacture,” Jason explains. “We wanted to launch with as large of an order as possible so we could get our cost down, really drive down the BOM — and we thought Kickstarter was the best place to get that high volume order.”

Each Edyn sensor is US\$100, so the target audience for those who can afford such a price is home gardeners in the US and Europe and larger, commercial farms in developing countries. “Home users are one of the fastest growing agricultural markets,” Jason explains. “There are huge efficiencies in home and domestic agriculture.” For those in developing countries, “We are really targeting ten+ acres commercial farmers... who typically will farm half of their land for cash crops, and a quarter to half of their land for value-added crops to use in their own households or sell locally.”

As much as Edyn would like to support smallholder farmers, Jason adds, “These individuals are very cost-constrained and have a lot of other challenges.” Ultimately, Edyn — in its current form — is just not meant for them.

### WHAT'S NEXT

*“As far as we know, this is the largest attempt to capture and quantify soil and agricultural data, to date.”*

To further improve water efficiency, Edyn is currently developing the Edyn Water Value — an automated irrigation controller farmers can use to automate and control the irrigation of their crops remotely. “In addition to being a

convenience, the system also saves significant amounts of water because it’s actually giving your plants the right amount of water that they need at the right time of day,” Jason adds. The value is just tremendous.

With all of these sensors transmitting data to the Edyn server, Jason also imagines that Edyn can become a place to capture trends in both existing and emerging agricultural markets. “We have data from all over the world in our database and we’re able to quickly visualise and analyse trends. So we can look at that data by geographic location, or by crop, and see how someone growing kale in Kenya compares to someone growing kale in their backyard in San Francisco. We can see what techniques they are using that differ and also how they’re adapting to weather conditions that differ in those different regions. The data visualisation potential is really exciting. As far as we know, this is the largest attempt to capture and quantify soil and agricultural data, to date.”

### ON THE HORIZON

*“To really foster innovation and grow new ideas, the traditional funding structures need to change.”*

In Jason’s mind, two fields are going to grow exponentially within the next five years: ICT and biofertilisers. “We have seen small cases, like the Smallholders Foundation in Nigeria, where a small bit of information about how to use resources more efficiently on the farm can have a massive impact. The potential of the smartphone to dramatically increase the bandwidth and the size of that pipe of information is incredible... and I think it will lead to an exponential increase in agricultural productivity.”

As environmental and economic sustainability begin to align, as well, Jason believes biofertilisers

will become invaluable. “They are more attuned to the soil, much more affordable than chemical fertilisers, and don’t have the same environmental impact. I think the space is going to grow dramatically.”

The potential for the sector transformation is tremendous but Jason believes the traditional funding structures are going to have to shift for any of these innovative solutions to truly emerge. “The traditional funding sources for agricultural development have used the same models for 50 years. They don’t really support innovation, rather they support the continued growth of existing solutions. To really foster innovation and grow new ideas, that system needs to change.” Jason looks to Silicon Valley for inspiration: “New ideas are funded all the time and maybe 99 out of 100 fail, but the success of one out of 100 makes up for all the failures. I think that’s really the only model that works with innovation and I think it’s a model that will hopefully be increasingly adopted in the development and agricultural space as well.”

## LESSONS LEARNED

*“If I could go back in time, I probably would have read every business book I could get my hands on.”*

In the face of such exciting opportunities and large financial hurdles, how can a young person navigate the agro-entrepreneurship space? Jason recommends going down the grant funding route: “Investors are hesitant to invest without really seeing a path to liquidity or to an exit. But if you’re a young innovator, there are grant funding sources that will provide small amounts of seed capital to demonstrate your viability.”

Especially for those hardware-based solutions, Jason also suggests expanding your user base. “It’s really in your interest to think as big as

possible and create as wide a market for your solution or product as possible. Don’t limit in any way because, if you limit it, it obviously won’t be as big.”

For any entrepreneur, whether in the agricultural space or not, Jason advocates for more business savvy. “If I could have been a little more business-minded and a little — well, not a little less idealistic — still idealistic, but also just thought about building, growing and sustaining a business. I think that’s really important... Whether you’re a non-profit or a for-profit, it’s still a company, it’s still a venture. I’ve had to learn all of that by experience. But, if I could go back in time, I probably would have read every business book I could get my hands on.” ■

### HOW TO PARTNER

For partnerships, please contact [jason@re-char.com](mailto:jason@re-char.com).

### COLLABORATION WITH CTA

Jason was elected as an Ashoka Fellow in 2013 for his work on a prior venture, re:char. See Jason’s Ashoka profile to learn more about the ingenuity, passion, and vision for the sector that propelled his invitation into the Ashoka network.

\* Though Edyn does not focus on smallholder farmers in ACP countries, the tremendous value of its innovation in soil nutrition tracking and water conservation is unparalleled. As an experienced Ashoka Fellow, Jason’s insights into the sectoral challenges for agro-entrepreneurs are immensely valuable to any aspiring innovator in the space.



50%

the theoretical potential for water reduction when using Edyn

## STORY 6

# Hello Tractor — Tractors get ‘SMART’

## Bringing the shared economy to Nigeria with connected tractors



JEHIEL OLIVER

United States,  
Trinidadian heritage  
www.hellotractor.com  
@HelloTractor  
Jehiel Oliver

### PROBLEM

*“Most farmers lack the technology to turn their land into a highly productive asset. Without tractors, farmers under-cultivate, plant late, and lose income.”*

After a 5 year stint in investment banking, Jehiel went into consulting to improve the lives of those at the base of the pyramid. “I was always interested in... providing opportunities to marginalised communities,” he explains. Little did he know that his passion would take him to Nigeria.

Jehiel conceived the early vision of Hello Tractor — a means of bringing high-cost inputs to low-income farmers — while researching value chain investing in The Philippines. “When policies protecting farmers from financial risks don’t exist, it makes it very difficult for farmers to access financing, which

means it’s very difficult for them to invest in value-added inputs,” he explains. “I just saw an opportunity to fill this gap by getting tractors to smallholder farmers in a way that was affordable and convenient.” Jehiel was not only thinking about smallholder farmers, he also believed that, by creating opportunities for a more reliable income, this scheme would mitigate risks associated with agriculture for banks.

Why Nigeria? “Nigeria has one of the largest inventories of uncultivated farmland on earth. More than half of the population identify as farmers, but most lack the technology to turn their land into a highly productive asset. Currently only 4% of the country’s demand for tractors is being met, leading farmers to under-cultivate, plant late and lose income.”

### SOLUTION

*“Instead of giving someone a grant to buy one tractor, you could make a smart investment into a platform that can deliver a sizable amount of impact for a fairly small amount of money. By engaging local banks, we are further leveraging this investment to amplify impact.”*

Hello Tractor created a Smart Tractor that is low-cost, versatile and designed specifically for small plots of land. Retrofitted with telematix and GPS, the tractors are also

“

**Nigeria has one of the largest inventories of uncultivated farmland on earth. More than half of the population identify as farmers, but most lack the technology to turn their land into a highly productive asset”**

trackable so operators can know their exact location. The company sells the Smart Tractor to individuals who can deliver the tractors when farmers text into Hello Tractor's virtual cloud. Hello Tractor then pings the service provider and the machine is delivered in less than two weeks. With this highly efficient scheme, Hello Tractor provides a service that is 40 times faster than manual labour and 1/3 the cost.

To make sure the tractors are community-led and community-owned, the company pairs this innovative technology with innovative financing, working with banks and investors to support farmers becoming tractor owners themselves. As such, the Smart Tractors become a means of improving livelihoods for everyone involved — the farmers and the tractor owners — changing the nature of rural opportunities.

## IMPACT

*"We're looking to impact 22,500 farmer beneficiaries in our first year. On a household level, we want to impact 148,500 household beneficiaries in total. And we want to save those households a total of US\$2.8 million."*

Though about only a year old, Hello Tractor has already convinced the market. "In our first year, we have already confirmed orders for 300 Smart Tractors," he shares. The company has not only had thriving sales, but their predictions of community-level impact are also tremendous. "That's going to affect 300 individual owners and increase their income by that multiple of five times the daily wage rate, after servicing the Smart Tractor loan," he adds. "In turn, those 300 owners will impact 22,500 farmer beneficiaries who are texting to request the Smart Tractor service. On a household level,



© Jehiel Oliver/Hello Tractor

**Demonstration of Hello Tractor in Nigeria, where currently only 4% of the country's demand for tractors is being met.**

that's 148,500 household beneficiaries in total, saving approximately US\$2.8 million in land preparation costs."

Jehiel explains how the model illustrates the multiplying effect. "You can see how you can really multiply your impact by focusing on simply reducing the cost of labour for farmers, by introducing affordable tractor services." Hello Tractor has made the transactions between the banks and farmers not only easier, but also more profitable. Jehiel believes the company has the potential to achieve five year growth numbers in under two years because of the popularity of these tractors.

## BUSINESS MODEL

*"The more tractors we sell and the more transactions we clear, the more profitable we are, and the faster we can grow."*



**Most importantly, the farmers benefit from affordable tractor services that allow them to overcome the labor constraints that are limiting their production and income”**

The Hello Tractor model relies on the alignment of interest among its stakeholders: Smart Tractor owners, financial institutions, and smallholder farmers. Smart Tractors are priced at \$3500, and Hello Tractor helps facilitate loans, so that buyers can access different financing options. Banks love this arrangement because they can collateralise the loan with the Smart Tractor, so the farmer becomes a much less risky investment. The company also works with impact investors who see this as an opportunity to “deliver a sizable amount of impact, on a sustainable basis for a fairly small amount of money,” Jehiel explains.

Most importantly, the farmers benefit from affordable tractor services that allow them to overcome the labor constraints that are limiting their production and income.

“For us,” Jehiel adds, “the more tractors we sell and the more transactions we clear, the more profitable we are, and the faster we can grow. It’s just combining all those interests.” Hello Tractor’s model allows everyone to be more profitable: banks receive new loan customers, owners increase markets, and farmers reduce their production costs.

Indeed, with such a focus on incentive alignment, Hello Tractor has cultivated the following strategic partnerships to aid in this effort:

- Public and private agriculture industry stakeholders: those with large networks of organised and vetted farmers who value and can directly benefit from Hello Tractor products (PropCom, Notore Chemical Industries Ltd., Nigerian Agricultural Cooperative Organisation, USAID MARKETS, and the Business Innovation Facility).
- Development finance institutions and commercial banks: those who offer affordable financing packages suitable for customers at both ends of the double-sided market. Affordable financing is paramount in getting Smart Tractors into the hands of smallholder farmers. (Central Bank of Nigeria, Bank of Agriculture, Fortis Microfinance Bank, USAID DCA).
- Development and multilateral institutions: those who provide both grant and in-kind support to accelerate product development, testing, demos and sales (USAID, IFAD).
- Logistics companies: assisting with product distribution, spare parts proliferation and the development of a network of trained technicians (Habgito Nig Ltd.).

#### ON THE HORIZON

*“The way we align our interests with that group is by providing them with an opportunity to buy a smart tractor, sending it to their village community, and allowing them to monitor their investment over our mobile app or our web platform.”*

As Hello Tractor looks to the future, they are looking beyond Nigeria’s borders — to the continent and beyond. “I think it’s a viable,

attractive enough business model to bring to sub-Saharan Africa where the challenges are even greater,” he shares. With the stakeholder alignment, the possibilities seem endless.

Indeed, the company is also thinking of engaging the Nigerian diaspora. “We’re looking to tap into that US\$21 billion remittance market for Nigerians in the diaspora. These are folks who have both capital and relationships,” he says. “The way we align our interests with that group is by providing them with an opportunity to buy a smart tractor, sending it to their village community and allowing them to monitor their investment over our mobile app or our web platform.”

The connection between stakeholders is what Jehiel believes will be the key to sustainability and scalability for Hello Tractor. “I think, when you do that, you position yourself well for sustainability and scalability.” When there is scalability, there is the possibility of becoming a truly transformative force. For Hello Tractor, this means addressing a market needing 750,000 additional tractors to be on par with global farm mechanisation standards.

## LESSONS LEARNED

*“You can see how you can really multiply your impact by focusing on one stage or one activity. If you pick the right activity, you can deliver a significant amount of impact.”*

Jehiel has a strong appreciation for technology in the agricultural sector. He sees it as a driver for business, as well as a way to incentivise young people to make business exciting and productive. “When you introduce technology, agriculture becomes more attractive to young people. These are people who want to make money and, without technology, it’s difficult,”

Jehiel explains. He sees technology as a way to keep young people on the farms by making agriculture profitable and attractive.

To any young entrepreneur going into the innovation side of the sector, he advises focus: “You can see how you can really multiply your impact by focusing on one stage or one activity. If you pick the right activity, you can deliver a significant amount of impact.” ■



**148,500**

**household  
beneficiaries  
save US\$2.8  
million in land  
preparation costs**

## HOW TO PARTNER

- Public and private agriculture industry stakeholders with networks of organised, vetted farmers
- Development finance institutions and commercial banks
- Development and multilateral institutions interested in grant and in-kind support to accelerate development of the product

For more information, please contact Martha Haile at [martha@hellotractor.com](mailto:martha@hellotractor.com).

## STORY 7

# DARAL Technologies — Nose rings for traceability

## Cattle tracking prevents disease epidemic and theft



AMADOU SOW

Senegal

daraltechnologies

Amadou Sow

### PROBLEM

*“Millions of CFA francs were lost to equine disease and caused by cattle theft.”*

Amadou has always strived to benefit those with less. “My ardent desire to take on challenges were always close to my heart,” he says. As a tradesman, himself, who had worked in different parts of the food production industry, he knew firsthand the challenges associated with the agricultural sector.

He was particularly struck by the enormous losses of livestock due to disease and conflict: “Millions of CFA francs were lost to equine disease and caused by cattle theft,” he explains, citing Ministry sources. “This happens all over Africa,” he adds. “Sometimes, this results in deadly fights between ethnic groups.”

Amadou sought to learn as much as he could and, while taking a computer science class, he realised that ICT had the power to benefit all development activities. “I immediately asked myself why not create something with this tool to help our compatriots with the problems they are confronted with,” he explains. “How can ICT aid our compatriots against the failures that result in enormous losses in their sectors?”

For Amadou, DARAL Technologies represents another step in his lifelong journey — “I would say that DARAL is a child’s dream that I am in the process of realising,” he shares. It has not been easy, but his dedication to his mission has never wavered.

### SOLUTION

*DARAL supports farmers in the fight against livestock illness and theft.*



A national register of farmers and livestock will ensure reliable and continuous statistics in the industry.

With their determination, Amadou and his team have turned DARAL Technologies into the place to improve livestock situations. DARAL has built a system that supports farmers in the fight against livestock illness and theft, by allowing them to identify and trace their cattle herds. DARAL inserts a trackable nose ring into each of the cattle in a herd, so that different stakeholders in the value chain can communicate through SMS alerts and notifications — for example, knowing when different herds have moved from place to place. In this way, DARAL has been tailored for individuals or organisations that are looking to buy or sell livestock, and has allowed them to secure their transactions.

## IMPACT

*“DARAL’s alert system helped prevent the risks of proliferation and sales of infected meat on the market. Lives were saved and, at least once, a catastrophe was avoided.”*

Though still in its pilot phase, DARAL is already working with 10 villages in southern Senegal, a total of 2,553 farmers. “And this number grows every week,” says Mansour Fall, Amadou’s deputy. DARAL is also starting to gain traction in the field, with partners such as the Ministry of Agriculture promoting and adopting the nose ring technology in its herds.

Besides all of the impressive pilot statistics, Mansour cites a third, but no less important impact of the system: the unity that DARAL brings to the farmers who are now centred on a common platform. “The government — specifically the Ministry of Agriculture — no longer faces a multitude of disparate movements and associations,” he shares. “Now they have a single interface with the world of farming.”

But what does all of this mean? Better communication allows for faster, more integrated approaches to farming. “When five cows died after having been bitten by a rabid dog,” Mansour describes, “DARAL’s alert system helped prevent the risks of proliferation and sales of infected meat on the market. Lives were saved and a catastrophe was avoided.” In such situations, DARAL’s ability to trace sources prevents mass panic, economic loss, and even death.

## BUSINESS MODEL

*“The new business model would allow DARAL to offer its services to agricultural insurance companies.”*

DARAL Technologies is currently funded by support from the Fonds de Développement du Service Universel des Télécommunications (FDSUT), an innovation fund created by the Senegalese telecom regulator. With the end of those funds approaching, the company is currently searching for new external financing for the short-term, and is amidst development of a new business model for the long-term.

Thinking about the different actors in the space, Mansour shares their vision for the next few years: “The new business model would allow DARAL to offer its services to agricultural insurance companies. In exchange, DARAL would place nose rings and deliver membership cards to farmers.”

## WHAT’S NEXT

*“We are in the process of creating a national register of farmers as well as the livestock to ensure reliable and continuous statistics in the industry.”*

While building up a business model to ensure sustainability, Amadou is thinking big about



**The young leaders of projects should arm themselves with courage, humility, objectivity and perseverance. Courage will lead you to a decision. Humility because sometimes people will underestimate you. Objectivity, and perseverance, for without it we rarely achieve the results we are looking for”**

the company’s future: “We are in the process of creating a national register of farmers and livestock to ensure reliable and continuous statistics in the industry,” he shares. “ This will allow the government good political protection for the sector, including the ability to intervene when needed with speed.”

Amadou also has high hopes to better engage the country’s young people, offering them work opportunities across the the sector. Accordingly, he is also looking for ways to expand DARAL through the whole value chain, and throughout the whole country.

#### LESSONS LEARNED

*Young leaders and innovators should be full of humility and perseverance.*

The story of DARAL Technologies is one of perseverance and immense dedication. Amadou took a big risk when he started DARAL, investing all of his savings and living on US\$0.50 /day for the last five years. He stresses the importance of courage,

citing his own decision to leave his lucrative business and devote himself wholeheartedly to DARAL.

“At one point, I had a choice between two things: returning to Mauritania and continuing my business to provide for my needs and that of my first suitor for marriage, or pursuing this project until it succeeded.” Undoubtedly the harder road, Amadou made a choice and has not looked back since.

