

ICT Update

a current awareness bulletin for ACP agriculture

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<http://ictupdate.cta.int>

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13 The Apps4Ag database has over 500 online and mobile applications and services for farmers, traders, researchers and decision-makers. See if there is something useful in it for you.

Applications for agriculture



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ICT Update



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Creating ICT opportunities with the Apps4Ag database

Benjamin Kwasi Addom

In ICT Update and on websites as ICT4D, CTA has covered the explosive growth and proliferation of digital and mobile phone technologies for agriculture. Now CTA takes the next step with developing the Apps4Ag database, a comprehensive, up-to-date and responsive database of ICTs including mobile, web, animation, audio, and video applications involved in the food value chains.

The ubiquity of ICTs, especially mobile technologies, is noticeably transforming the way individuals and institutions exchange information and interact. Still, rural populations in developing countries, in particular the millions of smallholder farmers, only marginally benefit from the potentials linked to adoption and use of these new technologies. The solution to speeding up the uptake of ICTs, mainly through mobile devices, by smallholders is two-fold: firstly, ensuring that smallholders are aware of the benefits of using the applications on their devices, and secondly, ensuring that smallholders are able to benefit from the penetration of the internet into rural areas. Both are eminent for improving production and marketing efficiency and the effectiveness of farmers' business and livelihoods.

Many initiatives and studies already have shown the opportunities of mobile applications for stakeholders in the agricultural sector. The World Bank published *Mobile Applications for Agriculture and Rural Development* in 2011 and there is GSMA's mAgri Deployment Tracker among many other initiatives. Still, there is not one comprehensive and interactive database that collects information from all available ICTs and mobile applications for agriculture. That is why CTA and partners initiated the Apps4Ag framework immediately after the 2013 ICT4Ag International Conference in Kigali, Rwanda and why we are now asking you to try out this version and give us some feedback and contribute content.

Sustainable platform for interaction

Over the years, CTA has shown its profound experience in knowledge management for agriculture and rural development. With its current expertise in ICTs for agriculture and rural development, and its leadership in the organisation of the ICT4Ag Conference, CTA aims with Apps4Ag to address the need and provide the agricultural value chain development community and the app development community with a sustainable platform for interaction that meets the rapidly changing requirements of these stakeholders.

There were three specific objectives and needs for Apps4Ag database. First, developing an agricultural value

chain framework upon which the apps will be mapped to facilitate use by value chain actors. Second, collating and documenting ICT applications for agriculture. Third, developing a framework for assessing the usability and functionality of these applications for agricultural value chain development.

The database will become the centerpiece for new opportunities to facilitate and support up-scaling of ICTs for agriculture initiatives with support from the ICT4Ag Community of Practice that will evaluate the applications. Apps4Ag database will boost information dissemination, knowledge exchange, extension and advisory service delivery, farmer engagement, and market access for both agricultural inputs and outputs.

Keeping the database up-to-date

The database is expected to be interactive with a feedback and update form for users to submit information on applications that are not currently in the database or for developers to correct and update information on their solutions. Feedbacks and new submissions will be received, validated and updated by CTA for quality purposes.

Now the database is operational within its framework, it will guide the definition of requirements arising from evaluations by the ICT4Ag Community of Practice, and act as a guide for new applications yet to be developed. The ICT4Ag Community of Practice will be able to apply the framework and submit their evaluations of new apps, or new versions of existing apps. The community is expected to grow with increasing confidence in their ability review, assess, and rate the applications using the framework. CTA remains committed to sustaining the community and the platform as it provides a neutral environment to monitor the development of apps in the agricultural sector, not only to

satisfy its mandate of support to agricultural and rural development institutions in ACP regions, but also as an international open and accessible resource.

The Apps4Ag database project, through its different components, is expected to address the current challenge facing most ICT4Ag initiatives: to scale up and be sustainable after donor support ends. Scaling up requires systemic effort, long-term commitment on the part of institutions, donors, and individuals. It requires a basic set of institutional values and incentives for key actors to continuously identify ways to build on successful interventions ensuring that they are replicated, transferred, and adapted in other settings. Current efforts and ideas to increase impact and upscaling can be read in this issue of ICT Update, for example in the articles of Christian Merz (Bill & Melinda Gates Foundation) and Richard Duncombe (University of Manchester). It will also showcase some interesting ICTs and mobile applications that you can find in the Apps4Ag database. ●

Try the Apps4Ag database and give us some feedback.