“To the young leaders of projects, I would ask them to arm themselves with courage, humility, objectivity and perseverance,” he shares. “Courage that will lead you to a decision. Humility because sometimes people will underestimate you. Objectivity, and perseverance, for without it we rarely achieve the results we are looking for.” ■

#### HOW TO PARTNER

For partnerships, please contact Amadou Sow at [sow.amadou78@yahoo.fr](mailto:sow.amadou78@yahoo.fr)

#### COLLABORATION WITH CTA

A partner of Daral Technologies took part in CTA’s Plug & Play event during the CTA International Conference ICT4Ag in Kigali, 2013 as well in other activities in 2015.

## STORY 8

# ESSEX LTD (Retronics) — Young tenacity

## Technology entrepreneurs model Egg Incubator

### PROBLEM

*“We were facing an impossible job market and few other options.”*

ESSEX LTD (previously Retronics) really grew out of a shared experience of unemployment, where Hilary, his co-founders, and other university friends were facing an impossible job market and few other options. So they created their own. “Among our current team of six, four of us shared the same class: electrical engineering,” Hilary shares. “That’s when we came up with this idea of creating products ourselves. We thought, we have the knowledge of the hardware and writing the software — we can design our own hardware to create better solutions!” Low and behold, ESSEX LTD was born.

### SOLUTION

*“We have the knowledge of the hardware and writing the software — we can design our own hardware to create better solutions!”*

How did ESSEX end up focusing on agriculture? “Our families are peasants,” Hilary shares. “It’s what we know.” The team started with Fertilizer Logic, a product that would measure the level of fertiliser, and use sensors to



The Egg Incubator uses technology to simulate the natural process whereby a hen sits on eggs and hatches them in an artificial environment.

detect when farmers need to adjust the ratio for optimal crop yield and sustainable soil health. The idea emerged out of CTA’s AgriHack activity in 2013. Though the idea had much potential, lack of funding forced the team to abandon the promising product.

Focusing on another idea that emerged during the incubation they benefited from as part of

 **HILARY MURAMIRA**

 Rwanda

 Hilary Muramira

their AgriHack prize, at the ICT hub, KLab, the team is now launching their second product, the Egg Incubator. “We use technology to simulate the natural process whereby a hen sits on eggs and hatches them in an artificial environment. We use temperature and humidity sensors to replicate the conditions eggs need to hatch,” Hilary explains. “A normal hen sits on about 15-20 eggs. So if someone wants to farm 100 chicks, it is practically impossible. But with an incubator, it’s possible.” The egg incubator prototypes won the 2014 ICT4Ag Hackathon organised by the Ministry of Agriculture and Animal Resources in Rwanda (MINAGRI).

### IMPACT

*“Owners have reached 90% utilisation, which has increased their income substantially.”*

ESSEX LTD has currently sold two egg incubators producing 120 eggs each. The two owners have reached 90% utilisation, which has increased their income substantially. With the automatised egg incubator, the poultry farm owners can also hold additional jobs, no longer needing to stay with the hens to actively keep watch all the time.

“

**It is essential to let the market share your product because oftentimes it will surprise you. Sometimes you might think the technology is going to be the solution, and instead, it’s going to be your innovative business model. You never know until you listen”**

### BUSINESS MODEL

*“There aren’t enough returns right now, like we’d expected, so we’re looking to create a complete package for the poultry farmer: a poultry farming kit.”*

Though only at the beginning of their product journey, Hilary and his team have exciting plans to take the egg incubator to the next level. “We want to bring on board 100 clients,” he shares. “Then, we can go onto the next step, which is introducing other products.”

As Hilary and his team think about the future, revenue is at the top of their minds. “We’re looking at changing our business model,” Hilary says candidly. “There aren’t enough returns right now, like we’d expected, so we’re looking to create a complete package for the poultry farmer: a poultry farming kit.” The poultry farming kit would include the egg incubator, as well as materials for constructing the poultry house, cleaning the spaces, and tracking business using software.

Though still in the idea stage, the poultry farming kit seems to have promise. “We’ve talked with other cooperative farmers and they are very interested in the product,” Hilary says. “We’re looking for subsidies from the government to take the idea forward.”

### LESSONS LEARNED

*“Entrepreneurship requires patience.”*

“Entrepreneurship requires patience,” Hilary says without hesitation. “Many people lack patience, and so rush to create their product without doing strong market research.” Understanding your customers is critical, and ESSEX’s up-and-down journey has proven that. It is essential to let the market share your



**Sometimes the problem is not money; it's just about how well you communicate your product, how many people you have around you. Your network is your net worth."**

product because oftentimes it will surprise you. "Sometimes you might think the technology is going to be the solution, and instead, it's going to be your innovative business model. You never know until you listen."

Another huge challenge for young entrepreneurs is lack of funding. "There's no money to develop a prototype," Hilary shares. "If you look at places like America and Europe, someone can raise up to US\$100 million for an idea, not even a prototype. That's not how it is in Africa — we can't get funding to take something ahead, so it just stops there."

Instead, he suggests playing the marketing game. "Sometimes the problem is not money; it's just about how well you communicate your product, how many people you have around you. Your network is your net worth." Hilary encourages young entrepreneurs to talk to as many people as they can — friends, business people, family. Work hard, show them why this is important to you, and chances are, you will find the support you need.

There will always be more challenges, and to get through them all, Hilary has one word: team. "We all have our differences and we decided to capitalise on them. We've got people who are technicians. We've got people who can speak. We've got people who can

write the code." And all of these differences harnessed together make for an unstoppable venture. "We believe in each other and trust each other," Hilary summarises. "That's what it comes down to." ■

#### HOW TO PARTNER

For partnerships, please contact  
[harusha2012@gmail.com](mailto:harusha2012@gmail.com).

#### COLLABORATION WITH CTA

Founders of ESSEX LTD participated in the CTA initial AgriHack championship in East Africa in 2013. They were national winners of the hackathon (with their product 'Fertilizer Logic') organised in partnership with the Rwandese ICT hub - Klab, MINAGRI, the Ministry of Youth and ICT (MYICT), and AGRA. The Egg Incubator was initially conceived during the incubation they won. They also took part in other promotion activities at the international conference "Revolutionizing finance for agri-value chains".



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Farmers are often stuck in subsistence farming, without the capital to move into the commercial space.

# Access to finance

Young entrepreneurs are finding innovative ways to connect farmers to financial services

Information is not only difficult to access, but financial inclusion for rural communities is also hard to come by. Traditional finance systems require credit scores, urban centres, and collateral, all of which are out of reach for most of the rural population; they simply are not built to serve smallholder farmers.

Without access to finance, rural communities are confined to an endemic cycle of poverty and no means of escape. Farmers are often stuck in subsistence farming, without the capital to move into the commercial space or find alternative sources of income.

Tapping into high mobile penetration across ACP countries, agro-entrepreneurs are finding new ways to connect rural farmers to financial sources.

Ensibuuko's mobile, co-banking platform works with Uganda's saving societies to provide financial access and encourage a culture of trust. Musoni Services pioneers cloud-based microfinance, integrating SMS messaging and mobile money to streamline operations and

enable broader financial inclusion. FarmDrive facilitates access to financial services for farmers via improved record keeping, financial history, and farm performance data.

To date, these three service providers have enabled access to and management of finance for thousands of farmers in Kenya and beyond.

“

**Without access to finance, rural communities are confined to an endemic cycle of poverty and no means of escape”**

## STORY 9

# Ensibuuko — Saving and credit cooperative societies go digital

## Mobile banking platform accelerates financial access



DAVID OPIO  
OBWANGAMOI



Uganda



[www.ensibuuko.com](http://www.ensibuuko.com)



Ensibuuko



Opio Obwangamoi David

### PROBLEM

*“It became evident that limited access to finance inhibited the capacity of smallholder farmers to grow more produce and keep more animals.”*

David and his co-founder, Gerald Otim, share a childhood experience. They were both born and raised in rural farming communities. David recounts how his mother, a maize

farmer who owned an acre of land could not afford to farm her entire plot. “As a young boy, I experienced firsthand the exploitation of middlemen, taking the biggest percentage of farm sales,” David explains. In an effort to increase his mother’s income, and the incomes of other farmers like her in his community, David began by helping rural farmers access the produce market. Despite his initial success, David realised that his efforts were limited to subsistence farmers who grow enough for their own consumption, but have little left for commercial farming.

“It became evident that limited access to finance inhibited the capacity of smallholder farmers to grow more produce and keep more animals,” David shares. The farmers were not making sufficient income from markets to expand their farms, and the formal financial institutions available would offer no assistance; they considered farmers as risky and unbankable people. “They are in a dilemma of looking for finance and no one can help,” he said. “So I asked myself, with the farmers, what could be the best way to enable them to access finances in a way that they can afford?”



Limited access to finance inhibits the capacity of smallholder farmers to grow more produce and keep more animals.

## SOLUTION

*“We build these mobile tools to promote financial inclusion to rural farmers.”*

The answer, David soon realised, lays in existing institutions: the Saving and Credit Cooperative Organisations (SACCOs). Rural Uganda has about 5,000 SACCOs that organise almost 20 million rural Ugandans into saving societies that encourage savings and provide loans. However, many of these SACCOs are embroiled in corruption and embezzlement, which is only exacerbated by the fact that much of their accounting is recorded manually. So David asked himself, “How could we enable these locally-based institutions, to deliver financial services to their members efficiently?” This gave birth to the Ensibuuko product, a mobile, co-banking system, customised to SACCOs, that enables unbanked, rural farmers to access finances through SMS and USB.

“The product — called MoBis, the Mobile Banking and Information Software — is a win-win for both SACCOs and farmers,” David explains. For the farmer, MoBis provides remote access to finances, using the USSD/SMS (Unstructured Supplementary Service Data) on their basic mobile phones. By using mobile money through MoBis, farmers can: (1) track their savings; (2) request a loan; (3) repay that loan; (4) deposit savings; (5) view a mini-statement; and (6) withdraw their savings. For the SACCOs, using the MoBis platform not only involves digitising and systematising their operations, but also trains their employees in the software, migrates all of their data onto a single platform, and allows them to connect to the internet, so non-local managers or government officials can monitor the SACCOs remotely. Ensibuuko also works with SACCOs

to put in place anti-corruption systems, giving managers and tellers different degrees of access to information.

## IMPACT

*40,000 rural Ugandan farmers currently use the platform.*

The effect of Ensibuuko’s system has been catalytic. For the 40,000 rural Ugandan farmers who are currently using the platform, MoBis has allowed them to increase their income, grow their farms and, for some, even access loans from the very formal institutions who had previously denied them. “Let me narrow it down to my mother,” David says. Her farm that was once two acres is now 10 acres. “She’s been able to raise more money and is a purely commercial farmer... She has been able to access more loans. She’s now an active SACCO member and recently got a loan from a bank.”

In addition to the successful impact on individual farmers, Ensibuuko has sparked a new trend in rural Ugandans’ culture of saving. While SACCOs are structured to promote cooperative saving, Ensibuuko adds technology to this system in a way that allows farmers to trust the organisations that were previously embezzling their money. By using mobile money and a data-oriented system, Ensibuuko has removed subjectivity from the system and replaced it with transparency. As David explains, “Before there were cases of fraud... The farmer worked day and night to save his money, then, the manager took all the money and disappeared. With Ensibuuko, we have transferred the... accountability... and now see a lot of farmers joining SACCOs and trusting them. And that’s the win-win solution, beneficial for both SACCOs and farmers. That kind of linkage... transfers the power to



**When regional governments do not consider agriculture as a viable business, this scares young people away from the industry. Technology can be used to excite young people to join agriculture, promote economic development, and drive sustainable livelihoods for their communities”**

the individual.” In addition, Ensibuuko has placed particular emphasis on encouraging men to save. “In most communities,” David describes, “women take on the responsibility to take care of the children and the men. Through Ensibuuko, we invite the man and the woman... the entire family, to know about saving and how to use their resources efficiently.”

#### BUSINESS MODEL

##### *How is the venture sustained?*

To ensure financial sustainability, Ensibuuko works with SACCOs and farmers to pay for the services they access. This may seem counter-intuitive — to charge the very people whose income you are aiming to increase. But, as David explains it, Ensibuuko was really a community-inspired and community-funded effort from the beginning. “We went to them and said, “This is your solution, and we want you to own it,”” he remembers saying. “But I stay 30 km from here, and if I am to bring you this service, I need to sit in a taxi... And trust me, I don’t have the money. We need to

operate — we need to get APIs, we need to learn the system on the server... We want you to be part of this process, to contribute to the sustainability of this.” And the first farmers paid US\$10 for membership for a year.”

Three years later, Ensibuuko still operates under a community-funded model. Now, the venture sells its solution to SACCOs directly, charging them per employee who will be accessing the service from their computer or laptop; this amounts to something between US\$500-\$2000. Ensibuuko also charges the farmers for transactions, US\$0.02/transaction. “They don’t pay for acquiring the solution, but we charge them for a transaction,” David explains. “But we don’t charge on savings... We only charge you when you’re withdrawing or transferring your savings to another individual.”

Ensibuuko also works very closely with the Ugandan government, Mercy Corps, Microsoft, and telecoms, like MTN and Airtel, to ensure that they are providing the greatest benefit to their farmer users. The Ugandan government actively links Ensibuuko to all SACCOs, including by subsidising training costs for SACCO members to learn the MoBis platform. Mercy Corps has been an active collaborator in rolling out Ensibuuko’s solution, by enabling them to leverage their community presence, relationships and resources to run a successful pilot. Microsoft has also been won over by the power of the platform, providing laptops, computers, and even phones to the SACCOs at subsidised, low-interest costs. Large telecom corporations, MTN and Airtel, have also committed to creating a network of two million mobile money agents to serve SACCOs and SACCO members on platforms like MoBis.

## ON THE HORIZON

*“I think technology can be used to excite young people to join agriculture, promote economic development, and drive sustainable livelihoods for their communities.”*

Gerald Otim, Ensibuuko’s co-founder and chief operations officer shares his dreams for their venture: “By December 2015, we hope to be working with 200,000 farmers on our platform.” However, it is not going to be a simple journey; unfortunately, even though agriculture employs 80% of the population, it is sidelined in the national planning budget. “When regional governments do not consider agriculture as a viable business, this scares young people away from the industry,” Gerald shares. “I think technology can be used to excite young people to join agriculture, promote economic development, and drive sustainable livelihoods for their communities.”

For David, ICT is the answer to many of the sector’s issues — ICT can help farmers access farming inputs, connect to markets, and access financial services, all via mobile phone. “75% of the Ugandan population own mobile phones,” he says. “That’s 28 million rural farmers. How can we tap into that infrastructure? How can we marry culture and ICT?”

## LESSONS LEARNED

*What have you learned along this journey?*

“A lot of people develop solutions from their own offices, and then dump them in the community,” David states. “But these solutions don’t work, because they are not customised to the needs of the rural poor. Our strategy was to listen to the farmers, ask them what they would like the solution to look like throughout the process of development, and what they

would like to access/benefit from the solution.” This community-inspired, community-funded, community-led innovation is one of Ensibuuko’s trademarks. It’s not just a solution for a community, it is a solution that has been created, developed, and resourced by the communities that it aims to serve. ■

### HOW TO PARTNER

- Technical assistance
- Ongoing financial support

For partnerships, please contact  
[opiodavid@gmail.com](mailto:opiodavid@gmail.com)

### COLLABORATION WITH CTA

Ensibuuko was the overall regional winner of the hackathon organised by CTA in the framework of the international ICT4Ag conference and of the AgriHack Talent programme piloted in East Africa in 2013. Apart from the cash prize award, they were incubated for six months in partnership with the ICT hub Outbox from Uganda. They attended the “Plug & Play” event during the Fin4Ag 2014 international conference in Kenya. CTA is partnering with Mercy Corps to support their application MoBis in the framework of the “Apps4Ag Learning Opportunities” initiative. Ensibuuko have benefited from other promotional opportunities.

## STORY 10

# Musoni Services — Microfinance joins the cloud

Award-winning core banking system integrated with mobile money, SMS and mobile apps



CAMERON  
GOLDIE-SCOT



United Kingdom



<http://musonisystem.com>



@MusoniSystem



Cameron Goldie-Scot

## PROBLEM

*“We got very, very frustrated at the lack of available and affordable technology out there, so eventually settled upon building it ourselves.”*

As a consultant for various microfinance organisations in East Africa, Cameron saw first hand the potential for technology to transform the sector. “There was this group meeting in Tanzania that I went to and the group meeting itself took four and a half hours. A group meeting should only take about half an hour. That’s when it dawned on me that even a few improvements could completely transform the efficiency of microfinance in this organisation. I think it was probably my light bulb moment.”

Frustrated by the level of inefficiency, Cameron and a few colleagues did what every entrepreneur does when faced with such a glaring challenge — they started their own microfinance organisation, Musoni Kenya. “This was a Kenya microfinance organisation and it was the first 100% mobile money M-Pesa organisation in the world. Every

loan repayment, every loan disbursement, and savings deposit was carried out over M-Pesa.”

The Musoni Kenya team soon found out that the client and loan management system they were looking for to build the infrastructure for their vision did not yet exist. “We wanted it to be modern and to enable us to do things like integrate with mobile money, to add new functionality like tablet devices for loan officers, to do data collection in remote, rural areas or link in to an SMS module to improve communication with clients. You name it. We got very, very frustrated at the lack of available and affordable technology out there, so eventually settled upon building it ourselves.”

As Musoni Kenya reached 20,000 clients, other MFIs began to approach the team wanting to use their groundbreaking technology. “We didn’t plan on becoming a separate software company,” Cameron reflects. “When other MFIs began approaching us, we got this little idea in the back of our minds and it grew and grew until we spun-off into a separate company with the goal of revolutionising the technology space in rural financial services.”

## SOLUTION

*“We’re trying to take advantage of these new technologies to drive financial inclusion into these rural areas.”*

The Musoni system is a cloud-based microfinance system, which allows a microfinance organisation to do all of its regular operations — client and group management, loans and savings, reporting and accounting — and also integrate new, pioneering technologies.

“We’ve integrated with multiple mobile money transfer services to enable clients or farmers to repay and receive their funds over their mobile phones. We also have our own integrated SMS module that allows for two-way communications between farmers and MFI organisations,” Cameron describes. Musoni has even developed an app for field officers to register clients, collect information, and send loan applications directly from their tablet.

What’s the driving force behind all of these new technological developments? “We’re trying to take advantage of these new technologies to drive financial inclusion into rural areas,” Cameron shares. “I think that’s what makes us unique. We’re always looking forward — looking to see what the next new technology is and how we can introduce it into microfinance organisations.”

## IMPACT

*“Traditionally, a loan disbursement can take a couple of weeks. When you’re using mobile money, the payment can get sent out in one or two hours.”*

Having pioneered this new field of mobile microfinance, Musoni is in high demand across the continent. Musoni currently services 100,000 clients over 29 microfinance



**The Musoni system is a cloud-based micro-finance system.**

organisations in Myanmar, Kenya, Tanzania, Uganda and Zimbabwe with 70% of these clients in rural areas. The company has so far processed more than 2.5 million mobile money payments, 1.5 million SMS messages and more than 50,000 loan applications through the tablet app alone.

Feedback from the organisations using the system has been fantastic, with one describing it as “The best all-inclusive microfinance platform they had ever seen.” “We got a wonderful email from a CEO expressing his thanks and appreciation for the system,” Cameron shares, describing an interaction he had with an organisation who had recently joined the platform. “He was so excited about how easy it was, explaining how this was going to be transformative for his operations. It’s those little things that really give you the drive to carry on.”



60%

of Kenya still  
doesn't have  
access to  
financial services

Beyond operational efficiency, Cameron and his team have found that the Musoni system has huge security benefits for the microfinance officers working in the field. “At one of the organisations we now work with... the senior accountant was tragically murdered during a robbery in the head office. He was murdered while he was taking the day’s repayments and transferring them from the safe into a cash deposit box to take to the bank,” Cameron recalls. “This organisation then started using the Musoni system to reduce the risk to their personnel. They no longer have cash being handled by members of the organisation or stored in their head office... It’s incredibly satisfying — to know that we can improve the safety of people operating in these areas.”

All of this speaks to the impact Musoni is having on microfinance organisations themselves — what about the rural clients they are actually trying to serve? The improvement in speed of the transactions is tremendous. “Traditionally, a loan can take a couple of weeks to be processed by a branch,” Cameron explains. “By contrast, when you’re using mobile money, the payment can get sent out one or two hours after the loan application is received. Moreover, Musoni has found that the time flexibility of mobile access has been pivotal for rural populations, who no longer need to disrupt their day to do their finances.

So what’s the bottom line? Musoni improves organisational efficiency, personnel safety, and clients’ ease and satisfaction with the microfinance system. “We get phone calls from clients saying, ‘Thank you very much. We weren’t expecting to get the funds this quickly. This has never happened before.’” If that is not a hallmark of success, I’m not sure what is...”

## BUSINESS MODEL

*“We have deliberately structured our pricing so that it is linked to the number of clients the organisation works with so that there is very low barrier to entry.”*

Despite the tremendous successes, Musoni is still working on becoming financially sustainable. “We have only been operating for about 18 months now, and we charge very low license fees,” Cameron shares. “It’s very, very cheap to use our software and, because of that, we need large numbers of organisations in order to become sustainable.”

Musoni has structured its pricing so that it has a very diverse client base. “We work with some organisations that have 25,000 clients and are looking for a more efficient way to manage their operations. At the same time, we also work with complete startups,” Cameron adds. “We’ve deliberately structured our pricing so that it’s linked to the number of clients the organisation works with so that there is a very low barrier to entry.”

With such a breadth of clientele, Musoni is set to reach profitability by the end of the year. “It’s just a case of bringing more MFIs on board, bringing more financial organisations on board, expanding into new markets and, hopefully, working with some larger international organisations as well,” Cameron describes. “We’re on the right track.”

## WHAT’S NEXT

*“We would like to place more power or more control directly into the hands, literally into the fingertips, of the clients themselves.”*

“We are very keen to expand,” Cameron says. “We are looking at expanding both in our

existing countries, but also into new markets or new regions,” particularly focusing on West and Southern Africa. Beyond its geographic expansion, Musoni has plans to increase the business’ product offerings. “We are now working on integrating credit scoring into the lending decisions. We are also working on a client-facing app to enable clients to check their balances and carry out account transfers, much as we would use a mobile banking app in the UK.”

From Cameron’s perspective, the client-facing app has the greatest potential. “At the moment, financial services are always delivered to people through a field officer or through a bank branch. Therefore, there’s always that middleman standing there that plays a very valuable role at the moment but also has the potential to reduce the amount of transparency and direct input from the client. Now that smartphones are getting cheaper and cheaper and the internet is getting cheaper and cheaper across Africa, we would like to place more power or more control directly into the hands, literally into the fingertips, of the clients themselves.” That’s the next frontier.

#### ON THE HORIZON

*“I think there is actually a huge amount of potential in bringing financial services to farmers and rural communities through smartphones and low-cost internet.”*

“I think we’re barely scratching the surface of financial inclusion in rural communities at the moment,” Cameron reflects. “60% of Kenya — which is pretty reliable for sub-Saharan Africa — still doesn’t have access to financial services. The majority of people who are financially included are still served by large banks operating in the middle of urban areas.



**Now that smartphones are getting cheaper and cheaper and the internet is getting cheaper and cheaper across Africa, we would like to place more power or more control directly into the hands, literally into the fingertips, of the clients themselves”**

Rural communities have still not seen many of the benefits that have happened over the last few years.”

So what’s the hold up? Organisations are turning to technology. Although they are not moving as quickly through the technology journey as Musoni would hope, they are changing; it is just a slow process. Beyond integrating technology, there are still huge challenges to moving into rural areas.

“It is coming up with a lending product that is more applicable to farmers with variable crop cycles and variable income streams,” Cameron explains. “It takes more work than coming up with a more generic product in the middle of an urban area. Technology will help and that’s what we’re trying to do but I think organisations also need to push out into these rural areas, which, to be fair, a lot of them are doing. It is just a slow process.”

So what’s the bottom line? “I think there is actually a huge amount of potential in bringing financial services and many, many

more products and apps to farmers and rural communities through smartphones and low-cost internet. It's still out of the price range for most of these communities at the moment and I think, as that changes over the next few years, it's going to be transformative."

### LESSONS LEARNED

*"You need to spend a decent amount of time actually living and working in the communities where you're trying to have an impact."*

Musoni has ensured that microfinance products are built with the user in mind. "We have not only tried to set up the technology to make it easy to expand into rural areas. We have also ensured our products have been very, well-suited to people working in agricultural areas," Cameron shares. Indeed, Musoni has won awards for the client-facing nature of its product design process, which includes going into rural communities and speaking with farmers, community leaders and the MFIs working there.

Cameron's advice for young, aspiring agro-entrepreneurs working on user-driven product development is "To get out into the field." He explains, "To really learn and to really gain the experience that's necessary to then drive the change required, you need to spend a decent amount of time actually living and working in the communities where you're trying to have an impact."

To be a sustainable entrepreneur, Cameron adds that self-care is absolutely essential. "Learn to separate your personal or emotional state from the day-to-day roller coaster that is running a small business. Some days you will have done everything you possibly can but, for whatever reason, whatever you're trying to do doesn't quite work out."

How does he keep a healthy mental state? "I try and read a lot," he adds. "When I say read, I spend a huge amount of time reading the typical social entrepreneur books and business advice books and things like that. They are great but they are still very much focused on your business. I try and spend a lot of time just reading completely unrelated books, random novels. It's one of the few times that it actually forces you to think about something outside the business, which I think is a very important thing to do for your general mental health." ■

#### HOW TO PARTNER

- Software Developers, App Developers
- Direct Investment, Technical Assistance
- MFIs, SACCOs & Asset-Finance companies looking for world-class platform

For more information, please contact [camerongoldiescot@musoni.eu](mailto:camerongoldiescot@musoni.eu)

#### COLLABORATION WITH CTA

Musoni was involved in CTA's Plug & Play event organised during the international conference Fin4Ag 2014 in Nairobi, in 2014.

# FarmDrive — Bridging the data gap

## Building comprehensive credit profiles for smallholder farmers using digital records

### PROBLEM

*“If agriculture is the backbone of the economy in Africa, then how can two-thirds of the people who are supposed to support the foundation of the economy be poor?”*

“Two-thirds of the African population is employed in agriculture and most of them are smallholder farmers who form the poorest households in Africa,” Peris shares. “If agriculture is the backbone of the economy in Africa, then how can two-thirds of the people who are supposed to support the foundation of the economy be poor? It doesn’t make any sense,” she concludes.

For the two 23 year-olds who comprise the FarmDrive team, this statistic is even more unforgivable. Both of their families are these very smallholder farmers, forgotten in the continent’s economic growth. Their motivation for FarmDrive is not only rooted in disbelief — it is also deeply personal. “I was born and raised in a village in Kisii, Kenya,” Peris shares. “Growing up, there were very few people in formal employment and labor... Most of the households relied on subsistence farming, and it wasn’t really productive.”

At the University of Nairobi, Peris met Rita in a computer science class and the two bonded over their shared experiences. It was a moment of realisation, Peris describes: “It was refreshing to find someone who shared the same experience and who together had the technical skills to leverage existing ICTs to give back to our communities.”

Reflecting on both their academic course work and their personal experiences, the FarmDrive


**PERIS BOSIRE**


Kenya


[www.farmdrive.co.ke](http://www.farmdrive.co.ke)


[@farmdrive](https://twitter.com/farmdrive)


[Peris Bosire](#)



Peris Bosire from FarmDrive at one of CTA’s Plug & Play events in Kenya.

team realised that: “Most of the farmers’ challenges actually come out of a lack of access to sustainable financial services. Some of them lack water, but this stems from a lack of resources to actually dig boreholes. Other farmers lack access to markets, but it’s because they’re unable to transport their produce to markets that are far away.” It all comes back to access to finance. “If we could address this glaring hole, there would be ripple effects throughout the sector.”

“We believe any strategy decisions should be based on data and facts,” Peris shares. “Yet there is no information about smallholder farmers; it doesn’t exist. If nonprofits, governments, and farmers themselves don’t have access to this information, can they make accurate decisions?” The answer is they can not. This is the exact gap that FarmDrive is trying to address.

### SOLUTION

*“It’s this kind of feedback that’s crucial to the farmers so they can make their decisions based on data.”*

FarmDrive provides a simple digital record keeping the platform accessible via SMS, USSD and smartphones that enables farmers to keep track of their farming activities. The farmer data, combined with existing agricultural data, is used to understand each farmer’s specific needs and provide analytics to allow farmers to gain valuable insight into their operations, and maximise efficiencies. FarmDrive uses the data to develop a comprehensive ‘credit profile’ to determine farmer credit worthiness for financial institutions.

How does it work? Farmers begin by creating a profile that includes a phone number, ID, location and type of farming activity. Once a farmer has built a profile, he/she can begin to

input financial information, including expenses, productivity, and revenue on a day-by-day basis. FarmDrive also asks for any challenges the farmer may be facing, so they can tailor their data analysis accordingly.

With all of this information input by USSD, Android, or SMS, FarmDrive then analyses and aggregates this data to give each farmer their financial report, a location-based market analysis, and other insights pertaining to their particular farming activity (i.e. What’s the best time to start growing your tomatoes?).

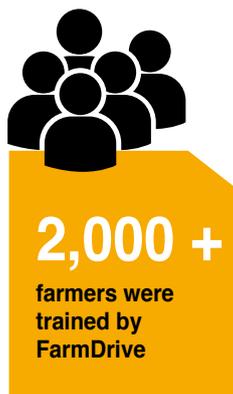
Why is this useful? “Most of the smallholder farmers don’t know if they are making profit or losses,” Peris shares. “We visualise this information for them, and then analyse their farm performance. It’s this kind of feedback that’s crucial to the farmers so they can make their decisions based on data.” Similarly, FarmDrive allows a farmer to use the health of her business in lieu of a credit score, and even provides farmers with the most up-to-date agroclimatic information.

FarmDrive also seeks to encourage financial institutions to lend more to smallholder farmers by de-risking the process, showing clear and transparent records and allowing the institutions to create products that are better catered to smallholder farmers. Financial institutions will be able to make lending decisions based on the health of a farmer’s business, as opposed to credit history and collateral which most farmers lack.

### IMPACT

*“She’s been keeping her records and we’re actually working on getting her a supplier.”*

FarmDrive began operating about a year ago, but it’s already starting to make its way into



some of Kenya's rural communities. "The farmers that we've actually signed up who are using our platform actively every day? Several dozens" Peris shares. "But we've trained more than 2,000." As the numbers show, the team has discovered that farmers' buy-in is the biggest challenge — a combination of digital and financial illiteracy.

It's with their active users where the potential of the platform shines, however. Peris tells the story of Anne, a dairy farmer, who originally suspected the FarmDrive team of being 'spies' sent by the dairy to hear her problems. At the time, she had an internet-enabled phone, but barely used it because she used her feature phone for calls and texts. "When we talked to her and showed her FarmDrive," Peris reveals, "she actually saw the need to use her internet-connected phone and signed up to FarmDrive. She's been keeping her records and we're actually working on getting her a loan to buy a forage chopper so that she can make her own dairy feed as opposed to commercial feeds. This reduces her expenses and allows her to make nutritious quality feeds; this is bound to increase her productivity and ultimately her revenues."

## BUSINESS MODEL

*"Solving this financial access for farmers is not something that we can do alone. Our strategy is to partner with these institutions."*

While still in their initial pilot phase, FarmDrive has established a robust plan for achieving financial sustainability. "In the short term, we provide premium functionalities in the record keeping system. We're also working on strategic partnerships with organisations that will benefit from the value of the analysed data. Medium term, we hope to have a large number of farmers who are actively using the



**Solving this financial access for farmers is not something that we can do alone. There have to be partnerships with other people who are providing complementary services. Our strategy is to partner with these institutions"**

application and accessing credit from financial institutions; we'll then charge for the linkage. Our long term revenue model is to be able to charge the farmers a modest monthly/yearly fee for using the credit profiles to access different financial services."

To accomplish this long-term plan, FarmDrive has its eye set on a few strategic partnerships. As Peris explains, "Solving this financial access for farmers is not something that we can do alone. There have to be partnerships with other people who are providing complementary services. Our strategy is to partner with these institutions."

## WHAT'S NEXT

*"We want to have a database of all the smallholder farmers and essentially all the farmers that exist in Kenya."*

Facing the challenge of digital and financial illiteracy in rural communities, FarmDrive is looking to work with organisations specialising in farmer training and awareness building. The team is not just aiming to expand its usage, but it has also got its sights set on an East African

gold standard in mobile phone applications. “If we can find a way to package FarmDrive in a way that it’s a necessity, just like M-Pesa, then the farmers will see our platform as something they need in order to grow; that will go a long way in bridging that gap between farmers we’ve trained and the farmers who are actively using the system.”

So what’s the goal? “At the end of the day, we want to have a database of all the smallholder farmers and essentially all the farmers that exist in Kenya and maybe the whole of Africa,” Peris enthuses. Data on smallholder farmers is so sparse, the FarmDrive team is hoping that having more information will allow other agricultural stakeholders to make more informed decisions about such a large segment of the population.

To provide even more opportunities to these farmers, FarmDrive hopes to expand its platform services even further: “We hope to grow and get to a point where we are able to actually do peer to peer financing, where someone in the U.S. or the Caribbean can send money to a rice farmer in Nigeria to

improve their yield and then share the profits. Eventually, we see ourselves working on a global scale to help finance farmers.”

FarmDrive is now partnering with Musoni, an innovative MFI introduced above and is entering in new collaboration frameworks with CTA and other institutions such as AGRA.

## ON THE HORIZON

### *What’s next for the sector moving forward?*

Working directly with farmers is not easy. What with different understandings of the power of technology and the usefulness of record keeping, FarmDrive has come to understand why other organisations have abandoned such a direct approach. But the team is not yet ready to give up, quite the contrary — “It’s a challenge but we are ready to take it head-on,” Peris affirms.

So how can the field support such ICT startups working directly with farming communities? More investment and more focus on the agricultural sector at large. “It took us so long even to get the historical data that we needed,” Peris shares. “There are no strategic policies or initiatives that place value on innovation in farming or encourage young people to get involved.” If the agro-entrepreneurs are not supported, how can we expect radical innovations to come from the sector? “If the government could come in right now to help us to scale, the impact would be felt so much sooner.”

Lastly, Peris points to young people’s potential to revive the sector. “I think it’s important for young people to be involved in the actual farming,” Peris shares. “Right now, most young people focus on getting a good job in an urban



**Data on smallholder farmers is so sparse, the FarmDrive team is hoping that having more information will allow other agricultural stakeholders to make more informed decisions about such a large segment of the population”**

area — working at a bank or a big audit firm — and agriculture is left for the old parents back in the village.” But what’s the incentive? Peris points to the digital generation: “There’s a lot of information exchange that goes on in social media, so young people can participate in sharing agricultural information on different social media platforms.” However if young people get involved — returning to farming itself or investing in new agricultural methods — the impact would be tremendous.

### LESSONS LEARNED

*“Don’t look at the whole big mountain in the challenge. Just stay focused and do small things that will help build towards that dream.”*

“I’ve been talking a lot about data,” Peris admits. “But at the end of the day, it’s about building relationships with the farmers.” FarmDrive knows its product is only as good as it’s satisfied clientele, and so has been focusing on cultivating strong relationships and investing in farmer trainings. It’s all about the people power.

For those young entrepreneurs who are just beginning, she offers another piece of useful advice: “I think you just have to start somewhere,” she shares. “My team and I started working on FarmDrive actively last year and almost instantly got overwhelmed. There were just too many problems and we didn’t know how to piece them all together. But you’re always going to have limited resources and tricky challenges. You just have to start somewhere.”

Of course, it’s not just about doing — it’s about doing with a clear goal in mind. Reflecting on how she would advise her younger self, Peris shares, “I would tell myself to really focus on



**It’s important for young people to be involved in the actual farming. Right now, most young people focus on getting a good job in an urban area — working at a bank or a big audit firm — and agriculture is left for the old parents back in the village”**

my mission and what I wanted to achieve... Don’t look at the whole big mountain in the challenge. Just stay focused and do small things that will help build towards that dream.” ■

#### HOW TO PARTNER

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#### COLLABORATION WITH CTA

FarmDrive was regional finalist of the hackathon organised by CTA in 2013 in the framework of the International ICT4Ag conference and of the AgriHack Talent programme piloted in East Africa. CTA supported their attendance to the “Global Forum for Innovations in Agriculture” in 2014 in Dubai and in 2015 in Durban, for promotional and networking activities (Plug and Play events, participation in sessions, etc.). FarmDrive has signed an agreement with CTA to train young farmers on digital records keeping through their app, which will also help consolidate the latter.