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www.apps4ag.org



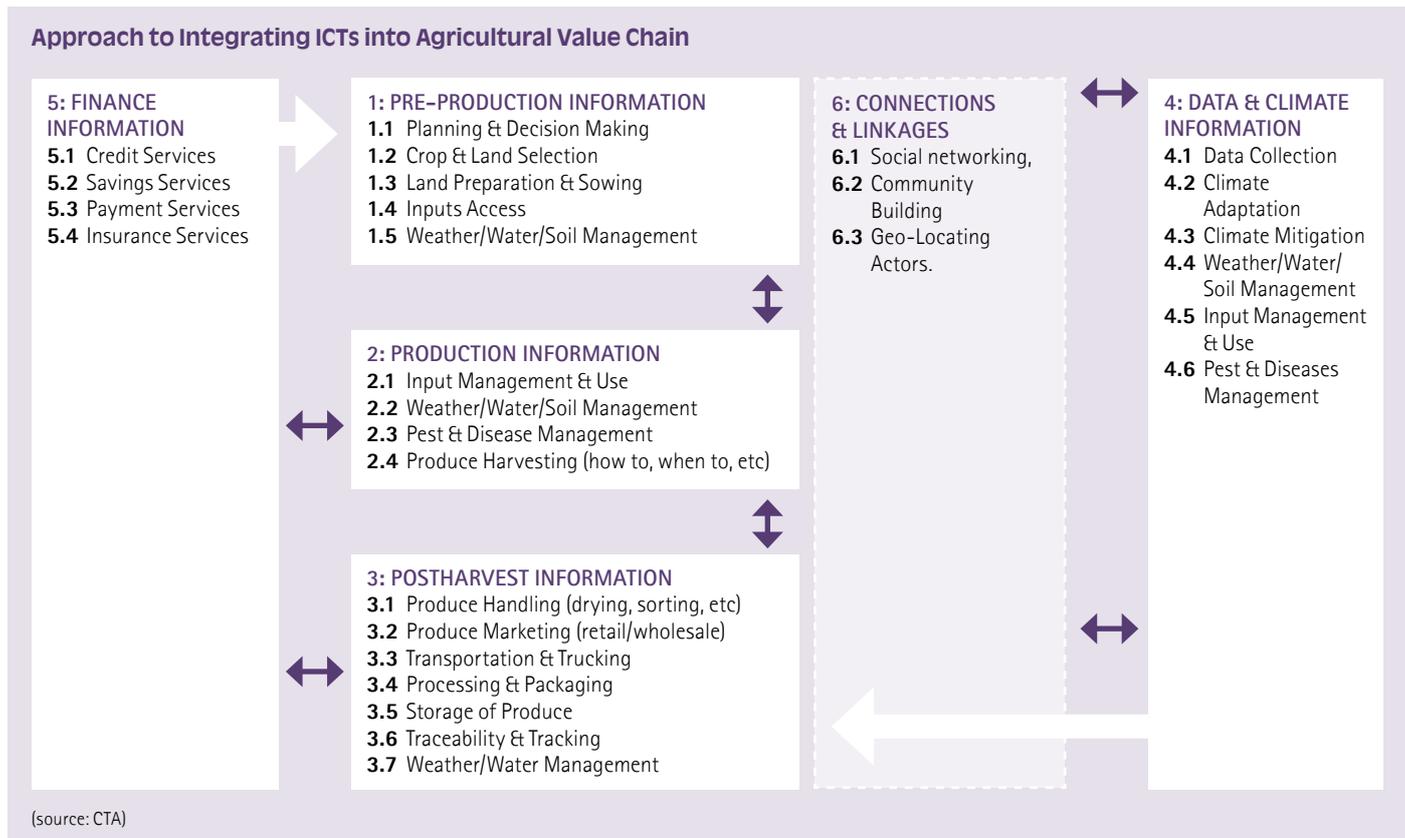
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Related links

Link to the Apps4Ag database www.apps4ag.org
Link to the ICT4Ag online platform <http://ict4ag.cta.int>



(source: CTA)

Investing in the ICT4Ag application space

Christian Merz

ICT4Ag models in the developing world are proliferating. Yet most players are not yet translating momentum into impact at scale. Despite the growth of opportunities, a very small proportion of the global ICT4Ag funding targets smallholder farmers in developing countries. Rethinking strategic approaches for ICT4Ag funding can change this.

Despite efforts to catalyse agricultural transformation in developing countries, smallholder farmer productivity and income remain low. Farmers continue to lack relevant information and market access. The majority of smallholders risk remaining trapped in a self-reinforcing circle of vulnerability, low yields and food insecurity.

New technology-enabled solutions offer the opportunity to reverse this trajectory. There is a dizzying number of ICT4Ag innovations – from remote and in-situ sensing tools to big data platforms – that can improve decision-making among farmers, suppliers and governments. Rising smartphone penetration and improving connectivity, along with improved data processing and analytics capabilities, offer us the opportunity to adapt and bring these improved solutions to smallholder farmers at a fraction of the cost of traditional methods.

Donors do not have dedicated central programmes focused on digital solutions in agriculture.

In most countries between 60% and 80% of smallholder farmer households have a mobile phone, and over 90% have access to said phone, with a majority increasingly using it for mobile money, or to access advisory, market and weather info. Price of broadband data service is falling precipitously, opening opportunities to deliver bandwidth-intensive applications and services.

These trends combine to create considerable momentum; ICT4Ag models in the developing world are proliferating. Directional evidence suggests the market has been growing more than 20% per year.

Yet most players are not yet translating momentum into impact at scale. Lack of evidence, challenging economics and poor understanding of the consumer, among others, continue to hamper the success of digital solutions. Also, despite the growth of opportunities – and a need for additional support – only around US\$100 million of the global ICT4Ag funding (over US\$5 billion in 2015) targets smallholders in developing countries. Mostly, donors do not have dedicated central programmes focused on digital solutions in agriculture. Rather, ICT4Ag projects are integrated as an element of broader agriculture projects with a community of practice or coordinator role sharing lessons learned and fostering collaboration.

The successes and lessons learned

The most successful ICT4Ag grants of the Bill & Melinda Gates Foundation built upon the ability to convene and coordinate disparate actors towards a common goal. The African Soil Information Service, has developed the first Africa-wide digital soil map. Most modern spectroscopy instrumentation for on-the-ground measurements in combination with remote-sensing has improved available soil data, while reducing the cost of soil sampling by 97%. Digital Green's video enabled extensions services has reached more than 1 million farmers in India and Ethiopia with an adoption rate above 30% (on average) of promoted agricultural practices. SAP has developed a mobile application suite in combination with cloud based analytics to track and trace smallholder farming trade. The solution has been piloted reaching more than 100,000 farmers and is now commercially available to potential customers worldwide.

Despite these successes, there is a need for improved data evidence on the impact of such investments. For example, despite multiple investments by the Foundation and partners, the evidence for digital Rural Advisory Services' impact on productivity and yields is still thin. Likewise, there are notable opportunities to improve in the digital management and analysis of agricultural data.

The realisation at the Foundation and partners is that we now have a major, cross-cutting opportunity to take a more strategic approach to our technology investments and galvanise the sector around the most promising approaches.

The opportunities

Within the landscape of ICT4Ag opportunities, there are roughly six digital agriculture use case areas that could support donors' target outcomes and strategic goals. These are: rural advisory services, financial access, farm management, supply chain management, market access, and agricultural intelligence and knowledge.

Each of these use case areas is supported by a layer of data, consisting of a wide range of information, from climate insights and weather to payment and sales transactions, from land records to soil maps, and so on. Each of these data types, in turn, is generated, managed and captured by a specific type of ICT4Ag hardware or software solution, such as *unmanned aerial vehicles* (UAVs, also known as drones) or soil kit (hardware), or a workforce management app or e-trading platform (software). Finally, these solutions all rest upon a large and deep infrastructure of enabling technologies and infrastructure, spanning the always-essential mobile device to higher-order enablers such as a conducive set of data standards and protocols.

Refocussing and restructuring funding in the ICT4Ag application could increase smallholder farmer productivity and translate it into higher income. Therefore, the Bill & Melinda Gates Foundation is implementing in line with its new Agricultural Development Results Framework a renewed ICT4Ag strategic approach.