© Jake Lyell/AfriPics

Even if the farmers' produce does make it to the city, chances are low that the produce will stay fresh long enough to make it to the kitchen.

# Trading, markets, and consumption

Accessing profitable markets to trade inputs or outputs is often very challenging to farmers

Some innovators focus on improving market information. RuSokoni, for example, introduces rural young people to solar-powered internet that allows them to access daily market price indices and connect with other farmers in the area. Mlouma uses web, SMS, mobile apps, and a call centre to help producers and buyers see the landscape of products available in the region, allowing them to decide where to buy/sell their crops.

Other innovators are building online spaces for commodity exchange, digitally connecting rural producers and urban consumers. D'Market Movers is the first online marketplace in Trinidad and Tobago, where producers and consumers exchange health-conscious foods. AgroCentral is a digital clearinghouse where buyers and sellers can mitigate the challenges of traditional trading with the platform's pay-it-forward model.

Mkulima Young makes farming 'cool' by creating a one-stop shop for young farmers to: buy/sell their products; learn the best techniques; access financing to expand their businesses; and connect with the other 60,000 young people on the platform. tech4farmers

runs platforms acting as commodity exchange and warehouse receipt system, where farmers can not only sell their products, but also access market intelligence, warehouse locations, and transport services to maximise their income. Lôr Bouôr improves connections between different stakeholders: buyers and sellers, input suppliers and farmer cooperatives, and farmer-to-farmer themselves.

Highly innovative changemakers like Oscar at FoodRing are building infrastructure for a recycling economy, using data to redefine the market by saving almost perishable products in retail establishments and reselling them to low-income families in need. Other changemakers, like Syecomp, are using ICT to improve access to international markets by using GIS/GPS maps for proof of documentation for international export regulation requirements.

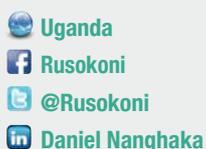
## STORY 12

# RuSokoni — Lighting the way

## From solar-powered internet access to price indexes



DANIEL NANGHAKA



### PROBLEM

*18% of the Ugandan population has access to power and the internet — but everyone else “simply lives in the blackout”.*

Daniel grew up using the internet. “I used to go to my Dad’s office and use the internet and computers... and soon I became addicted.” His addiction led him to pursue a degree in information technology. When he began commuting to the village with his father, he realised the access he had to the internet as a child was unique.

“Computers existed, but they were much more common in urban areas. In the rural areas, there was limited accessibility.” Stumped by such a dichotomy, Daniel soon learned that 18% of the Ugandan population has access to power and the internet — but everyone else “simply lives in the blackout.” Overcoming this inequality was soon to become a driving force in his life.

In university, life-long exposure to rural populations and a passion for ICT prompted Daniel to work towards improved technological access in Uganda’s rural areas. Daniel and his colleagues sought to teach basic web technologies to those who had never been exposed to the internet. They believed that access to such a valuable tool would radically transform rural lives — for farmers, young people, families, and communities at large.

After some time in the programme however, Daniel realised that teaching locals about the technology was not enough: “Local communities were adapting to the technologies so fast, but when our programme left, they did not have anything to interact with.” Even when the communities did have access to computers and the internet, they did not always understand the full potential of what they had before them. For example, although Daniel and his team knew how the internet



Access to web technologies will radically transform rural lives.

could be used to establish better access to market information, this was not immediately clear to the farmers themselves.

## SOLUTION

*“Once they are empowered with the skills, they will be able to train other users and other farmers to adapt the technology for their own uses.”*

“RuSokoni comes from two words,” Daniel explains. “Rural, and then ‘sokoni’, a Swahili word that means ‘markets.’” As a computer programme platform, RuSokoni enables local farmers to access prices from surrounding markets, as well as connect with other farmers to share knowledge, collaborate to fill orders, and build long-term relationships.

The core of the RuSokoni platform is its price index tool, which farmers use to set their prices each day. How does it work? The RuSokoni team works with local communities to crowdsource the prices from the surrounding markets on a daily basis. All of these data points are entered into the platform, where the prices are aggregated. An algorithm is then used to determine the strength of those prices. Farmers can then predict when and how a price may drop/rise, according to the surrounding market demand. “This enables them to set appropriate prices, based on current market structures, so they aren’t cheated,” Daniel says. “Because of this, people have higher sales, higher incomes, and better standards of living.”

While the price index tool alone would be a useful platform, RuSokoni uses it as an incentive to build technology literacy among rural populations, especially young people. The venture trains young community members to use RuSokoni, in addition to some basic IT skills —

how to send an email and type documents, as well as how to check for prices and read the algorithm on the price index system. The young people also learn how to operate the solar-powered internet infrastructure that supports RuSokoni, so that if anything happens to the technology, they have the knowledge and skills to fix it.

In doing so, RuSokoni equips young people to be the technological leaders in their communities. “Once they are empowered with the skills,” Daniel says, “they will be able to train other users and other farmers to adapt the technology for their own uses.”

## IMPACT

*“I have young people coming up to me from surrounding villages asking to be trained on the platform.”*

In its early stages, RuSokoni started with five young people. This upcoming year, that number will increase to 25 and local demand is rising. “I have young people coming up to me from surrounding villages asking to be trained on the platform,” Daniel reveals. “It’s really quite humbling.”

Daniel shares the story of Ebuk, who cultivates maize. Since joining the platform, Ebuk’s sales have increased by 30 % and he now has regular

“

**Local communities were adapting to the technologies so fast, but when our programme left, they did not have anything to interact with”**



18%

of the Ugandan population has access to power and internet

buyers with whom he works. RuSokoni has improved Ebuk's income and increased his free time and quality of life. "He now goes fishing in the afternoons," Daniel says smiling. "He's much happier."

"There's also the story of Adea Kennedy," Daniel adds. "When he died, he left his business to his wife." Ordinarily, being a female cultivator would inhibit getting a fair price at market. But with RuSokoni, Kennedy's wife knows exactly how much to ask for, and does not get shortchanged.

#### BUSINESS MODEL

*"RuSokoni looks to build strategic partnerships that offset the cost of their operations."*

Daniel and his team are working hard to make RuSokoni sustainable, focusing on advertisement as a core strategy. Because their computer is also solar-powered, Daniel believes there is untapped potential in the green energy solutions market that can be leveraged for further sources of revenue. In particular, Daniel and his team are working on a subscription model that will allow them to diversify their revenue sources.

“

**Many people say that agriculture is for poor people, and the farmers are exploited. We have to change this narrative and encourage young people to see that they have potential, they have promise, and they can transform this sector if they put their minds to it”**

In addition to advertisement, RuSokoni looks to build strategic partnerships that offset the cost of their operations. "We work with Microsoft," Daniel says. "They let us host the platform online. Arduino supplied units to build our model open-source, which lowered the cost of the computers for the farmers." As they move forward, RuSokoni will be looking to build further partnerships with different organisations and companies.

#### WHAT'S NEXT

*"We want to scale so we can meet the growing population."*

Daniel's always thinking big and, for him, the next few years of RuSokoni are tremendously exciting. "We want to scale so we can meet the growing population. We're planning on working with local councils to share the RuSokoni platform with more villages, so we can tell them about its benefits and get them on board."

While Daniel's dreams are big, the reality is a bit more stark. "The cost of implementation is just so high," Daniel reflects. "It's hard to grow when there aren't resources willing to support you to that scale where you can turn a profit. Everything is about funding and scalability."

#### ON THE HORIZON

*"Young people need to be aware that they are able to do something. They do not have self-esteem and confidence in themselves."*

Daniel believes there are tremendous opportunities in large-scale farming. "The potential of automated tech for harvesting, for storage, for transportation — everything — is just so high. I'm surprised more people aren't getting involved in the field."

In his mind, it's an issue of self-confidence. "Young people need to be aware that they are able to do something. They do not have self-esteem and confidence in themselves. Many people say that agriculture is for poor people, and the farmers are exploited. We have to change this narrative and encourage young people to see that they have potential, they have promise, and they can transform this sector if they put their minds to it."

"Technology is the playing field," Daniel reminds us. "It's something we all can access."

### LESSONS LEARNED

*"The best solution is a solution that has been evolved together with the user who is encountering the pain. Then you have solved the problem."*

"Many people rush into building their products without understanding the needs of the consumer," Daniel notes. "They aren't really listening. Every livelihood has a need. Every livelihood has a pain. There is always this pain we are looking forward to solving. But if we do not understand how exactly we are going to solve the pain, then we are not providing a solution. The best solution is a solution that has been evolved together with the user who is feeling the pain. Then you have solved the problem."

Instead, RuSokoni took a different approach that Daniel credits with their success. "We conducted interviews, tested our model, and made sure we understood the community's needs before we focused on the issue of pricing. Then we built the team," says Daniel. "We didn't do it the other way around." For any young entrepreneur, Daniel believes this approach is crucial to success: "Feedback is very, very important. For us, it has been our best friend." ■



**The cost of implementation is just so high. It's hard to grow when there aren't resources willing to support you to that scale where you can turn a profit. Everything is about funding and scalability"**

#### HOW TO PARTNER

- Donations of hardware and computer engineering
- Local community based organisations
- Technical assistance on platform development

For more information on partnerships, please contact [daniel.nanghaka@i-africa.net](mailto:daniel.nanghaka@i-africa.net) or [dndannang@gmail.com](mailto:dndannang@gmail.com).  
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#### COLLABORATION WITH CTA

CTA has supported Daniel through the UNITAR Innovative Collaboration for Development course on social media, which has enabled him to lead his team to support farmers and improve young people's training needs. Earlier, CTA supported Daniel's technical training, which was then used for the local communities in Oyam.

## STORY 13

# Mlouma — Mobile market manual

## Linking producers and buyers on four channels

 **ABOUBACAR SIDY SONKO**

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 Aboubacar Sidy Sonko

### PROBLEM

*“In Dakar, the same product sold for 10 times the price in the village... It was an injustice that people were suffering.”*

Aboubacar grew up in a rural farming community in Senegal and had first-hand knowledge of the problem. “I knew the reality that they faced because I grew up in that environment,” he reminisces. While the challenges of his community were numerous, Aboubacar focused on the one challenge that frustrated him the most — unequal pricing.

Upon moving to the city for university, he was struck by the immense difference in prices he saw for the same produce his parents grew in the rural areas. “Producers who do not have another option are forced to keep the product at this low price. Yet once in Dakar, this same product sold for 10 times the price in the village.”

In his eyes, it was a market demand problem. In the urban areas, the high number of consumers would drive up the price; but in the villages, only the middlemen were purchasing the produce that they then sold in the more profitable urban markets. “It was an injustice that people were living,” he adds.

Motivated by such frustration, Aboubacar did what all social entrepreneurs do — he asked

himself how he could change this status quo: “How could I help my parents who are farmers and the millions and billions of other farmers who are facing this problem?” Mlouma was born.

### SOLUTION

*“We are an agricultural stock product accessible via web and SMS.”*

Mlouma is a web and mobile platform that directly links producers and buyers. “Louma means walking and asking in the local language,” Aboubacar explains. “M means mobile. So in a way, it’s a market manual available on the mobile phone.”

Producers and buyers can access the platform to see what products are available in the region, and then determine where and when to buy or sell their crops. Mlouma is available on four channels: web, SMS, mobile apps on smartphones, and via a call centre for those who cannot access the mobile applications.

By providing access to market price information, Mlouma is able to equip farmers and food industries with the right information, allowing them to make the best decisions about their agricultural products. Rather than being controlled by middlemen, the farmers can make decisions themselves.

## IMPACT

*“We have allowed one of our major clients to sell onions with an additional margin of 25% on the original price.”*

While technology innovation is undoubtedly important, what really matters is how that technology is used. Mlouma’s platforms have helped its farmer partners to increase their income. “We have allowed one of our major clients (UGPAR) to sell onions with an additional margin\* of 25% on the original price,” Aboubacar explains.

In addition to increases in income, Aboubacar sees the platform as connecting small producers with the broader public. It would give producers the visibility they need to promote their operations and thus improve their livelihoods. “Our service has allowed us to connect those based in very rural areas of the country with the rest of the world, even though they don’t have access to internet.”

Mlouma has not only connected many rural producers with global buyers, but it has also stimulated a local network. “Our inclusive and participatory approach has allowed us to put in place an ecosystem of users using the Mlouma platform in rural areas,” he adds.

## BUSINESS MODEL

*“We’re looking for models that will enable us to solve these challenges one by one.”*

Still in the early stages, Aboubacar and the Mlouma team continue to explore which business model will ensure their sustainability. In particular, they are working to balance different issues, namely, producers’ capacity to pay, buyers’ incentive to use the platform, and continuous revenue generation. “We are looking for models



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**Farmers working in a green beans plot in Koer Abundoy, Senegal, where several vegetable gardens are farmed to provide to the community and to the local market.**

that will enable us to solve these challenges one by one,” Aboubacar explains.

One of the most promising business models at the moment would revolve around charging for accessing the information, particularly via SMS. Aboubacar envisions a model where Mlouma could charge its users for requesting price information.

Mlouma has won several international awards.

## WHAT’S NEXT

*“The next two to three years we’ll focus on Senegal, and later, Africa as a whole.”*

Although the business model is still in its preliminary stages, this has not stopped Aboubacar from dreaming big about what’s next for Mlouma. “The next two to three years we’ll focus on Senegal, and later, Africa as a whole.”



**For the young to benefit from an advantage in the agricultural field, we need to transform agriculture by rendering it more attractive through innovation and mechanisation”**

To scale up their operations, the team plans to work sector-by-sector and region-by-region: “We are going to work with partners in rice sectors. And two years later, in eastern Senegal we can touch with banana... And after two years, we would have launched activities in the sub-region.”

While the ideas are big, the challenges are often just as great. “Internet is not really available throughout the country...Perhaps for some there is no possibility to have this, but then it’s difficult to reach people who are in these remote areas.” Of course, Mlouma is accessible on many platforms for this very reason, but Aboubacar sees this technological access as a key obstacle to greater scaling and maximising the potential of Mlouma, as well as the other ICT technologies out there.

#### LESSONS LEARNED

*“We need to facilitate young people’s access to financing. Without actual financial support for agro-entrepreneurship for young people, it will not be a viable path for young people to pursue.”*

Aboubacar hopes that the agricultural sector can do a better job of engaging young people throughout the value chain. In his eyes, that starts with incentives. “For the young to benefit

from an advantage in the agricultural field, we need to transform agriculture by rendering it more attractive through innovation and mechanisation,” he emphasises. “Moreover, we need to facilitate young people’s access to financing. Without financial support for young agro-entrepreneurs, it will not be a viable path for young people to pursue.”

Similarly, Aboubacar sees that financial support is needed on an everyday basis for development, not just during the popular pilot or scaling stages. “There are not enough deposits to allow for producers to store their products in good condition for long periods of time,” he explains. “Efforts must be made to develop the logistics and production paths to facilitate the flow of products.” To truly develop the field and realise the power of ICT, Aboubacar encourages organisations to invest in innovation and agro-entrepreneurship for young people. ■

#### HOW TO PARTNER

For partnerships, please contact Aboubacar Sidy Sonko at [assonko@mlouma.com](mailto:assonko@mlouma.com).

#### COLLABORATION WITH CTA

Mlouma was involved in CTA’s Plug & Play event organised during the international Fin4Ag conference in Nairobi in 2014. He also took part in some ARDYIS project online activities.

\* Read more about Mlouma in this article in *Jeune Afrique: Réussite : Mlouma, une plateforme en ligne au service des producteurs agricoles* - <http://tinyurl.com/jtjt5sc>

# D'Market Movers — Healthy eating meets convenience

## First local online marketplace in Trinidad and Tobago

### PROBLEM

*"We would normally sell to middlemen, but I realised if we sold directly to the consumer, we could double or triple our margin."*

"I started at the base level of agriculture," David shares. "I used to plant lettuce and sell at wholesale markets." But this life was not always profitable, let alone easy. "We would normally sell to middlemen," he adds. "But I realised if we sold directly to the consumer, we could double or triple our margin."

David realised these middlemen were taking a huge share of the profits simply because they had mini-markets or roadside vendors. So how could farmers themselves get that same kind of consumer access? "I was just trying to find a way where the farmers could have access directly to the consumers. I was trying to find the shortest way to the consumer." David originally started the company as a pick-up service, but has since brought on board a new business partner and switched to an online model; the results have been incredible.

### SOLUTION

*"People go online, they order, and we deliver."*

Meet D'Market Movers, the first online marketplace in Trinidad and Tobago, centred on healthy food needs. "We post products online," David shares. "Produce, meat, dairy, minimally processed items, like local chocolate bars, etc. People go online, they order, and we deliver. That's basically it in a nutshell."

By enabling consumers to purchase their grocery needs online, D'Market Movers is simultaneously bringing the street vendor into the consumers' home, and the urban consumer into the smallholder farmers' rural farm area. "We consider it more or less a meeting place," David adds.

Consumers are drawn to D'Market Movers for its convenience. "People normally have to go out and wait in traffic and long lines," David explains. "We are saving people time, and I think people really appreciate any gift of time we can give them." On the other hand, D'Market Movers attracts producers with its strong consumer access. The value of such a virtual meeting place is especially high for those who are producing specialty foods, health-conscious produce, and other niche market products. "Say a farmer wants to do some sort of specialty product, but he doesn't



have access to the specialty market. We provide that kind of platform,” he explains.

As a result, a lot of D’Market Movers’ producers employ good agricultural practices, like pesticide-free and organic farming. “D’Market Movers’ core values are health and convenience,” David shares. “We want to support a healthier people and a healthier planet.”

### IMPACT

*“The greenhouse products were higher quality, but they weren’t getting the appropriate price at the local markets. Now, through our awareness, they are able to get their higher margins.”*

With five years under its belt, D’Market Movers is consistently engaging about 30 producers and close to 700 customers. These producers offer a variety of different products, from organic produce to local chocolate bars, but most come

from rural or hard-to-reach areas that the 95% urban consumer base would, otherwise, not be able to access.

The consistent market demand has had a huge impact on the smallholder farmers. One stand-out example is a rural foodsman who supplies David with raw goat’s milk. “Traditionally, people feel that pasteurised milk is better,” David reveals. “So when he came to us, he was having difficulty finding a market. He was struggling so much that he had stock piles of excess milk.” That all changed when he joined D’Market Movers. “We were able to find people who were more aware of the health benefits of using raw milk.” His sales increased, his demand skyrocketed, and now “His demand is so high, it’s almost higher than his production.” The rural foodsman who was barely getting by is now expanding his business, goats and all.

What’s even more exciting than these individual success stories is the way that D’Market Movers has enabled the growth of the healthy-foods movement on the islands. Take the example of some greenhouse farmers in Cherala. “They were having problems when they started. The greenhouse products were higher quality, but they weren’t getting the appropriate price at the local markets. Now, through our awareness, they are able to get their higher margins.” By creating a marketplace for healthy foods to reach the people who demand them, D’Market Movers has encouraged both producers and consumers to support this growing movement. D’Market Movers has changed the way consumers relate to both local farmers and local food.

### BUSINESS MODEL

*“By choosing optimum quality, we’ve been able to get a premium price for our products.”*



D’Market Movers, the first online marketplace in Trinidad and Tobago, is centred on healthy food needs.

Becoming financially sustainable was not an easy road. “We were the first business that was offering produce online,” David shares. “It was a cultural shift. Traditionally in the Caribbean, people go to the markets where they can actually feel and see their product before they purchase. We had to convince people that high quality could come from online too.” D’Market Movers has since won over people’s confidence, and the business has grown to be a financially sustainable enterprise.

The venture sustains its operations by paying for produce and then charging a slightly higher cost to consumers. “By choosing optimum quality, we’ve been able to get a premium price for our products,” David explains. “This benefits the producers because we give them a better price, while also covering our operational expenses. Even though our prices are a little higher than the regular markets, we are on par with the supermarkets.”

D’Market Movers also charges a delivery fee for consumers who want this extra convenience. But for the most part, the company has kept a pretty standard business model, even opting out of online payments due to the high cost. Instead, customers pay via PayPal, cash, or cheque.

#### WHAT’S NEXT

*“We’re looking at getting into the export market — using local produce to do frozen fruit.”*

With consistent demand for their platform and financial sustainability, David is looking to the next step for D’Market Movers. “Immediately, we’re looking at getting into the export market — using local produce to do frozen fruit, for example. Long-term, we want to be able to franchise our business model into other Caribbean islands.”



**Traditionally in the Caribbean, people go to the markets where they can actually feel and see their product before they purchase. We had to convince people that high quality could come from online too”**

In preparation for their expansion, David and his team are currently documenting and streamlining processes so they can be easily duplicated. “In the Caribbean, each island has its own culture,” David notes. “So to expand we plan to tweak the processes for the particular island.” The venture will have to learn as it goes along, but this organisation has a lot of experience building as it goes.

#### ON THE HORIZON

*“If younger people get involved and use social media to become aware of global trends, they will be able to produce in that direction.”*

Although the healthy foods movement has grown considerably in the last few years, David still sees a lot of room for improvement in agricultural practices, particularly among large-scale producers. “I see the reluctance. We’ve proven that if you take the time and effort to put more care into what you produce for consumers, you’ll actually get a better price. But still, most farmers are not concerned with



**If younger people get involved and use social media to become aware of global trends, they will be able to produce in that direction”**

the health aspect.” So how do we encourage more farmers to be aware of the health effects of what they are producing?

David believes the answer lies in market demand. “If the producers followed trends in a consumer-driven market, then you would see changes in how agriculture is done in the Caribbean. Preferences are changing, people want healthier food. It’s a matter of listening to those changes in taste, and shifting agricultural practices accordingly.”

David also thinks that young people have a particular opportunity to engage in this evolving market. “If younger people get involved and use social media to become aware of global trends, they will be able to produce in that direction.”

Technology is also an area that provides opportunity for young people. “You see a lot of young people developing apps for agriculture. I’ve seen those as young as 14 seeing opportunities where ICT can make a change in agriculture.” With their eye for technological solutions, these young people can truly transform the sector.

What’s so powerful about technology? In agriculture, time makes a world of difference. “If you spend a day or two trying to solve a problem,

you can lose your crop,” David explains. “If you could ask for advice and get a response in real time — maybe in an hour — that can make the difference between a profit or loss.” Speed is crucial in agriculture.

### LESSONS LEARNED

*“I wish I had paid more attention to the business side earlier.”*

Thinking back to when he was just starting D’Market Movers, David shares some key advice: “When you are starting something, you’re very enthusiastic about the idea. But you forget about the business side. I wish I had paid more attention to that earlier. I have learned along the way, but I wish I knew more about these topics before.” With such a steep learning curve, having a business background is essential to a sustainable, viable business. ■

### HOW TO PARTNER

For partnerships, please contact David Thomas (Founder) at [marketmovers14@yahoo.com](mailto:marketmovers14@yahoo.com)

### COLLABORATION WITH CTA

Daniel was a mentor of young innovators during the AgriHack Talent Caribbean activities. He was invited to showcase D’Market Movers and network with participants during the Caribbean Week of Agriculture (CWA) 2014 in Suriname.

## STORY 15

# AgroCentral — Pay-it-forward

## Online model accelerates rural and urban connection

### PROBLEM

*“I realised that getting connections to market is actually a bigger problem than getting information.”*

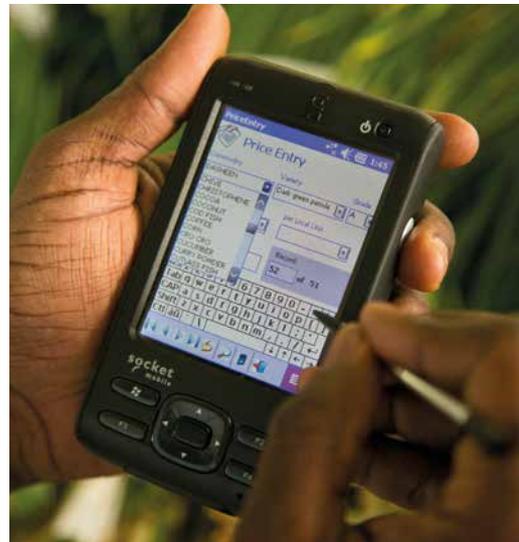
“I’ve always been passionate about entrepreneurship,” Jermaine says. It started as early as high school, where Jermaine would sell miscellaneous products just to make some extra money. When he arrived at university, he joined the entrepreneurship club and met the first of many young entrepreneurs who inspired him to start AgroCentral. It was an ‘A-ha’ moment for Jermaine, when he realised anybody could create change. “You don’t have to be older, you don’t have to be particularly talented in one area. As long as you’re willing to work hard and actually think about what you’re doing, then it’s possible for you to be successful and create that change.”

His initial idea centred on an SMS-based information hub for farmers. But as he talked with the farmers themselves, his idea started to shift. “I realised that getting connections to the market is actually a bigger problem than getting information. So I decided to start moving in that direction.” With his new idea in hand, Jermaine attended the Startup Weekend in Jamaica, where AgroCentral won for its high-potential idea. Just over a year later, the team is poised to launch its second beta as a combined clearinghouse and marketing platform with more than 200 farmers.

With so much ahead, what keeps Jermaine hard at work? “I see myself as somebody who can create value. So I wanted to find a problem that I could solve that would create value for a lot of people in Jamaica and solve a problem that is all over the world.”

### WHAT HE DID

*“We’re a digital clearinghouse that allows buyers to buy products directly from farmers, and suppliers to increase their market reach.”*



 JERMAINE HENRY

 Jamaica  
 <http://agrocentral.co/>  
 Agrocentral  
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**Getting connections to the market is a bigger problem than getting information.**



**Farmers also would benefit from financial literacy. They aren't really as savvy in the business side and, therefore, don't know how to increase production or maybe even to start a farm. Ventures that support such financial infrastructure for farmers would dramatically impact the sector"**

Understanding the inconvenience of rural farmers getting to urban marketplaces, Jermaine and his team have founded AgroCentral, an online marketplace where buyers and sellers interact with each other directly. "We're a digital clearinghouse," Jermaine explains. "We allow buyers to buy products directly from farmers, and suppliers to increase their market reach."

So how does it work? Farmers sign up to the website for free, and then AgroCentral reaches out to them to get the required information — acreage, payment method, crops, etc. "Once the farmers are signed up," Jermaine says, "they have access to the platform. They are able to receive requests from buyers and can reply to those requests using a bidding system." The platform also allows suppliers to work together to fill buyer requests. For buyers, such as agro-processing units and restaurants, the platform enables them to get instant price comparisons from different suppliers, all with the click of a button.

The whole system works on web and SMS platforms, which means that both buyers and sellers get customised dashboards for the relevant products posted running through a curated feed. Moreover, AgroCentral handles all payment transactions digitally and uses a pay-it-forward model, which allows farmers to get paid within three days, without putting businesses under pressure to pay before making their own income. AgroCentral is really a triple win — a win for the farmer, for the business, and for the world.

#### IMPACT

*"Farmers see a 15-22% increase in income by being on our platform."*

In the year since it began, AgroCentral has reached 75 farmers and two buyers (small and medium-sized enterprises) through its initial beta programme. Though still small in scale, the organisation has started to see promising financial impact. "Most of the farmers were initially selling to vendors who are middlemen, so they were losing a decent margin." By cutting out the middlemen, farmers who use AgroCentral have seen a 15-22% increase in their income.

In addition, the pay-it-forward model has helped make that income more reliable for farmers, while keeping the costs sustainable for business. While farmers typically waited about 30 days to get paid from a business, AgroCentral farmers get 90-92% of the transaction at the time of purchase. This structure has radically improved farmers' ability to scale, as Jermaine explains. "Farmers previously scaled down production because they could only meet a certain market. But, by allowing them access to a wider market, consistent buyers, and immediate income, they have started to make plans for increasing production."

## BUSINESS MODEL

### *How is the venture sustained?*

AgroCentral has approached its sustainability in stages, thus building up different funding sources until it reaches its scaling model. In its current beta phase, AgroCentral does not charge for the platform. To sustain its initial operations thus far, the organisation has relied on income from side projects. As the venture continues to grow, the team is working with investors and grantmakers to invest in additional personnel to continue its promising trajectory.

AgroCentral is exploring a fee-for-service model to sustain its venture in the future. Buyers would be offered access to the platform free for a year, and farmers would be charged a small percentage for each transaction. This amount would then be used to fund the pay-it-forward model, in which farmers receive 90-92% of the payment within three days of the transaction.

## WHAT'S NEXT

*“Our current model is moving into the hotel industry locally, and being used by persons overseas to buy Jamaican produce.”*

While AgroCentral continues to improve in its beta phases, Jermaine is already looking ahead. “We’re working on a marketing platform that integrates web and SMS,” Jermaine shares. “And, as we move forward, we’ll be integrating other services, such as the information hub.”

Jermaine has hopes to expand AgroCentral both within Jamaica and beyond. “Our target market right now is small and medium-sized enterprises... I see our current model moving into the hotel industry locally, and being used by persons overseas to buy Jamaican produce.

I envision AgroCentral moving into different Caribbean countries and South America, and maybe even Africa later on. That’s what success would look like for us.” To scale their model, AgroCentral is looking to build upon its existing partnerships, both to work on market research and expand clientele.

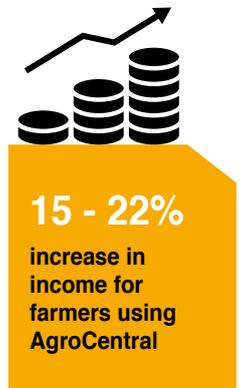
AgroCentral won the 2015 ATECH Demo Day (event organised by the ATECH Conference, the Caribbean’s major tech conference for startups in Aruba, along with a 20,000 USD prize.

## ON THE HORIZON

*“You could use that big data to shape the sector and industry locally, as well as worldwide.”*

While there are many exciting developments in the Caribbean agricultural field, Jermaine believes that financing for farmers, data collection, and information sharing need to be addressed if we want to truly shift the sector. “Access to finance is a problem for farmers locally, mostly because there’s not a lot of record keeping done,” Jermaine explains. Farmers also would benefit from financial literacy, Jermaine believes. “They aren’t really as savvy in the business side and, therefore, don’t know how to increase production or maybe even to start a farm.” Ventures that support such financial infrastructure for farmers would dramatically impact the sector.

Another major road block for agricultural development in the Caribbean is the lack of sector-wide information. “In Jamaica, for every one extension officer, there are about a thousand farmers. As a result, the data collection methods in the agricultural sector locally just aren’t very effective.” Jermaine sees huge potential for ventures to use ICT or mobile strategies to address this challenge.



With more open data, Jermaine believes the sector would be exponentially more efficient and productive. “Just like most startups use metrics to steer where their startup is going, you could use that big data to shape the sector and industry locally, as well as worldwide.” Useful for trend spotting and problem-solving, this data could inform policymakers, innovators, and the farmers themselves. “Data would help farmers to make wiser decisions in terms of what they are growing, how they are fitting their crops, where they’re growing, utilisation of space, and more.” Jermaine sees endless possibilities — once the sector embraces open data, the rate of change will be accelerated exponentially.

### LESSONS LEARNED

*“It’s hard to get people who are willing to work without salary for a while.”*

Like many startups, AgroCentral has found that it’s important to find the right people from the beginning. It’s hard to get people who are willing to work without salary for a while,” Jermaine reflects. “So it’s crucial to find dedicated persons who are willing to commit to solving the problem without profits, at first.” Your team makes or breaks your venture.

Once you have the right team, Jermaine believes the rest is a matter of being attentive and open. “Don’t be afraid to talk, don’t be afraid to reach out to stakeholders. That’s the number one thing,” he shares. “We were a little bit slow to reach out to different people. We were waiting until we were perfect or until we had this or had that. I think the best thing to do is get out there and get the information directly from the people involved.”

With the right team and an informed idea, the sky is the limit. Many people worry about how to have a sustainable venture, but Jermaine believes this is not as big of a hurdle as it may seem. “If you’re creative enough, there’s a business model for everything,” he says. ■

#### HOW TO PARTNER

If you are interested in partnering with AgroCentral or just receiving more information, please contact [info@agrocentral.co](mailto:info@agrocentral.co).

#### COLLABORATION WITH CTA

AgroCentral’s first interaction with CTA was in July 2014 when they were invited to Nairobi for the Fin4Ag conference. Through this conference they were exposed to a number of different solutions that helped them to develop their business model and also got the opportunity to engage many African agricultural stakeholders for feedback on their product. In October 2014, They were selected as one of the facilitators for the AgriHack Caribbean initiative that again helped them engage numerous stakeholders as well as forge partnerships. CTA continues to support AgroCentral through communication and networking opportunities.

## STORY 16

# Mkulima Young — 60,000 connections

## Premiere social platform and marketplace for young farmers

### PROBLEM

*“We have a bulging population who cannot fit into the employment that we have. Agriculture has been one of the areas that can provide employment.”*

“I grew up in a small-scale farming region, and I became a small-scale farmer,” Joseph shares. After having the opportunity to study agriculture at university, Joseph realised he wanted to use these skills to help his community: “I wanted to give back to the society through my profession. I also wanted to focus on the challenges that are being faced globally, with regards to agriculture and food security.”

For Joseph, another pressing issue was unemployment, especially in Kenya. “We have a bulging population who cannot fit into the employment that we have. Agriculture has been one of the areas that can provide employment. If the potential is there, then why aren’t young people flocking to the sector? Agriculture needs to be attractive to young people — and it’s a challenge to figure out how to do so.”

### SOLUTION

*“Mkulima Young focuses on assisting young people with three aspects of agriculture: (1) information; (2) market access; and (3) financing.”*

“Mkulima Young is an online platform that engages young people who are interested, inspiring and using agriculture to generate income and employment,” Joseph explains. Mkulima Young focuses on assisting young people with three aspects of agriculture: (1) information; (2) market access; and (3) financing. Beyond providing services, Mkulima Young is building a community of young people working in agriculture and creating a space for them to connect.

**JOSEPH MACHARIA**

 Kenya

 [www.mkulimayoung.co.ke](http://www.mkulimayoung.co.ke)

 Mkulima Young

 @mkulimayoung

 Mkulima Young



Agriculture needs to be attractive to young people - and it's a challenge to figure out how to do so.

© CTA



60,000

Facebook  
followers for  
Mkulima Young

How does it work? “We think of ourselves as a one-stop shop,” Joseph explains. “You come to us if you would like to be inspired, you’re interested in how to do something, or you would like to buy or sell produce.” For those that want to be inspired, Mkulima Young tells the stories of Mkulima champions, young people who are using agriculture as a business and earning income. If people come to the platform to learn, there’s a specific Q&A section on the site, where both Mkulima Young staff and other fellow farmers will respond. Questions can also be submitted via SMS, and there’s an organisational YouTube channel with videos on what other young farmers are doing. Lastly, for the young farmers that come to buy or sell their products, Mkulima Young supports a free, online marketplace, which is also integrated with the organisation’s famous social media presence on Facebook and Twitter.

“Mkulima is a Kiswahili name meaning ‘farmer who is young’,” Joseph states. “People say you make agriculture sexy but we say agriculture is already sexy, it’s just the way you dress it.”

### IMPACT

*“We have been able to make transactions and marketing faster. We’re now able to overcome the challenge of brokers or the middleman.”*

Mkulima Young has about 60,000 Facebook followers and 10,000 Twitter followers, many of whom Joseph believes the organisation interacts with on a daily basis. While the numbers are impressive, Joseph finds meaning in how this has shifted power and income into the hands of his young farmers.

“We have been able to make transactions and marketing faster,” Joseph explains, referencing the work the organisation has done to digitise

the marketplace. “We’re now able to overcome the challenge of brokers or the middleman.”