Above: Local shop in Kenya for ICT services. (WorldRemit/ Fiona Graham)



The new ICT4Ag strategy

The Foundation recognises that digital tools can be a key enabler to unlock impact for farmers and agricultural systems. Our new strategy will guide future investments in ICT solutions that can boost smallholder farmer productivity, income, women's empowerment, and nutrition.

The aim is to prove ICT innovations work, de-risking investment, and mobilising private and public stakeholders to fund ICT4Ag solutions at scale. Investment opportunities are pursued in the following areas.

Participatory and Customised Rural Advisory Services have to link farmers to the knowledge necessary to drive productivity gains. Nearly half of the IC4Ag solutions focus on rural advisory services – particularly in India, Ghana and Kenya. Yet, many innovators are struggling to scale rapidly. More experimentation is needed to develop more precise, participatory and cost-effective service delivery models.

ICT-Enabled Market Linkages need to translate productivity gains into increased farmer incomes. Market linkages are perceived by many experts in digital agriculture as the key to unlock dramatic gains in smallholder income by connecting farmers to high quality inputs, and allowing to sell produce easily at the right time and at optimal prices.

Self-Service Farm Management Solutions also have to boost farm profitability and empower farmers to transition from smallholders to small businesses. Farm management solutions have emerged strongly in the last five years with over 35% annual growth, growing three times the market average. The majority of the existing solutions focus on record management (e.g., crop volumes), with a significant number of solutions having financial literacy components built in.

Finally, it is necessary to build an *Agricultural Data Exchange* that unlocks the “data opportunity” for private investors, agribusinesses, financial and service providers and national ag ministries and agencies. The data interoperability and sharing is a primary constraint to integrate solutions and to improve resource allocation.

In addition, the Foundation will leverage the *Financial Services for the Poor* programme to target digital financial services that help mitigating risks through better information and driving down transactions costs. There is strong interest in integration of alternative digital data into credit scoring and portfolio monitoring to drive financial inclusion, yet the range of data being actively used today is still narrow, business models are nascent, and most finance providers lack the capacity to use this digital data to price loans and other financial products.

By successfully executing against this vision we believe we can help double the income of millions of farming households. ●



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Related link

Webpage of Bill & Melinda Gates Foundation
www.gatesfoundation.org



Facilitating change in agricultural value chains with app services

Richard Duncombe

Investment in mobile agricultural services is likely to be most effective where the technology is integrated into specific systems and organisational routines that are developed by new or established local innovators. They are the drivers for developing new processes and new networks on the ground that promote scale efficiencies along the value chain.

There is a paradox between rapid advances in the technologies of mobile phone services for agriculture (also known as M4Agric) and the relatively slow growth of agricultural productivity – defined as the discrepancy between measures of investment in ICT and measures of output at the sector level. This can occur for two main reasons.

First, (mis)management of ICT which can result in both additional costs and un-realised gains. ICT involves complexity in design, maintenance and management systems. M4Agric

projects, in common with most ICT4Development projects, experience cost overruns, delays in implementation, rapid obsolescence of hardware and software, and other problems of compatibility and security. Many of these constraints are magnified in the rural areas of developing countries.

Second, the significant time-lags between investment in new technologies and productivity/output improvements. During these time lags, it is necessary to make sufficient complementary investments in other, more critical, factors of production – electricity and roads, sufficient financial investment to upgrade agricultural production technologies, and the ability to access markets large enough to warrant the increase in production.

To conclude, extracting productivity benefits from ICT requires many complementary investments. It also requires changes in complementary processes and structures (i.e. just changing the technology is insufficient). And change takes several years.

TABLE 1: m-Farm transitions (2010–2015)

Degree of Transformation	2010			2015
	Inception	Integration	Process re-Design	Network re-Design
Key Change identified according to the model	Initial application development for improved service	Further development of a mobile platform to integrate multiple services	Changing the way the production process is organised	Changing the way the transaction process is organised along the value chain and re-defining the business model
m-Farm Innovation	SMS service introduced to provide farmers with up-to-date market prices	Mobile payment and other agricultural information services added to the platform	Group selling tool introduced that allows farmers to collaborate and sell larger quantities	Agronomist-grader model introduced that allowed farmers to integrate further into the m-Farm supply chain m-Farm redefines its role as a knowledge broker and financial intermediary

Transformation of Agriculture?

A transformational trajectory is generally defined by a number of pre-determined stages. At the *inception* stage, ICT innovations are likely to be localised and isolated within the produce value chain, causing minimal changes to key processes, focusing on the provision of information and faster communication. The second stage provides greater *integration* of different applications along the value chain – digitising key processes – such as the ability to access investment capital, procuring material inputs, identifying markets and conducting transactions. The third stage – *process redesign* – signals a step change to the way in which key processes are organised, addressing more fundamental problems associated with a broader set of process-related factors, such as relationships with customers, production, volumes and decision making concerning what to produce and other inputs.

The next stage – *network redesign* – is the first truly transformational phase. At this stage, there is a particular focus in using ICT to enable organisations to see themselves as part of a knowledge network that cuts across organisational boundaries as well as extending along the produce value chain. The final stage – *transformation* – re-defines the scope of the organisation. Whereas stage four still focuses on what the organisation traditionally does, stage five moves beyond this, to rethink organisational objectives.

As academics Ian Mckeown and George Philip wrote in the International Journal of Information Management in 2003: “(T)he benefits of IT deployment are marginal if only superimposed on existing organisational conditions. Thus, benefits accrue in those cases where investment in IT functionality accompany corresponding change in organisational characteristics (strategy, structure, processes, culture).”

This model can be used to track the evolution of a case study – in this case mFarm in Kenya (see table 1). Rather than ‘pushing information’ directly to mass populations of farmers, initiatives such as mFarm facilitate organisational and systemic change. This emphasises the importance of qualitative use of data and the criticality of information quality over the technological means to communicate, recognising that farmers have limitations in assessing digital information, and difficulties experienced in applying information effectively, in the absence of required complementary resources.