Despite the tremendous accomplishments, Joseph is most proud of Mkulima Young’s role in shifting the conversation around agriculture. “In Kenya there was no focus on agriculture,” Joseph recalls. “But after we began telling the stories of our champions, they were featured in the newspaper and popular media. There were programmes that came up on agriculture and we were the contact point for anything related to young people in agriculture. We’ve changed the mindset of agriculture in Kenya.”

### WHAT’S NEXT

*“We just registered as a savings and credit society. Maybe Mkulima Young Savings and Credit Society can be a bank for young people in the future!”*

In the next few years, Joseph hopes that Mkulima Young can strengthen itself internally, while also expanding its services to its young farmer network. “We initially started as a Facebook page,” Joseph shares. “And then we grew from one level to the next. Now we’re focused on how to build the organisational structure, so that we can have the administration, finance, and other departments.”

Simultaneously, Joseph has plans to expand Mkulima Young’s services within the three focus areas. To improve the information component of the organisation’s work, Joseph is eager to make a more robust knowledge base. “How do we get credible information? How do we build trust? How do we provide the best information for these young people?” he shares. Mkulima Young also hopes to take its online marketplace to the next level, by directing people to local markets and connecting them with other regional or export markets.

One of the most exciting ideas for the organisation lies in their plans to offer savings and credit. “We just registered as a savings and credit society. We would like to build it and promote that culture. Maybe Mkulima Young Savings and Credit Society can be a bank for young people in the future!” Joseph exclaims.

### ON THE HORIZON

*“We need to make young people feel that agriculture is not just production; there are many ways to get involved along the value chain and earn income.”*

To truly transform the agricultural sector, Joseph believes that improving farmers’ financing and earnings is essential. “It’s frustrating because agriculture has the highest number of risks, yet the business does not attract many financial institutions to give loans,” Joseph shares. How can rural communities escape endemic poverty, if farmers aren’t able to expand their businesses?

Farmers need more than financial services, though; they need to be better valued. “The payback for the farmer is so poor compared to other players in the value chain. Though we say it’s the backbone of our GDP, we all know that three times a day you have to eat food, but still we do not support those people who produce it.”

In Joseph’s mind, it’s critical to change the conversation around agriculture — to lessen the talk about its challenges, and spend more time talking about its opportunities. “We need to make young people feel that agriculture is not just production; there are many ways to get involved along the value chain and earn income. We just have to help them find them.”

### LESSONS LEARNED

*“You have to have that hands-on experience as a farmer.”*

“You have to have that hands-on experience as a farmer,” Joseph emphasises. There are many programmes advocating for young people and agriculture, but many are staffed by those who have no agricultural background. “They do not even know what a cow looks like or how to milk one; they don’t know the pains that young people undergo when trying to implement a certain project.” Agriculture has always been the centre of Joseph’s life, and he attributes that to much of his success: “When a young person tells me, ‘I have some disease on my tomatoes.’ I know how it feels because I am a farmer.” ■

#### HOW TO PARTNER

For partnerships, please contact Joseph Macharia (Founder) at [mkulimayoung@gmail.com](mailto:mkulimayoung@gmail.com).

#### COLLABORATION WITH CTA AND ASHOKA RELATIONSHIP

Joseph was elected to the Ashoka Fellowship in 2014. He was finalist of the Women and Young Professionals in Science competitions, organised by CTA’s Science, Technologies and Innovations (STI) programme in 2009. He was sponsored to attend international conferences such as the ICT4Ag conference in Rwanda in 2013 and the COP 19 conference in Poland in 2014.

## STORY 17

# tech4farmers — 80% income increases

## Digital commodity exchange and warehouse receipt system unlocks markets

 DEOGRATIOUS  
AFIMANI

 Uganda  
 [www.tech4farmers.com](http://www.tech4farmers.com)  
 [tech4farmers](https://www.facebook.com/tech4farmers)  
 [@tech4farmers](https://twitter.com/tech4farmers)  
 [Deogratiuous Afimani](https://www.linkedin.com/company/tech4farmers)

### PROBLEM

*“The logistics of moving food from the village to the city is a huge challenge. The price of inputs is just so high.”*

“If you look at our economy, 82% of people are engaged in agriculture,” Deo explains. “Yet agriculture only contributes 23.1% to GDP, in part because so much food is lost in storage. The logistics of moving food from the village to the city is a huge challenge. The price of inputs is just so high.”

Coming from a family of farmers, Deo knows this challenge firsthand. “Most farmers bring their food on bicycles, or hire a vehicle to get to the market. My dad’s truck would go and pick up food to transport, but the roads were so bad, the cost of transportation was too high. It was hard for the farmers to turn a profit.” While infrastructure is not an easy fix, Deo saw potential in technology — however small — in making an impact.

### SOLUTION

*“We run a digital commodity exchange and warehouse receipt system. We build trust and transparency in the whole value chain.”*

“We run a digital commodity exchange and warehouse receipt system,” Deo explains. “We build trust and transparency in the whole value

chain.” tech4farmers provides services for the main value chain stakeholders — farmers, traders, input dealers, warehouse owners, and consumers. Subscribers can access all services through one platform: <http://www.tech4farmers.com>.

For farmers, the platform offers market intelligence on commodity prices, warehouse locations and transport services; sources commodity information, and other consulting services. The biggest draw, of course, is the



Farmers loading tea onto a lorry, Uganda.

© Jake Lyell/AfricPics

online marketplace to sell goods and receive payments directly via mobile phone. Consumers, similarly, are interested in tech4farmers as a farmer network where they can compare local produce and, for additional payment, receive quality checks on their purchases. The platform also has a significant value-added function for farming service partners who use it to advertise and connect with potential customers.

How does it work? Once a client signs up to the website, she can access all the services. In addition, for rural farmers without access to the internet they can access the services through supplementary SMS or USSD channels, as well as field partners. While platform usage may vary depending on the season, tech4farmers endeavours to provide value during all times of the year — during planting, harvesting, and distributing — to make sure its means of access are conducive to farmers.

Ultimately, Deo sees the platform as a means of business growth: “We’re inspiring farmers to see farming as a business, not just subsistence. We’re helping them realise their own potential as business men and women.”

## IMPACT

*“Our farmers are able to increase their income by 80% in part due to increased yields as a result of adopting better farm management. They are doing farming as business.”*

“Our farmers are able to increase their income by 80% in part due to increased yields as a result of adopting better farm management,” Deo shares. “This is because they are now marketing and more organised... They are doing farming as a business. We intend to help our farmers increase yields further by up to 155% by 2020.”

In addition to individual farmers’ income, tech4farmers has reduced postharvest losses in whole industries collectively and intends to further reduce the losses for its clients to less than 50% by 2020. “We worked with warehouses in Eastern Uganda to increase their rice storage capacity,” he explains. Now, those warehouses are able to better predict the harvests and create space, accordingly.

tech4farmers currently serves 70 businesses and 2,100 individual subscribers, and projects to reach 10,000 farmers by the end of 2015. By working with its service providing partners — warehouse operators, food processors, transport service providers — Deo is confident that they will be able to reach their goal of 150,000 subscribers and 5,159 cooperatives by 2020.

tech4farmers will also be expanding into the storage industry. They count on the support of the Ministry of Trade, Industry and Cooperatives.

## BUSINESS MODEL

*“We expect to break-even by 2018. We offer premium services and enterprise solutions for businesses that want extra services.”*

“We expect to break-even by 2018,” Deo shares. “Some of the businesses that use our platform on a regular basis are asking for new services, like sourcing commodities.” Banks and government entities are also approaching tech4farmers with these customisation requests. Deo sees this as the near-term business model: generating subscription fee revenue for premium services.

Subsequent revenue streams will come from commissions on transactions, commodity sales and trade financing. “We offer premium services for businesses that want extra services, including

processing payments for off-takers, warehouse quality checks, and organised farmer groups. We've already been approached by traders," Deo adds. "They want these services." For a modest service charge of US\$20/year, businesses can take advantage of the premium plan and enjoy the benefits of more targeted content well-suited to their particular area of business."

### ON THE HORIZON

*"Commercial banks do not meet farmers' needs."*

Looking ahead, Deo sees immense potential in agricultural financing — in his eyes, it is still a largely untapped frontier. "Still, a lot of agricultural initiatives do not have good finance systems and commercial banks do not meet farmers' needs," he shares. "Currently, 90% of finance going into agriculture comes from the farmers themselves. Either farming should become much more profitable, or external financing for agriculture has to increase radically; but overall, finance for agriculture has to increase by at least half."

For Deo, innovation in this part of the agricultural sector would include better record keeping, both from the government regarding land holding and farmers regarding business transactions. "People need to begin looking at farming as a business and take it seriously. This means keeping proper records, which will also help them actually get financing."

### LESSONS LEARNED

*"You need to know when to say no. You don't have to say yes all the time."*

"If you want to move forward, you need to make quick decisions," Deo advises. "You need to know when to say no. You don't have to say yes all the time." For many entrepreneurs, the

opportunities seem endless — there are so many ways to tackle a problem, it is easy to try and do everything. But that's not always wise, Deo says. "You need to have a goal. You need focus." One entrepreneur — and even a team of entrepreneurs — cannot do everything; it is most important to focus on doing one thing well, and then diving deeply into that strategy to achieve success. ■

#### HOW TO PARTNER

- Technical assistance
- Sourcing commodities
- Value chain development
- Telecoms, MFIs, banks

For more information on partnerships opportunities, please contact Deogracious Afimani (Founder/CEO) at [deo@tech4farmers.com](mailto:deo@tech4farmers.com). Tel: +256 793 730 859  
4th Floor Hive Colab, Kanjokya House, Plot 90  
Kanjokya Street, Lower Kololo  
P O Box 10694, Kampala, Uganda

#### COLLABORATION WITH CTA

tech4farmers first began working with CTA in November 2013, when the organisation was invited to Plug & Play at the International Conference ICT4Ag in Kigali. In December 2014, tech4farmers was also selected for Plug & Play at the Agricultural MIS & ICT Platforms for Business Management across the Value Chain International Workshop in Arusha organised by IFDC and co-sponsored by EAGC and CTA. CTA continues to support tech4farmers by providing opportunities to showcase at international conferences, identify new partners and publicise their work in publications.

## STORY 18

# Lôr Bouôr — five services

## Using ICT to improve efficiency, communication, and productivity in farmer cooperatives

### PROBLEM

*“I saw the difficulties they faced, which triggered this idea to become an entrepreneur.”*

Having studied computer engineering at university, Jean-Delmas worked as a consultant to advise organisations on how to use ICT for development. While working on a project with African cashew nuts in rural areas, he had a realisation: “During my mission, I decided to work in close collaboration with the people on the ground to come up with a service platform that will respond to their needs at different levels. I spent 3 years with the population, which enabled me to see the difficulties they face and triggered this idea to become an entrepreneur.”

Of the challenges that he saw, Jean-Delmas was particularly struck by the lack of formalisation in the farmer cooperatives that he worked with. While not traditionally a problem, Jean-Delmas saw the potential for ICT to modernise their operations and bring greater efficiency and opportunity.

### SOLUTION

*“Our platform offers five services. Each service has a special feature, but they all work in synergy with each other.”*

Seeking to bring his skills to the development space, Jean-Delmas founded ICT4dev.ci to integrate ICT-based solutions in response to the issues faced by the African population. While ICT4dev.ci has many programmes, one of its main platforms — Lôr Bouôr (“excellent plantation”) — is “a solution platform at the service of a modern and efficient agricultural sector,” Jean-Delmas explains.

The platform is designed to offer five services to local farmer cooperatives and their partners: (1) a web-portal ([www.lorbouor.org](http://www.lorbouor.org)); an information, training and promotion space dedicated to the

 **JEAN-DELMAS EHUI**

 Côte d'Ivoire  
 [www.ict4dev.ci](http://www.ict4dev.ci)  
 [ICT4dev.ci](https://www.facebook.com/ICT4dev.ci)  
 [Khan Jean-Delmas Ehui](https://www.linkedin.com/in/KhanJeanDelmasEhui)



Women from a local cocoa farmers association work with cocoa beans in Djangobo, Côte d'Ivoire.

agricultural sector (2) a web-based application (GELICO), which is a genuine cooperative management tool; (3) a mobile and SMS application referred to as a “virtual market” that creates an opportunity for agricultural cooperatives provision and customers demands to meet (4) an SMS MIS (Market Information System) application; and (5) a voice mailbox called “Djassi” (news) to directly convey agriculture-related information to producers in local languages. “Each service has a specific feature,” Jean-Delmas adds, “but, at the same time, they work in synergy with each other.”

At its heart, Lôr Bouôr improves connections between different stakeholders in agricultural communities. Its information portal promotes local input suppliers and even cooperatives themselves who would like to increase their visibility; the digital record keeping platform allows farmers in the same cooperative to track their farm information in the same location, making management infinitely easier; and the online market and market prices connect farmers directly to their buyers, so they can increase their income.

### IMPACT

*Even though in its pilot phase, the platform has 800 registered cooperatives.*

Though still in its pilot phase, Jean-Delmas and his team have already registered 800 cooperatives on the platform. In particular, the record keeping platform has 10 active cooperatives, which each brings in 500 farmers. The team plans to have 40 cooperatives actively using the service by the end of 2015, so that Lôr Bouôr will be servicing 20,000 farmers. “Even though we are still in a pilot phase,” Jean-Delmas describes, “we will provide them with the platform to use and equip them with our other tools.”

### BUSINESS MODEL

*“When cooperatives register with us, they will pay a fee just once to access our services.”*

Thus far, Lôr Bouôr has been sustained by external funding — mainly through the competition prizes that the platform has won. These prizes have not only brought Lôr Bouôr the finances to support the platform, but they have also connected the team to technical support and training to improve their go-to-market strategy.

To diversify their revenue stream, Jean-Delmas has also applied for a loan from the bank. Down the line, though, he hopes that Lôr Bouôr can be sustained by registration fees from the cooperatives and all the actors of agri-business who use its services and all agricultural sector partners. With this long-term strategy in mind, he’s focusing on this next hurdle.

### WHAT’S NEXT

*“The objective is to have regional grants that will encourage farmers to produce more and contribute to food security.”*

As Jean-Delmas thinks about the next few years, he is excited to expand Lôr Bouôr both geographically and programmatically. Indeed, Jean-Delmas has his sights set on much of West Africa — Benin, Burkina Faso, Mali, Togo, and even Cameroon. “We’re planning to start very quickly and increase the coverage in Côte d’Ivoire in the first year. Then, in the second year, we’ll start in other countries in the region.”

Why the regional focus? Jean-Delmas has visions of improving regional integration among agricultural producers and consumers, such that the region’s food insecurities can be tackled from different angles. “The objective is to have regional grants that will encourage farmers to

produce more and contribute to food security,” he explains. Jean-Delmas seeks to improve the region’s food security by improving coordination across the different seasons represented in neighbouring countries.

### ON THE HORIZON

*“It’s in entrepreneurship that we can fight against unemployment.”*

To maximise the power of ICT in the agricultural sector, Jean-Delmas believes the government needs to take a more active role. “We think there should be a minimum of support and collaboration from the Ministry of Agriculture in Côte d’Ivoire,” he shares. Though there are government initiatives working towards similar goals, he wonders whether they are partnering with organisations who are already doing the work.

Without government support, financing and training is also difficult for young entrepreneurs. In Jean-Delmas’ mind, this is a critical area for growth, as he sees entrepreneurship as the way to tackle unemployment across the continent: “I always tell young people that it is not in making job applications that we can assert ourselves. It is firstly to dream, to have a goal, and then step-by-step put the idea into place. It’s in entrepreneurship that we can fight against unemployment.”

For Jean-Delmas, this means reversing the stereotype that agriculture is only for the older generations. It also requires building environments where young people can experiment and thrive.

### LESSONS LEARNED

*“The end-users feel that they are involved in the solution; the tools are not something that has been imposed on them.”*

Jean-Delmas cites ICT4dev’s strategic advantage in its emphasis on co-creation with local communities. “The tools and the solutions have been developed with the population,” he explains. “The end-users feel that they are involved in the solution; the tools are not something that has been imposed on them.” As a result, Jean-Delmas and his team are able to bring products to market that have been developed through long pilot phases with local feedback and suggestions.

Along with this emphasis on local feedback, Jean-Delmas reminds aspiring entrepreneurs to just get started with their initiatives. It is not only the smart thing to do from a programmatic perspective, but it also can help secure financing. “When I have an idea,” he says, “I first make a prototype and see if it works. Then I show it to someone to invest in it. You cannot sell revolutionary ideas to investors without having a prototype and actually showing what it can do.” ■



20,000

farmers will be serviced by Lôr Bouôr

#### HOW TO PARTNER

For partnerships, please contact Jean-Delmas EHUI (Founder & CEO) at [delmo225@ict4dev.ci](mailto:delmo225@ict4dev.ci).  
Address: Cocody 2 Plateaux Ex-Ambassade de Chine Tech Hub Akendewa, BP 1164 Abidjan 04

#### COLLABORATION WITH CTA

Jean-Delmas was supported to attend the international conference Fin4Ag in Nairobi, 2014. He participates in online activities of the ARDYIS project. Lôr Bouôr is selected on the reserve list for potential funding in 2016 for the CTA’s “Advancing youth agricultural entrepreneurship and ICT innovations to boost climate-resilient food value chains.”

## STORY 19

# FoodRing — Perish no more

## Cloud service connecting low-income households to affordable nutrition

 OSCAR EKPONIMO

 Nigeria  
 <http://foodring.com.ng/>  
 FoodRing  
 @foodrings  
 Oscar Ekponimo

### PROBLEM

*“Rising prices of food items reduces access to nutrition for low income households, while retailers and distributors waste nutritious food after expiry.”*

When Oscar was in high school, his father became ill and was temporarily unable to provide for their family. “It was a challenging period,” Oscar remembers. “Gaining access to quality nutrition and wholesome meals was a challenge. There were several days when I went to school without proper nutrition and it impacted my

education and my academics.” He resolved to work towards a future where his peers would not suffer like he had. “I didn’t want other young people like me — 12, 13, 14 years old — to go through what I did,” he adds. Oscar’s dedication to nutrition and food security was born.