Transformation strategy

Structural transformation provides potential to move from a market of ‘middlemen’ buyers and farmers who are individualised sellers, towards collaborative forms of collective action. Collective action provides the means to fundamentally change farming from a fragmented and disorganised subsistence form to a more organised market-orientated approach, which can provide the basis for the scaling of production, and potentially, step changes in agricultural productivity. This structural transformation goes hand-in-hand with the requirement for new forms of ‘re-intermediation’ such as employed by mFarm, such as through the empowerment of community-based agronomists (who are usually farmers themselves) to act as information intermediaries (info-mediaries).

Process change can take place in relation to both the purchasing of input materials (aided by a group buying tool) and the selling of produce output through collaborative re-design of produce marketing aided with web- and text-based tools for completing transactions. Over four years since inception, m-Farm progressed from being purely a provider of information to becoming a

trusted ‘digital intermediary’ that plays a central role in coordinating the value chain and completing transactions. Thus, farmers who subscribe to m-Farm tend to move into produce sectors (e.g., organic primarily for export) that are conducive to technology application, and is already developing the type of process re-design that is necessary for transformational change to take place.

Within the typical agricultural setting in East Africa, culture plays an important role for change. Small-scale subsistence farmers may lack the incentives to collaborate or to grow because they remain embedded into a particular physical and institutional context, a context that mAgric initiatives may find difficult to transform. This problem of *embeddedness* means that an initial investment in m4Agric is unlikely to show demonstrable benefits for productivity without contributory changes in organisation and systems, and investment in the necessary complementary resources.

Rather than ‘pushing information’ directly to mass populations of farmers, mobile application initiatives should facilitate organisational and systemic change.

Implications

Interventions based on new technologies are coming to substitute for both the top-down role of the state (by providing an alternative to the traditional government extension services), and the bottom-up role of farmer collective action (local farmers’ cooperatives).

Understanding the characteristics of the produce sector market and how it operates is critical for successful ICT application. Interventions should build upon the specific characteristics of local demand, or the ability to identify specific farmers’ or more importantly farmer groups’ needs. Local enablers of innovation processes are crucial in this respect, and the evidence suggests that achievement of scale through collective action is an effective and productive way to transform pre-existing farming systems when combined with the enabling power of new mobile technologies. ●

Opposite: Young innovators enter the mLab Southern Africa for an ICT Hackathon. (mLab Southern Africa/via Flickr)

Below: ICT workshop for rural communities in Ghana by Esoko (AgReach/via Flickr)



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Related link

Website of the Centre for Development Informatics
www.cdi.manchester.ac.uk



Four building stones for a vibrant ICT environment

Serge Kedja

A vibrant enabling environment is vital for creativity, stimulus and optimism on which ICT4Ag initiatives can generate impact. Developers and innovators have to learn from cases, either successful or not, when it comes to the environments or contexts where they have been deployed. There are four areas on which an enabling environment depends.

The explosion in mobile phone usage in the African, Caribbean and Pacific regions has come about, in large part, because governments have liberalised the telecommunications sector, allowing private companies to compete to supply phones and networks that people find affordable. Despite these successes, some regulations might constrain further growth of the ICT sector by, for example, inhibiting innovation or limiting network expansion. Thus, national and local governments are important players for a sustainable growth model, in particular for ICT4Ag initiatives. Once they have endorsed a new project, governments need to provide consistent support to its implementation. A focus on four building stones for the enabling environment is eminent.

Governments and policy-makers are at the heart of creating a well-functioning enabling environment for ICT4Ag innovations.

1: Promoting research and innovation

Take for example Ignitia, a tropical weather forecast company that developed a disruptive technology, allowing smallholder farmers in West Africa to access accurate weather predictions (see also ICT Update issue 83). The need of accurate weather forecasting models is important for farmers in order to plan their activities accordingly. It was a study by the Royal Institute of Technology in Sweden on

how innovative entrepreneurs could scale-up while engaging with end users in rural area that involved Ignitia, which is headquartered in Sweden and has subsidiaries in Ghana and Nigeria. The team took two years (and total of 15 man years) to research and develop a high-resolution tropical forecast model, from a large amounts of satellite data and algorithms developed by the team, before their service was first piloted with farmers in Northern Ghana. Delivering a better forecast by using mobile phones, resulted in a yield increase for the service users, which in turn may lead to increased economic status and poverty reduction.

This example shows the crucial role that research and extension systems play in ICT development in agriculture. The study of the Royal Institute of Technology favoured a deeper development of the knowledge on weather forecast, which had generated solutions aiming to solve a specific issue for farmers in tropical areas. It also reveals the fact that many developing countries do not have sufficient resources to develop properly their capacity to innovate. This is another proof that public and private sector should invest in research and innovation and, most importantly, ensure that their investments give concrete results on the ground.

2: Legal and institutional support

Law and regulation play an essential role in society to protect citizens, businesses and the public interest. However, facing rapid changes in technology, law and regulation making can become a nightmare considering the wide range of areas concerned with technological innovation for agriculture (e.g. satellite, personal or market data, technological patents).

The case of Unmanned Aerial Vehicle (UAVs), also known as drones, applied to farming in order to help increase crop production and monitor crop growth well illustrates the need to catalyse innovations and knowledge through a regulated framework. The use of advanced sensors and digital imaging capabilities enable farmers to use these drones to help them gather a richer picture of their fields. All information gathered by UAVs can support farmers' decisions for the increase of their productivity or incomes, or both.

On the other side, reckless and indiscreet use of UAVs by civilians, from paparazzi drones to unauthorized UAVs flights over restricted areas, have raised serious concerns about leaving the technology unregulated. To respond to these concerns, some developing countries already implemented regulations on the use of the technology by civilians, while others have banned the use of UAVs without explicit permission from authorities. In Ghana, there are more than 28 rules to operate UAVs while they are banned and only permitted for military use in Cote d'Ivoire, and no specific regulations are currently known in Burkina Faso, according to the Global Remotely Piloted Aircraft Systems Regulations Database. The situation in West-Africa shows the lack of a harmonised set of rules for the use of small UAVs in public airspace. A restrictive regulation, a relative





supervision and an uncontrolled activity give unequal opportunities for innovators into the benefits of UAVs technology, as well as for the farmers. Narrowing this gap surely requires a diversity of efforts. Among them, an emphasis on collaborative approaches between innovators and regulators stand as a good starting point as it promotes an inclusive sharing of the expertise and resources during the regulation-making process.

3: A safe and healthy economic environment

A profitable business model becomes hard to achieve when the economic environment is not propitious or fair for entrepreneurship and innovation.

The cost of an ICT4Ag innovation is high and has to be paid back with a revenue flow from mostly poor farmers. Sector-specific taxes, such as airtime excise and SIM taxes, imposed in developing countries on both consumers and mobile operators affect the affordability of services, and reduce incentives for investment and rollout in rural, less profitable areas. For example, an SMS message to request information can cost €0.15 in Zambia, while a call to an interactive voice response (IVR) service in Côte d'Ivoire costs more than twice that. Mobile subscribers across East Africa face taxes at some of the highest levels worldwide, according to GSMA. Kenya, Uganda and Tanzania impose mobile-specific taxes that when added to VAT can result in consumers facing taxes as high as 30% in Uganda and Tanzania, and 27% in Kenya.

M-Kilimo, a farmer help-line launched in 2009 in Kenya, was no longer functioning in 2011 after initially being very successful and reached over 20,000 users by 2010. It was a donor-funded project, but high operation costs made the business unsustainable after funding had run out.

4: Coordinated advocacy

ICTs can have a major impact on countries' development. However, ICT4Ag initiatives, as subcomponents of agricultural and economic growth, are not always priorities for developing countries compared to the other challenges they face in for example health, education and security.

Governments and policy-makers are at the heart of creating a well-functioning enabling environment for ICT4Ag innovations. In return, these innovations contribute positively to development with the creation of business opportunities, increase of quality, productivity and incomes.

Still the recognition of the opportunities is lacking at the level of many decision-makers. To help them to create an enabling environment for innovation in ICT4Ag, there is a need to raise awareness. Advocacy carries more weight if international, national and local organisations with similar views and interests work together, a collaborative approach between agricultural value chain, innovators and businesses is the key to support innovations with a better impact. ●



About the author

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Related links

CTA publication "Lessons for sustainability – Failing to scale ICT4Ag-enabled services" (2016)
<https://publications.cta.int/en/publications/publication/1925>

ICT Update 83 – Youth e-agriculture entrepreneurship (2016)

<https://publications.cta.int/en/publications/publication/ICT083E>

Above: Pitch AgriHack 2016, Day2 Pitching Day. (CTA)

Opposite: ICT4Ag conference 2013 (CTA).

“IT solutions are disruptive: they change the way things are working”



Martin Njeru is the Account Director for Cojengo in the East Africa region. Cojengo is a Glasgow based ICT start-up that offers an application and ICT platform for livestock farmers in East Africa. Njeru's background is in biotechnology, but with a bias in livestock health and welfare. His passion is to see the empowerment of smallholder farmers with ICT related technologies. He aims in his work at Cojengo to improve the ICT skills of farmers through the Cojengo solution in this region, which would help them alleviate losses and achieve higher profits.

Q What is the story behind the creation of Cojengo?

Cojengo is a classic story of a university start-up. It has benefitted from an active entrepreneurial support infrastructure at the University of Strathclyde in Glasgow (Scotland) for graduates to start a business. The Strathclyde Entrepreneurial Network is a key partner in Cojengo and the university

Every problem can be turned into a business opportunity.

provides a pool of experts and talents on many different matters. It all started with Iain Collins, who is one of the founders of Cojengo, travelling to Kenya as a student. He did a research on ICT4Ag. After interviewing farmers,

he found out that livestock diseases are a real threat for farmers. There are not enough VETs around to tackle all the problems in the field as an accurate diagnosis takes a lot of time from VETs. The idea was to develop an app on a smart phone that is easy to use and could diagnose accurately livestock illness while at the same time source appropriate assistance.

Q What can you tell about the app?

We offer Africa's first integrated livestock disease diagnosis and disease surveillance platform with the ability to store data for compliance and monitoring. One of our tools is VetAfrica Mobile, an app for users in the field to assist with diagnosis, data collection and education. We further have developed VetAfrica Hub, an online data management dashboard to review, share and act upon live surveillance data, and VetAfrica Expert, a method allowing the addition of new diseases and species to the platform. The technology works on the latest Android Phone, Cloud Technology, Azure and Office 365 and is used by large organisations, individual farmers and veterinary professionals who use the tools to lower misdiagnosis, capture data from field faster and save lives of livestock.

Q Not many African farmers have a smart phone. Do you want to reach out to smallholder farmers?

Absolutely. We hope to convince them that the smart phone can be earned back easily by making use of the app. Farmers will see that they keep their livestock healthier and incomes will rise over time. To lose every year one cow is a lot of money too. That is why Cojengo wants to become the “killer app” for livestock farmers in Africa that makes the purchase of a smart phone an economical logic next step. The future is smart and once the farmer has bought a smart phone, he or she can use it for many other things – for example, education for the kids.

Q How did Cojengo move from an initial idea towards a start-up?

Every problem can be turned into a business opportunity. Filling in all livestock disease data and uploading it in a database in the cloud results in information that can be used for an accurate diagnosis. Now VETs fill in many forms manually, which is time consuming. After the initial idea, Cojengo first built a prototype from its Glasgow headquarter. Then we had to test it. Can the app diagnose a disease as accurate as a VET in the field? Through the university network we found a dedicated professor that was interested in independently testing the app. He ran an experiment in Ethiopia. One group of local VET students in their last year did livestock disease diagnosis in the field in a traditional way, while others used the app. With blood samples the real livestock diseases were tested. After bringing all the data together it showed that the software was indeed a very effective diagnosis tool.

Q What is the business model?

Making impact is the driving force behind the business. But we are not a charity or an NGO. We must earn money to deliver a sustainable future for our services. Due to the huge





impact that our IT solution can have on the dairy and meat sectors we believe that governments and farmers are willing to pay a small fee for the services. Now 10% of livestock dies of diseases in Ethiopia and Kenya. Drought is one of the main causes, but the lack of veterinary support also contributes to the death toll. By making use of the app we believe that 3% of livestock could be saved, which brings money in the local economy. Now we are in the first phase of our marketing strategy. We are focusing solely on selling our services to local and county governments as we believe that this is more efficient than focusing in this stage on individual farmers.

Q How do you experience working in the African market?

To focus on Africa and marketing a technology there is difficult. It is complex and a lot of bureaucracy is involved. Trust is one of the most important aspects of success. We go to cattle markets to build trust over a longer period. This is time consuming as stakeholders from governments, VETs, and farmers must see what we do. Introducing an IT solution as we do is disruptive in a sense that it will change how things are used to work.