In 2009, Oscar and his friend started an initiative where they cooked and distributed food to street kids on Valentine’s Day. “That was the early stages of what I’m working on now,” he explains. While the Valentine initiative continued, Oscar soon found out that a retail store where his friend worked regularly threw away unsold, packaged food. “I thought to myself, ‘What if we channeled that food while it’s still good to these street kids?’ Instead of cooking meals, what if there’s an alternative way to provide nutrition?” Later that year, SalvageHub — now FoodRing — was conceived: an organisation preventing retail food waste by redistributing unsold produce and products to those in need.

### SOLUTION

*A cloud-based data platform that fosters nutritional security, and prevents postharvest food loss.*

Aiming to foster nutritional security, Oscar realised that Salvage Hub had to capitalise on technology and a sustainable business



**FoodRing is an organisation preventing retail food waste by redistributing unsold produce and products to those in need.**

model to become an effective solution for this problem. The venture had to be reworked into a comprehensive technology service with a revenue model, while staying true to its objectives. The team found a solution in their development of FoodRing: “A cloud-based information and dataset tracking technology that fosters nutritional security, thus preventing postharvest loss at the retail and distribution stage of the agricultural value chain.”

The solution addresses Oscar’s initial goal of food security while ensuring these foods do not go to waste. But how does it work? “We have a cloud-based system,” Oscar explains, “this allows all key stakeholders to access the right information and connect with each other.” Retailers, suppliers, and distributors sign up to the platform, and then are able to monitor and track their stock nearing expiry, for a maximum of 90 days. Simultaneously, consumers — typically economically disadvantaged households — are able to access the platform and purchase these near expiry products at deep discounts. “On the one end, we’re preventing postharvest food loss at the retail level, while fostering nutritional security. That’s the novelty behind what we’re doing now at FoodRing.”

## IMPACT

*FoodRing works with 20 retailers and has daily interactions with 300 low income earners and two orphanages.*

FoodRing launched at the beginning of 2013, and already works with 20 retailers, 300 low-income earners, and two orphanages. “On a weekly basis, we are able to provide nutritional security for 150 vulnerable children who rely on the deeply discounted and low priced food products for their nutrition intake,” Oscar reveals. FoodRing is not only supporting



**On the one end, we’re preventing postharvest food loss at the retail level, while fostering nutritional security. That’s the novelty behind what we’re doing now at FoodRing”**

children who face similar challenges as he did growing up, but the venture has also received high praise from retailers, who say that FoodRing has turned what used to be a pain point into an easy and effective social system.

In addition to providing nutritional security for all these participants in the value chain, FoodRing has secured market share, realising the significant dependence by these individuals on the ease and affordability of their product. Hence, FoodRing is strongly committed to the continuation of their business model for purposes of the community.

## BUSINESS MODEL

*“Direct sales and marketing ... to consumers who would relish the opportunity and access to deeply discounted or rock bottom priced products that are soon to expire.”*

FoodRing’s business model takes advantage of the high mobile penetration across the African continent, through self-funding. Using the technology alongside volunteers, retailers are able to input and receive information needed from the volunteer-assisted plugged-in data.

Additionally, FoodRing does “direct sales and marketing to consumers of elderly homes and artisan groups who would relish the opportunity and access to deeply discounted or rock bottom priced products that are soon to expire.”

By being the provider of access to local markets to retailers and consumers, FoodRing sustains itself on the high dependency it has created within the community. FoodRing’s market share is increasing, especially without government support towards community groups like orphanages. While currently using self-funding, FoodRing seeks to grow its business model in the future to enable stronger and more complete financial sustainability.

### ON THE HORIZON

*“We want a better operational structure... for more sales a month to advertise and have more people on board.”*

To overcome the challenges of financial sustainability, FoodRing wants to secure a revenue-generating model, using that to acquire and retain strong technical talent. Oscar hopes that FoodRing can begin to charge a subscription fee from retailers. With these resources, Oscar believes FoodRing will scale, creating larger, more lasting impact in the community.

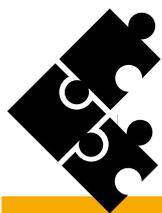
Oscar’s plans for scaling are no small feat. “We want a better operational structure; for more sales a month to advertise and more retailers on board. It’s our strategy to make more consumers aware of what the platform is doing.” While FoodRing does seek additional funding, Oscar hopes that FoodRing can eventually be independent and self-sustaining for value-added impact.

### LESSONS LEARNED

*The huge penetration of mobile technology on the African continent unlocks a new market for young entrepreneurs.*

With huge penetration of mobile technology on the African continent, Oscar sees a new market for young entrepreneurs. “You can e-deliver products and raise income levels in households; you can help farmers in rural areas better price their commodities. You can use mobile for everything because it’s already widely used in the African landscape,” he shares.

To build a sustainable product, though, Oscar realises you cannot just rely on mobile demand. “You’ve got to be able to improvise, innovate around challenges. You have to learn new skills. I had to learn sales and marketing,” he says. Successful entrepreneurs are flexible — willing to learn, create, and change course as they go. ■



**You’ve got to be able to improvise, innovate around challenges. You have to learn new skills.**

#### HOW TO PARTNER

For partnerships, please contact Oscar Ekponimo (Founder/CEO) at [oscar@twelvesquare.net](mailto:oscar@twelvesquare.net) or [oscarekponimo@gmail.com](mailto:oscarekponimo@gmail.com).  
Tel: +234 8063 852043 | Address: 14B Kampala Street, Wuse II, Abuja

#### COLLABORATION WITH CTA

Oscar participates in online exchanges under the ARDYIS project.

# Syecom Ghana Ltd — A bird's eye view

## GIS/GPS maps empower farmers to succeed internationally

### PROBLEM

*“A lot of farmers don't know the size of their land... or where there are natural opportunities for a certain crop over another.”*

Solomon started a few initiatives at university and realised that the entrepreneurial path was the one he wanted to take. “I didn't want to follow the traditional way of living. I wanted to try to make a change by identifying challenges in the market and developing solutions to those challenges.” Solomon's journey as an entrepreneur started with observation — noticing where there was a market gap, and creating a way to fill it. He honed his skills and applied the same thinking to agriculture.

“Technology was used in academia to support research activities,” Solomon shares. He remembers a USAID project that used GPS to analyse agricultural implications for a trade and investment programme. With the technology, USAID could understand a country's comparative advantage — information that would have been very useful for farmers, yet wasn't reaching them. “Some of them were aware of the technology, but some didn't know that it existed,” he adds.

From his experience in both public and private sector institutions, Solomon saw the potential of GPS/GIS technology to transform the ways

farmers understood their own production. “A lot of farmers don't know the size of their land or its underlying terrain. Their families have been farming it for generations, but they don't know how large each plot is or where there are natural opportunities for a certain crop over another.”

### SOLUTION

*“We're a data collection and data analysis tool. We create maps.”*

Syecom Ghana Ltd. uses geospatial mapping (GIS/GPS) to provide farmers with a scientific understanding of their farmland. “Basically, we're

 **SOLOMON ELORM ALLAVI**

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 Ghana

 <http://agricinghana.com/>

 Syecom ghana Ltd

 @agricinghana



**Syecom Ghana Ltd. uses geospatial mapping (GIS/GPS) to provide farmers with a scientific understanding of their farmland.**

a data collection and data analysis tool,” Solomon explains. “We create maps.” Farmers then use this data to meet desertification requirements and provide documentation for financial and insurance institutions. These maps also help farmers plan for their next production season — what inputs they should use and in what quantity.

How does this differ from the norm? “Obtaining scientific understanding about farming fields isn’t budgeted by many of our farmer clients,” Solomon explains. The service is quite expensive, especially for smallholder farmers. Syecomp Ghana Ltd. offsets the cost of the technology by involving farmer groups, collaborators, and intermediaries who can support farmers in the technology adoption. The company is also expanding its technological services to make the data more accessible: “We are scaling our service by using satellite imagery to monitor crop growth, water loss, and agroclimatic conditions. We then georeference this data to the farms mapped,” he adds.

With an economic advantage for larger farms, Syecomp Ghana Ltd. caters mostly to medium-sized commercial farmers, but also works with smallholder producers groups to reach the majority. “We have a lot of horticultural and vegetable producers who are in the export market,” Solomon adds, noting that mango, pineapple, and vegetable producers find the service particularly useful for export certification. Syecomp Ghana Ltd. also works a lot with farmer groups, which tend to have both the resources and markets that require such documentation.

### IMPACT

*Syecomp Ghana Ltd. has worked with 4,000 horticultural and vegetable farmers, helping them become more aware of their fields, as well as meet regulation requirements to sell their produce to additional markets around the world.*

Since its founding five years ago, Syecomp Ghana Ltd. has worked with 4,000 horticultural and vegetable farmers, helping them become more aware of their fields and meet regulation requirements to sell their produce to around the world. Solomon tells the story of one particular client, Quin Organics, Ltd., that exports and processes fruit-based drinks.

“We worked with their 10 farmer groups totaling 5,000 farmers and helped the groups meet the required certification for organic produce.” Though Syecomp Ghana Ltd. has not carried out a formal impact evaluation to know the extent of the income increase, organic certification opens up several more high-paying markets, especially in the US and EU.

As Solomon thinks about the next few years, data-based decision-making is a high priority. “Geospatial technology is quite broad. We want to focus on a more comprehensive way of linking farm information to satellite information, so farmers can better understand what is happening in their fields.” Over the next 3 years, Syecomp Ghana Ltd. hopes to generate such models for its client farmers, so they can make integrated data-driven decisions.

### BUSINESS MODEL

*“Syecomp Ghana Ltd. clients are primarily concentrated in the southern region. In the north, they have not fully adopted professional services due to donor projects.”*

As a private company, Syecomp Ghana Ltd. does have financial sustainability, but not without diligent cultivation of demand. Marketing can traditionally be difficult, with four million smallholder farmers in Ghana who are primarily not online. “They want to



**5,000**

farmers were helped to meet the required certification for organic produce

see you in person,” Solomon notes. “That has been a challenge, especially in the most remote parts of the country.” To address this challenge, Syecomp Ghana Ltd. visits farmer groups to maximise the outreach of its in-person meetings.

Still, Syecomp Ghana Ltd. clients are primarily concentrated in the southern region. “In the north, they have not fully adopted professional services due to donor projects,” Solomon reflects. “They are not very enthusiastic to pay for professional services when there are so many free donor-funded initiatives available.”

### ON THE HORIZON

*“We don’t add value to most of our produce. That’s a great area for young entrepreneurs to explore.”*

Solomon sees immense potential for improvements in infrastructure throughout the rest of the sector. “The infrastructure is not developed; the road networks to farming communities are very frustrating. There’s also a lot of room for improvement in literacy levels,” Solomon explains. New technologies like GIS/GPS are often easier to explain in English, but that’s not always feasible in many farming communities.

While infrastructure and education often fall under government or NGO responsibility, Solomon sees warehouse efficiency as a place where social entrepreneurs could really make an impact. “We need more investment in warehouses so that the produce doesn’t rot. For example, so much could be stored and sold during the lean season,” he explains.

There are also numerous opportunities throughout the agricultural value chain for enterprising young people to get involved.

“Enterprise research consultancy, improving farming logistics from rural production to urban markets, more efficient agricultural inputs,” Solomon lists, “and the processing area - in Ghana, we don’t add value to most of our produce. That’s a great area for young entrepreneurs to explore.”

### LESSONS LEARNED

*“If you have an idea to start on an entrepreneurial journey, go ahead and pursue it. There is no time to waste.”*

“If you have an idea to start on an entrepreneurial journey, go ahead and pursue it. There is no time to waste,” Solomon advises. He did not wait to get a lot of feedback from colleagues before he started Syecomp Ghana Ltd., and he credits that action with his success. “I didn’t look back. I saw the need, I saw the potential, and I just went into it. What you are starting now, someone elsewhere has already begun,” he adds. “So just do it.” ■

#### HOW TO PARTNER

For partnerships, please contact Solomon Elorm Allavi (Founder) at [sallavi@syecomp.com](mailto:sallavi@syecomp.com).

#### COLLABORATION WITH CTA

Solomon was winner of two CTA international prizes: the CTA-NEPAD essay competition on youth entrepreneurship (2011) and the YoBloCo Awards in 2013. His organisation is one of five grantees under the CTA programme “Building Viable Delivery Models” for ICT4Ag proof-of-concept in 2014. He has also attended several capacity building activities organised or facilitated by CTA.



The potential of ICT to transform the agricultural sector is great.

# Overcoming challenges: What young entrepreneurs recommend

## Advice from youth to youth

Starting a venture is never easy. These young innovators have not only seen tremendous impact in a short amount of time, but they have also navigated tricky entrepreneurial environments. Seeking to work at the intersection of tech and agriculture in developing countries, these entrepreneurs cite several specific challenges: a lack of funding for ICT innovations, slow adoption of ICT within organisations, and lack of cross-sector data.

While challenging, these barriers are hardly a deterrent, for the potential of ICT to transform the sector is great. Innovators see ICT playing a pivotal role in accelerating financial inclusion and ecologically sustainable practices, and in doing so, re-branding agriculture as a viable career for youth.

For those passionate about becoming agro-entrepreneurs, these young changemakers offer a few tips of advice, ranging from what to read to

how to practise self-care. Read on to learn about an innovator who gives such advice everyday, creating an environment dedicated to fostering the next generation of agro-entrepreneurs.

“

**Innovators see ICT playing a pivotal role in accelerating financial inclusion and ecologically sustainable practices, and in doing so, re-branding agriculture as a viable career for youth”**

## INTERVIEW

# LOG'EL — a youth-led organisation from Uganda

 **HERBERT LWANGA**

 Uganda  
 [www.logelproject.org](http://www.logelproject.org)  
 LOG'EL PROJECT  
 Lwanga Herbert

## Why found an incubator?

"I always wanted to be an innovator," Herbert shares. "I always wanted to come up with solutions to challenges within my community, my society, and my country." Herbert's innovative path began in high school, and took him to pilot two prototypes with the National Council of Science and Technology in Kampala.

Yet Herbert knew that there was more he could do. What if there was an organisation that supported young innovators, nurturing

their growth and building connections so they would not have to struggle through the process as he did?

"I knew that I had fellow young people who were similar to me — who took on challenges and had great ideas for how to improve our communities," Herbert shares. Uganda is currently facing a challenge of unemployment, especially among young people, so Herbert sought to address this challenge. The LOG'EL Project was re-born as a non-profit for science and technology for young people.

## How does the model work?

"We empower young farmers to apply their technologies and skills to solve local challenges," Herbert shares. "We support them in coming up with unique solutions to society's problems." At LOG'EL Project, young people are given the opportunity to learn new skills, experiment with new ideas, and experience what an entrepreneurial path means. The project involves several key programmes, including the incubation programme and the entrepreneurship programme.

The incubation programme offers a free space for young innovators or prospective young entrepreneurs to begin experimenting with their innovations. Innovators come to LOG'EL Project with a few ideas, register



© Elizabeth Gin & An Xiao Mima/LOG'EL Project

Young farmers are empowered to apply their technologies and skills to solve local challenges.

with the programme manager, and then are given a space to work among 40 other innovators. The physical space inherently enables cross-collaboration and cross-fertilisation of ideas between innovators, but the project also connects entrepreneurs to those outside the local community: technology experts, entrepreneurial mentors, and anyone accessible on the internet. The incubator also works closely with other organisations to offer relevant workshops and trainings.

LOG'EL Project's core is to inspire, embed and nurture an entrepreneurial mindset among young people. "We think it's imperative for young people to be supported to be entrepreneurs at an earlier stage, so we also work with schools to bring entrepreneurship to the classroom." In universities, high schools, and primary schools, LOG'EL Project invites people who have made it in business or entrepreneurship to talk to students about how to be a problem-solving entrepreneur. "We show them real examples of entrepreneurs... and organise exhibitions, contests and meetups where they can share their ideas." The entrepreneurship programme also involves awards for the best ideas and trainings at reputable institutions. "We want to motivate them to shape their entrepreneurial spirit," Herbert explains. "We'll do all we can to encourage them in that."

### How has the model impacted lives?

LOG'EL Project currently works with about 30 young innovators in its incubation programme, as well as two universities, 40 high schools, and five elementary schools through its entrepreneurship initiative. Its innovators have built mobile phone applications, electronics systems and web applications serving Uganda's rural and underserved, urban communities.

### How is the project sustained?

LOG'EL Project also includes a business arm that provides consulting services and technology training services. Partners of the business arm include schools seeking technology training for their staff, NGOs seeing customised technology solutions to their individual challenges, small and medium enterprises seeking technology services and government agencies looking for similar consulting services. Combined with grants, the LOG'EL Project's business arm is able to support the organisation's not-for-profit activities and programmes.

### What are the take-aways?

"Young people's strength is in technology and innovation. They are skilled in technology, so they can come up with these solutions that will transform the sector," Herbert says. "Their other strength is their energy. They have energy to multi-task. They have a lot of robust enthusiasm and vibrant ambition." ■

#### HOW TO PARTNER

Contact [Iwangaherbert@gmail.com](mailto:Iwangaherbert@gmail.com) for opportunities in:

- Technical support
- Tech-APP's development, design, fabrication, testing, rollout, and delivery
- Ongoing support

#### COLLABORATION WITH CTA

Herbert participated in CTA's Science, Technology and Innovation (STI programme). He also won the CTA-NEPAD photo and essay competition on youth entrepreneurship in 2011. He has attended several capacity building and networking events organised or facilitated by CTA.

## KEY ISSUES

# Youth, innovation and agri-business: Some critical issues

Throughout the exchanges with the innovators, a number of key issues have been repetitively raised. We highlight them below.

## How do we incentivise young people to be involved in agriculture?

“There’s this new trend where people are trying to make agriculture sexy to appeal to young people,” David of D’Market Movers says candidly. It is more than just marketing and David believes there are tangible ways for agriculture to shed its association with the old and traditional. His secret? “More brains, less brawn.” Translation? ICT.

Many other innovators agree. “When you introduce technology, agriculture becomes more attractive to young people. These are people who want to make money, and without technology it’s difficult,” Jehiel of Hello Tractor explains. He sees technology as a way to make agriculture profitable.

Launching a formal agri-business venture also needs to be straightforward and simple. Jermaine of AgroCentral does not believe that is the case, at least in the Caribbean: “The barriers to entry... are pretty high locally. If I decide that I want to start a farm tomorrow, it would take me a while to get all the information that I need.”