Although there are no losers here, there is still resilience among some stakeholders to change the way VETs have to work. And I understand it. VETs remain responsible for the diagnosis. So, there is a challenge for authorities to allow the app within existing regulations.

Q Is it practical to have the headquarter in Glasgow?

Glasgow is the logical headquarter to develop the software and kick-start the business. All shareholder and investors are located close to Glasgow, like the government of Scotland. For testing we had to go to Ethiopia and Kenya and we have our marketing team based in Nairobi. We know that in the long term it would be more appropriate to move the headquarter to Nairobi, but as we are still developing and piloting all the aspects of the software it is still better to stay in Glasgow.

Q ICT4Ag is booming, but there is still a lack of productivity growth in agriculture in Africa. Do you believe too much impact is expected from ICTs?

I do not agree with that. IT is disruptive and that means it takes some time to be fully embraced by all actors. Most problems that you face in ICT4Ag are

not technological, but political, cultural and commercial. Many decision-makers are still not aware about the opportunities and benefits of IT for communities. If they have not a comprehensive plan to stimulate such changes, its total impact on agriculture will remain small.

Q Where do you see Cojengo in the near future?

We focus now on governments, but farmers themselves should in the near future diagnose livestock with the app. The app could be extended with a service to prescribe medication remotely by VETs through mobile systems. And we are looking to expand in the future to Tanzania, Uganda and Zambia. ●

Most problems that you face in ICT4Ag are not technological, but political, cultural and commercial.

Above: Collecting water for livestock, Kitui County, Kenya (Rob Hope/REACH)

Opposite: Smallholder farmers that live in remote areas are included in the VET Africa application. (Cojengo)

Resources

A selection of interesting websites, online platforms and literature on web-based and mobile applications for agriculture in the context of developing countries.

ICT4Ag

As the digital springboard for inclusive agriculture, ICT4Ag aims to keep policy makers, extension service providers, agricultural researchers, farmers and farmer organisations up-to-date on emerging ICT innovations. This initiative of CTA supports stakeholders to identify viable ICT solutions to address agricultural challenges. With ICT4Ag, CTA facilitates the co-creation of new ICT4Ag applications and provides platforms for discussions with policy-makers. The Apps4Ag database is part of the ICT4Ag initiative. You can join the ICT4Ag Dgroups or subscribe to the mailing list on the website. <http://ict4ag.cta.int>

AppsAfrica

AppsAfrica.com is a pan-African technology news portal and advisory service, dedicated to delivering the latest insight on mobile, tech and innovation in Africa. It organises the AppsAfrica.com Innovation Awards to celebrate the best in mobile and tech from across Africa. The organisers are now accepting entries with the deadline on 8 September 2017. www.appsafrica.com

Mobile Ecosystem Forum

The Mobile Ecosystem Forum is a global trade body that acts as an impartial and authoritative platform that addresses

issues affecting the broadening mobile ecosystem. Its members get access to a global and cross-sector platform for networking, collaboration and advancing industry solutions. The goal is to accelerate the growth of a sustainable mobile ecosystem that drives inclusion for all and delivers trusted services. Insights are shared with the public through official reports and a blog. It has chapters across Africa, Asia, Europe, Middle East, Latin and North America. <https://mobileecosystemforum.com>



Research ICT Africa

Research ICT Africa consists of a network of researchers in 20 African countries. It conducts public-interest research on ICT and mobile application policy and regulation. It provides African researchers, governments, regulators, operators, multilateral institutions, development agencies, community organisations and trade unions with the information and analysis required to develop innovative and appropriate policies, effective implementation and successful network operations that can contribute to sustainable development.

www.researchictafrica.net

Working with mobile operators

“Opening Doors: A start-up’s guide to working with mobile operators in emerging markets” is the title of a guide that aims at start-ups interested in collaborating with mobile operators in emerging markets. The GSMA Ecosystem Accelerator programme and Match-Maker Ventures teamed up to produce this guide, which is about the process of securing a partnership with a mobile operator. Engaging with a mobile operator and building a partnership is a journey, and this guide has identified four main stages of this journey: understanding the industry, understanding the market, pitching, and making the collaboration work. <https://goo.gl/rg5tDq>

PitchIT Caribbean

PitchIT Caribbean is a two-tiered partnership approach to support growth-oriented mobile app business in the Caribbean. It is part of the Caribbean Mobile Innovation Project (CMIP), which is part of the Entrepreneurship Program for Innovation in the Caribbean (EPIC) and is executed by the University of the West Indies Consortium. PitchIT

Caribbean is designed to strengthen the Caribbean mobile innovation ecosystem and enable sustainable and competitive mobile enterprises to grow through activities that will target early stage innovators and guide them to market readiness.

www.pitchitcaribbean.com



e-Agriculture Global Community

e-Agriculture is a global community of practice that facilitates dialogue, information exchange and sharing of ideas related to the use of ICTs for sustainable agriculture and rural development. As an e-Agriculture member you can contribute blogs and participate in forum discussions. e-Agriculture global community is made up of over 12,000 members from 170 countries and territories, members are information and communication specialists, researchers, farmers, students, policy makers, business people, development practitioners, and others. They have a common interest of improving policies and processes around the use of ICTs and mobile applications in support of agriculture and rural development, in order to have a positive impact on rural livelihoods. www.e-agriculture.org

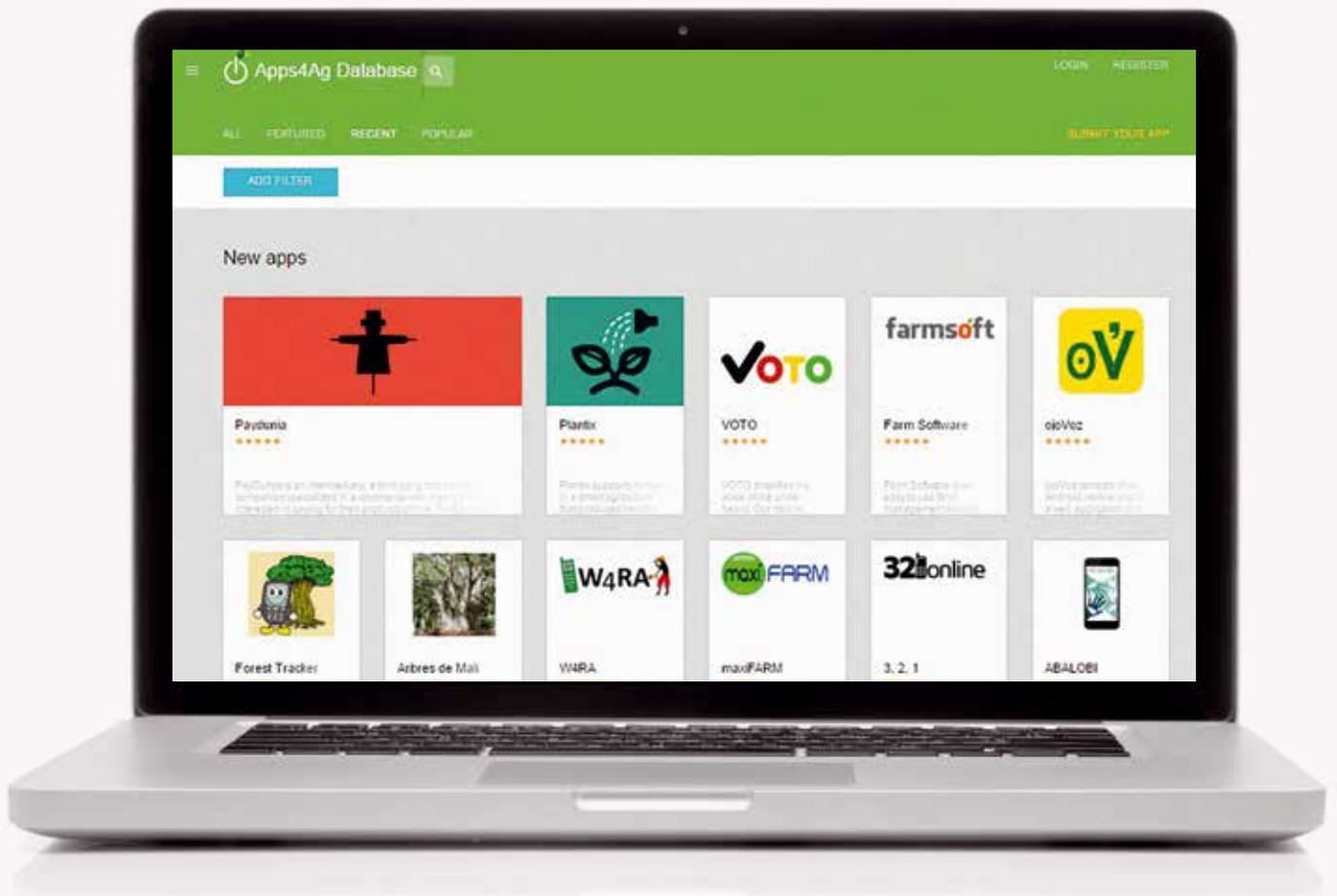
Report: mobile apps for agriculture

Although this World Bank report is from 2012 it still is a worthwhile resource on mobile applications and its impact on agriculture. The report, titled “Mobile Applications for Agriculture and Rural Development”, reviews country examples and extracts policy lessons and good practices. It also presents detailed studies of cases from Kenya, Philippines, and Sri Lanka, as well as summarises 92 case studies from Africa, Asia, and Latin America. The goal is to provide a comprehensive understanding of the development impact, ecosystem, and business models for mobile applications in agriculture and rural development. One of the main findings is that an enabling platform can facilitate interactions among ecosystem players, increase access to users, provide technical standards, and incorporate payment mechanisms. <https://goo.gl/AmNfQS>



ICT Update Special feature

The Apps4Ag database



Meet the Apps4Ag database

The Apps4Ag database is developed by CTA and is an online collection of over 500 applications, which provides new ways to find and discover worldwide ICT innovations for agriculture. How can you make the most of this database on www.apps4ag.org?

Interested app users: register now!

With multiple filters, based on an agricultural value chain framework, finding the right innovation for your needs has never been this easy. Simply select the filter(s) according to your interests and the database shows all relevant innovations available.

You can also type a keyword to search across all the descriptions of the innovations in the database by using the search area, which appears when you click on the magnifier icon next to the website logo. Once you click on an app card, in addition to the description given by the developers, you will get detailed information about:

- Where in the agricultural value chain the app focusses on (Pre-production, Production, and Post-harvest).
- The support of the extended agricultural services (Data & climate, Finance, Collaboration & networking).
- The technologies used or needed to make the app work (Device categories, Operating systems, Content formats, Output channels, and Distribution channels)
- The people (Audiences, Countries, and Languages)
- The Business model of the app (Start-up capital and Revenue model)
- Screen-capture and/or demonstrations videos of the app.

Once you feel yourself convinced by the app, use the links on the bottom of the app card to go to the app website or the app distribution channel or simply contact the app developer to know more. The Apps4Ag database also offers the opportunity to discover similar apps or other apps built by the same developer or company.

You can create a free user account, by clicking on the “REGISTER” link, on the right of the “LOGIN” link. Once registered, your email address will be used to receive the activation link, newsletters and updates. With a free user account, you have access to more functionalities of the database than non-registered user.

App developers: submit your application now!

As innovator, you need to activate the box “I am a developer” during registration to be allowed to submit app(s) to the database. You can enter the submission process by clicking the link “SUBMIT YOUR APP” on the right of the website menu.

Submitting an innovation to the database is a two-step process. Step one is the app description. This step allows the developers to give the name of their innovation and a description text; give a link to the website, or to a link to the market place, where the application can be downloaded; upload application logo and screenshots (up to three); and give a link of an online video (currently support only YouTube and Vimeo), either a demonstration or a promotional video.

It is important to think carefully about the description text before submission. The interest of database users depends on how attractive, concise and useful they found the description. Tip is to keep the text short and to mention in the first line a sentence stating its functionality and reasons why it has an added value for the user.

Step two is to add the app's details. This is where apps developers define the features of their app(s), based on an agricultural value chain framework. The available options give the opportunity to categorise an app by: agricultural value chain or service, support services, people, and technology.

By an accurate and relevant choice of the features, app developers now have the tool to specifically describe what the app is doing, how it can be used and by whom. The accuracy of the choices has a direct impact on the efficiency of the filters. Select only the features that match the actual stage of the app!