While working to change the image surrounding agriculture, then, Jermaine advocates for information hubs with plans for youth engagement, workshops, and access to capital, so that young people can actively pursue careers on the farm.

Incubators may be quite common in global tech spaces around the world, but those that focus on agriculture are few and far between.

## Some key challenges young agricultural entrepreneurs face

The barriers to entry are even greater for young people who want to change the agricultural value chain systematically as agro-entrepreneurs. Here’s where innovators are feeling the greatest pain points:

### Lack of funding for new innovations

While the potential for the sector transformation is tremendous, several entrepreneurs believe that traditional funding structures need to shift in order for any truly innovative solutions to emerge. “There’s no money to prototype,” Hilary of Essex, Ltd. shares. “If you look at places like America and Europe, someone can raise up to US\$100 million for an idea, not even a prototype. That’s not how it is in Africa — if we can’t get funding to take something ahead, it just stops there.”

Ashoka Fellow Jason Aramburu believes this lack of funding reflects a broader problem of financing in agricultural development: “The traditional funding sources have used the same models for 50 years. They don’t really support innovation; they just support the continued growth of existing solutions.”

Jason looks to Silicon Valley for inspiration — “New ideas are funded all the time and maybe 9 out of 10 fail, but the success of one out of 10 makes up for all the failures. I think that’s really the only model that works with innovation, and I hope it becomes increasingly adopted in development.”

### Slow ICT adoption in organisations

Institutions are not always ready for the technological changes that innovators envision. Increasing adoption then often means pulling back the pace of change to meet institutions where they are. “While everyone is using the same platform, each organisation is at a different stage of using technology. Some just use the core system and the SMS module, while other organisations are 10% cash free and paperless.” Cameron Goldie-Scot of Musoni Services explains, referencing his own platform: “It’s a journey and it’s one that people slowly introduce over time but that we’re always trying to speed up.”

As Cameron describes it, technological adoption in the agricultural community follows a particular path. It’s not just a straight transition from zero to 100. “You can have the greatest technology in the world, but the key is the relationships — really understanding the farmers’ needs, requirements, and business. Technology can improve the efficiency of that model and it can cut out a lot of the bureaucracy; but it only gets you so far. It’s about the skills of the team on the ground, the



Ensibuuko from Uganda was selected as the overall winner of CTA’s hackathon in Kigali, Rwanda, in 2013.

operational practices and measures that you’ve put in place. That’s why it’s not just a case of flicking a switch. It’s about carefully integrating it into the organisations that use it.”

### Lack of data

Inadequate data is also a major road block for agricultural development and innovation. “It took us so long just to get the historical data that we needed to start,” Peris of FarmDrive shares. “There are no strategic policies or initiatives, let alone robust data tools to use on tech platforms.” The problem extends even further with ineffective data collection methods, as Jermaine of AgroCentral sees it.

Troy of CropGuard shares this dream for better cross-sector data, and even has a vision for a large collaborative network of developers. “We want to be able to see how our products can function together,” he explains. “We want to offer a more comprehensive solution.” The network

he imagines connects developers from different fields — transportation, agriculture, education, etc. “We want to learn from them, and we think they can learn from us. Let’s build a network that allows for such cross-fertilisation.”

## Two promising areas

### Financial inclusion

As the founder of a financial inclusion platform, Cameron of Musoni Services shares his observations of the field: “I think we’re barely scratching the surface of financial inclusion in rural communities at the moment. The majority of people who are financially included are still served by large banks operating in the middle of urban areas. Rural communities have still not seen many of these benefits that have happened over the last few years.”

Cameron believes banks need to become more oriented towards rural communities: “We need to come up with a lending product that is more applicable to farmers with variable crop cycles and income streams. Technology will help, but I think organisations also need to push out into rural areas. To be fair, a lot of them are doing this, but it’s a slow process.”

Jermaine of AgroCentral sees a deeper problem within rural communities: financial literacy. “There’s not a lot of record keeping done,” Jermaine explains. “Farmers aren’t really as business savvy, and so don’t know how to increase production or maybe even to start their own farm.” Ventures that provide financial infrastructure for farmers would dramatically impact the sector. Deo of tech4farmers echoes this sentiment: “People need to begin looking at farming as a business and take it seriously. This means keeping proper records, which will also help them actually get financing.”

Each of these innovators sees how transformative radical financial inclusion could be. “Some of the farmers have a lot of land, but they are just not able to cultivate it all because they don’t have funding to do so at the beginning of the season,” Alloysius adds. Imagine how much the sector would expand and individuals’ livelihoods would improve if that small influx of capital was available at the right time.

### Environmentally friendly agricultural practices

ICT enables real potential to move from labour-intensive agriculture to capital-intensive agriculture. “You see people getting into greenhouse technology, aquaponic technology... these methods that are less labour intensive. Imagine a greenhouse that’s fully automated because you have sensors, where you can control the humidity levels right from your cell phone,” David of D’Market Movers shares.

These capital-intensive agricultural practices are also often more environmentally friendly, which David sees as a huge value addition in this age of climate change. “There’s less land available for agriculture. So you have to find ways to produce more in less space and with less resources,” he adds. Moreover, climate change makes any weather pattern assumptions less reliable, and therefore more dependent on real-time information. ■

# 8 Tips for the aspiring entrepreneur

Every entrepreneur's journey is a learning process. We asked the innovators to look back and reflect on their experiences building their ventures thus far. Here's their advice for aspiring changemakers seeking to transform the agricultural sector.

## 1. Understand your user

Many people rush to build their products without strong market research or understanding the needs of their customer. While this may seem expedient, it is not in a venture's best interest. "You have to have that hands-on experience," Joseph emphasises, "so that when a young person shares their experience, you know how it feels." It is not only listening that is the right thing to do, it's also the smart thing to do. "A lot of people develop solutions from their own offices, and then dump them in the community. But these solutions don't work, because they are not customised to the needs of the rural poor."

For those who do not already have the community perspective, Cameron suggests an active approach. "I would say get out into the field. To really learn and to really gain the experience that's necessary to then drive the change required, you need to spend a decent amount of time actually living and working in the communities where you're trying to have an impact."

## 2. Find the right team

It can be tempting to start your venture with the first people you see, but don't throw caution to the wind. "It's crucial to find dedicated persons who are willing to commit to solving the problem," Jermaine shares, especially if it is uncompensated at the beginning. "We all have our differences and we decided to capitalise on them," Hilary reflects. "But we believe in each other and trust each other. That's what it comes down to." Having a strong and diverse team can make all the difference in your success.



Rwanda's Minister of Youth & ICTs, Hon. Jean Philbert Nsengimana is advising young entrepreneurs.

### 3. Just get started

It is easy to get overwhelmed when trying to tackle some of these huge social issues. There are lots of problems and so many potential ways to fit them together. “You’re always going to have limited resources and tricky challenges,” Peris suggests. “You just have to start.” Being able to move quickly and nimbly is always critical for an entrepreneur. “If you want to move forward, you need to make quick decisions,” Deo advises. “You need to know when to say no. You don’t have to say yes all the time.”

### 4. Don’t be shy; get feedback

Sharing your idea for the first time can be scary. You are being vulnerable and opening yourself up to critique. “Don’t be afraid to talk,” Jermaine advises. “Don’t be afraid to reach out to stakeholders... You don’t need to wait until it’s perfect.” And remember, it is okay to get constructive feedback! It is often the well-intentioned suggestions that sting that influence you the most in the end.

### 5. Read business books

For any entrepreneur, whether in the agricultural space or not, it is essential to be business savvy. “If I could go back in time, I would read every business book I could get my hands on,” Jason shares. “Whether you’re a non-profit or a for-profit, it’s still a company, it’s still a venture. It’s essential to have that business mind.”

### 6. Be creative with your business model

Many people worry about how to have a sustainable venture, but Jermaine believes this is not as big of a hurdle as it may seem. “If you’re creative enough, there’s a business model for everything.” Think about your customer segments, how to focus but also not unnecessarily narrow your user base. “It’s really

in your interest to create as wide a market for your solution as possible,” Jason adds. “Don’t limit in anyway. Because if you limit it, it obviously won’t be as big.”

### 7. Stay focused

Don’t let your creative side spiral too out of control or you will end up trying to do too many things. “Don’t look at the whole big mountain in the challenge,” Peris advises. “Just stay focused and do small things that will help build towards that dream.” This will not only bring peace of mind, but it will also increase your chances of making a difference. “If you pick the right activity, you can deliver a significant amount of impact.”

### 8. Practice self-care. Starting a venture is stressful

There are lots of highs and lows, and moments of uncertainty. “Learn to separate your personal or emotional state from the day-to-day roller coaster that is running a small business,” Cameron shares. “Some days you will have done everything you possibly can but, for whatever reason, whatever you’re trying to do doesn’t quite work out.” Your venture is important, but so are you. Make sure you prioritise your mental health. ■

# Other innovations to watch

Below are additional remarkable young ACP innovators with insights on their products.

## **AgriDirect | Steffan Boodhoo & Jherez Taylor | Trinidad & Tobago**

Promising AgriHack Caribbean participants AgriDirect are working on an application that connects farmers and consumers. It will provide a system where each can communicate the products they have for sale or products they wish to purchase, respectively. True to its name, information is sent to stakeholders directly as soon as producers have the produce available. AgriDirect recently received a government grant to continue developing the product and enter a beta testing phase.

**steffan\_boodhoo@hotmail.com & jherez.taylor@gmail.com**

## **AgrInfo | Rose Peter Funja & Grace Sylvester Makanyaga | Tanzania**

AgrInfo, the second runner up of the East African AgriHack, is a mobile app and web portal addressing the challenge of land ownership verification in Tanzania. It aids in solving the problem of double selling of land, and opens the door to financing smallholders by using land as collateral. The product is currently in soft launch, and talks are being held with nationwide partners to explore further expansion.

**rose.funja@gmail.com & gmakanyaga@gmail.com**

## **Agritech Solutions | Claudius Kurtna | Kenya**

Founded in 2013 by a group of young ICT4Ag entrepreneurs, Agritech Solutions is a youth-led agricultural company providing ICT solutions both for crop and livestock production. Agritech Solutions brings together all kinds of information, such as planting date of crops or birthdates of livestock, and make these available to agricultural value chain players to guide their decisions. According to Claudius, a recent milestone for the enterprise is acquiring the Rwandese government as a client to assist in creating linkages between value chain actors countrywide.

**<http://agriculturetechnologies.org/> - info@agriculturetechnologies.org**

## **M-Fodder | Elvis Ouma | Kenya**

M-Fodder SMS system enables livestock farmers to access a reliable source of hydroponic fodders by sending an SMS. M-Fodder was one of the innovations identified by CTA in the framework of the “Top 20 Innovations that benefit smallholder farmers”. M-Fodder also won the USAID Save Water For Food and Food (SWFF) Round 3 AWARD.

**elvisouma@gmail.com**

### Mewanko Farm | Christelle Laminsi | Cameroon

Mewanko Farm, the winner of the Orange Partner API prize, is a digital platform that connects rural farmers to a regional, national, or even international market, potentially increasing the income of small farmers through the help of ICT. Customers or intermediaries are in direct contact with farmers through a web-portal that is easy to understand and operate by the farmers.  
[contact@mewankofarm.com](mailto:contact@mewankofarm.com)

### Modisar | Thuto Paul Gaotingwe | Botswana

Orange African Social Venture prize winner, Modisar, is a livestock farm management application that makes it easier for farmers to manage their business. The goal of the application is to assist livestock producers by allowing them to keep accurate records and provide automated and continuous monitoring of their farm animals. The product is currently being finalised for commercial use after a successful beta phase, with the company looking to prepare for international expansion.

<http://www.modisar.com/> - [thuto@modisar.com](mailto:thuto@modisar.com)

### Node420 | Jason Scott & Orane Edwards | Jamaica

AgriHack Caribbean winner Node420 has developed an application which consists both of hardware and software components. Their prototype, described as a small weather station, can form an additional source of information for farmers who are interested in maximising the productivity of their farm. Aside from weather analysis, it can make effective yield estimate forecasts based on algorithms that take several data sources into account.

[jayskally@gmail.com](mailto:jayskally@gmail.com) & [oraneedwards@gmail.com](mailto:oraneedwards@gmail.com)

### RevoFarm | Ricardo Gowdie | Jamaica

RevoFarm, one of the contestants of the CCAFS/CTA supported Hackathon on Climate Smart Agriculture in Latin America and the Caribbean in 2014, analyses weather, market and field data. It provides farmers with information to make intelligent farm decisions, having a strong educative component, and furthermore connect them to their markets. Connectivity is made easy by being both accessible through SMS and web app.

<http://revo.farm> - [info@revofarm.com](mailto:info@revofarm.com)

### Rural eMarket | FTA Youth Group | Madagascar

Rural eMarket was launched with prize money won by the youth group Jeune et Agriculture à Madagascar when they took part in CTA's agricultural blog competition (YoBloCo Awards) in partnership with the association Farming and Technology for Africa (FTA) from Madagascar. Rural eMarket is a web-based agricultural market information system that provides information directly to its subscribers.

<http://rural-emarket.com/> - [andrew.raso@gmail.com](mailto:andrew.raso@gmail.com)



Young agro-entrepreneurs are transforming the agricultural sector with their innovations.

# Supporting youth ICT innovations and entrepreneurship in agriculture



This publication has been produced in the framework of the “Agriculture, Rural Development and Youth in the Information Society (ARDYIS) programme of CTA.

It aims generally to raise the capacity and opportunities of youth in agriculture through ICTs in ACP (Africa, Caribbean and Pacific) countries. Its key activities include the Youth in Agriculture Blog Competition (YoBloCo Awards) and the AgriHack Talent initiative. Youth targeted are those aged between 18 and 35 years, as specified by the CTA Youth Strategy.

*AgriHack Talent* is an initiative which focuses on ICT4Ag entrepreneurship, which aims to support youth ICT innovation and entrepreneurship in agriculture. Co-designed with youth and partners from the ACP, AgriHack includes competitions to develop, via hackathons or other coding sessions, ICT applications for agriculture, as well as capacity building, long-term mentorship and incubation for best participants. Promotional

and networking opportunities are also offered to best participants who are notably involved in other CTA activities (such as the Plug & Play event described below).

CTA recognises the potential that these types of activities can offer in terms of engaging young people in agriculture and promote youth entrepreneurship. AgriHack Talent’s partner organisations are involved in the process from the design of events, to the organisation of coding sessions, the selection of winners and finally throughout the incubation and other follow-up activities.

The AgriHack initiative has been successfully implemented so far in East Africa and the Caribbean: 250 aspiring young entrepreneurs have seen their capacity built on entrepreneurship in ICT4Ag; six ICT4Ag applications have been awarded (some are being piloted), and best teams have been incubated. Best prototypes developed address farm management (Agri-Kari), land

management (AgriInfo), pest management (Crop Guard), financial services (Mobis/Ensibuuko, FarmDrive), advisory services (AgriVAS), weather data management (Node420). Some of these applications are presented in this publication and are already being used by farmers. Eighteen ICT hubs and ICT institutions from 12 countries have been involved so far in AgriHack activities. Ministries in charge of ICT and agriculture,

regional organisations (AGRA, CARICOM, etc.) as well as the private sector (Microsoft, Telesur, etc.) have also been involved.

In May 2015, ARDYIS won the United Nations World Summit on the Information Society Project Prize. The YoBloCo Awards and the AgriHack Talent programme were two of the activities highlighted on this occasion.



#### AGRIHACK TALENT PROGRAMME

The AgriHack Talent programme is planned in other regions. CTA looks forward to collaborate on that activity with ICT hubs, entrepreneurship or business development institutions, agricultural institutions, incubators, investors, and any interested stakeholders. Collaboration opportunities can address the development of relevant apps, capacity building and incubation for young innovators and entrepreneurs and testing developed applications.

For more information:

[lohento@cta.int](mailto:lohento@cta.int)

<http://hackathon.ict4ag.org>

<http://ardyis.cta.int>

## ABOUT CTA'S PLUG & PLAY EVENTS

# Tech-dating for agriculture

CTA's Plug & Play – a tech-dating for agriculture – is an event usually organised in collaboration with international conferences and workshops to showcase the range of ICTs/mobile platforms developed and being implemented along the agricultural value chain. The event offers ICT innovators the opportunity to demonstrate their solutions to interested clients; users to discover the latest ICT platforms along the value chain; investors to identify viable areas for investment; donors to discover emerging areas for support; and

policymakers to understand and explore areas for action. It is a fantastic opportunity for a valuable and very practical insight into the new technologies and a true hands-on experience with demonstrations by prestigious application providers and experienced practitioners. Selected platforms for a given event closely parallel the broader conference themes and streams and are well tailored to the needs of all stakeholder groups who are encouraged to engage with developers during the sessions.

For more information [Addom@cta.int](mailto:Addom@cta.int)



Team AgriDirect from Trinidad and Tobago during AgriHack Caribbean.

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### ABOUT CTA

The Technical Centre for Agricultural and Rural Cooperation (CTA) is a joint international institution of the African, Caribbean and Pacific (ACP) Group of States and the European Union (EU). Its mission is to advance food and nutritional security, increase prosperity and encourage sound natural resource management in ACP countries. It provides access to information and knowledge, facilitates policy dialogue and strengthens the capacity of agricultural and rural development institutions and communities. CTA operates under the framework of the Cotonou Agreement and is funded by the EU.



### ASHOKA

Ashoka is leading the way to an «Everyone a Changemaker» World. As the world's largest network of changemakers and social innovators with more than 3,000 social entrepreneurs in 84 countries, Ashoka aims to bring about large-scale social change. Ashoka supports innovators to get started, grow their ideas, collaborate, reshape whole systems, and influence societal transformation. Founded in 1980 with the belief that the most powerful force in the world is a big idea in the hands of an entrepreneur, Ashoka applies insights from the world's leading social entrepreneurs to set in motion profound societal transformation.

For more information on Ashoka, please visit [www.ashoka.org](http://www.ashoka.org) or find Ashoka on Twitter, Facebook, or LinkedIn.



For more information on CTA,  
visit [www.cta.int](http://www.cta.int)





Transforming agriculture through innovations



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