A moderating team from CTA reviews each new app to assess if the description and features meet reality. When an app meets moderating conditions, it becomes public and available on the database. App developers can get editing rights on its app(s) after verifications. The moderating team reviews and validates changes made to an existing app.

In addition to the app features, and to boost business opportunities with potential customers, partners or investors, a “Business model” section holds information on: start-up capital (seed money), current funding, and the revenue model (app monetisation).

For any information on the database contact team@apps4ag.org.

What is in the Apps4Ag database?

The Apps4Ag database has over 500 online and mobile applications and services for stakeholders in the food value chain. ICT Update gives you an insight what users from farmers, traders, researchers and decision-makers can find in the database. The database will be updated and extended with new information and new innovations on a regular base. So, have a look and see if there is something useful in it for you?

Abalobi

Abalobi is a mobile app developer for traditional and small-scale fishers. It is a knowledge hub and data sharing platform. It also features navigational, weather prediction and SOS functionalities using mobile phone and VMS integration. Abalobi also developed a virtual and transparent market place available to fishers and retailers.

Main audience: Fishers
Region: Africa: South Africa
Language: English
Website: <http://abalobi.info>



Agri ProFocus

Agri ProFocus is a platform that provides brokering services as well as an active online space for networking and exchange. It offers a space to highlight innovations and facilitates groups of local and international actors to jointly create solutions for farmer entrepreneurs.

Main audience: Farmers, Farmer Cooperatives, Agribusinesses, Non-Governmental Organisations
Region: Africa
Language: English and French
Website: <http://agriprofocus.com>



Agrivi cloud farm management software helps farmers to plan, monitor and analyse activities like tillage, planting, spraying, fertilisation, irrigation, and harvesting easily. All other activities are managed with a few clicks. It is powered by built-in agricultural knowledge base of best practice processes for 100+ crops and 500+ pests and diseases.

Main audience: Farmers and Farmer Cooperatives
Region: No specific region
Language: English
Website: www.agrivi.com



Agrivi

Special feature

Agro App

Agro App allows agronomists to create and email paddock/field inspection reports whilst on the farm eliminating travel time to the office, reducing paper work and freeing up time to increase individual output per day. It works offline where mobile/cell coverage is limited, and it exports data in CSV format to accounting packages or excel spreadsheet.

Main audience: Field workers, extensionists, agronomists
Region: No specific region
Language: English
Website: www.eziapp.com.au/index.php/agro-app



CattleFax

CattleFax is a platform that shares information on, by, and for the beef industry. It is an information and analysis service designed to meet the unique needs of the beef industry. When it comes to providing stakeholders with the tools they need to make profitable decisions.

Main audience: Livestock farmers, Agribusinesses
Region: Americas: USA
Language: English
Website: www.cattlefax.com



Climate FieldView offers a comprehensive, connected suite of digital agricultural tools to help farmers optimise resources and maximise yield. Using real-time and historical crop and weather data, Climate FieldView delivers customised insights that help you make important agronomic decisions with confidence.

Main audience: Farmers and Farmer Cooperatives
Region: No specific region
Language: English and Portuguese
Website: <https://support.climate.com>



Climate FieldView

Cropster Hub

Cropster Hub is an online platform for connecting green coffee sellers to specialty coffee roasters. On the platform coffee buyers can view a public offering list from each participating seller as a way to promote their coffees.

Main audience: Coffee Farmers and Coffee Buyers
Region: Africa, Asia, Americas
Language: English
Website: www.cropster.com



CultivAPP

CultivAPP is a mobile app designed to help agricultural professionals to effectively manage their farms. It records all activities carried out on the farm in real time. It helps access a comprehensive database, reliable and fully updated, on plant protection products and fertilizers. It supports direct communication channel with the different players in the sector.

Main audience: Farmers and Farmer Cooperatives
Region: Europe: Spain
Language: Spanish
Website: www.cultivapp.com



DataWinners

DataWinners is an online, do-it-yourself mobile data collection service for organisations in the developing world.

Main audience: Farmer Cooperatives, Agribusinesses, Financial Institutes, Researchers, Governmental Institutes, Non-Governmental Organisations
Region: Africa: Ethiopia, Senegal, Mozambique
Language: English and French
Website: www.datawinners.com



eFarmer Navigation

eFarmer navigation enables users to combine benefits from field records and tractor navigation. Users can further increase the efficiency of their farm business by using paid eFarmer farm management solutions such as team management and farm data analytics.

Main audience: Farmers and Farmer Cooperatives
Region: No specific region
Language: English
Website: <https://efarmer.mobi>



eGrowers

eGrowers is an outgrowers management system developed with the concept of aggregating information on events happening on a regular basis at organised smallholder farmers. All the information is captured with an aim of sharing it with stakeholders and conducting produce traceability for transparency on the production of the commodity.

Main audience: Farmers and Farmer Cooperatives
Region: Africa: Kenya
Language: English
Website: <http://agriculturetechnologies.org>



Ensibuuko is a mobile and web application that integrates SMS and mobile money services to enable saving and credit associations (and other financing organisations) to handle savings and make loans to smallholder farmers. The Ensibuuko system allows farmers to register and apply for loans using SMS, and save, receive and repay loans using mobile money.

Main audience: Financial Institutes, Farmers and Farmer Cooperatives
Region: Africa: Uganda
Language: English
Website: <http://ensibuuko.com>



Ensibuuko

E-Prod

E-Prod is a software package intended for SMEs in the agribusiness working closely with a substantial number of (small scale) farmers. E-Prod keeps track of several important areas of the business operations. Its unique features include full traceability, support for loans and repayments, full transparency of payment to farmers, collection and payment at group levels.

Main audience: Small and Medium Agribusinesses
Region: Africa: Kenya, Tanzania, Uganda
Language: English
Website: www.eprod-solutions.com

Farm At Hand

Farm At Hand is a cloud-based farm management app that allows farmers to manage the entire farming operation from seed to sale anytime, anywhere via computer, tablet or smartphone. It can automatically download reports (Fields, Planting, Spraying) for crop insurance, agronomists and market consultants.

Main audience: Farmers
Region: No specific region
Language: English
Website: www.farmathand.com



FarmDrive

FarmDrive uses mobile phones, alternative data, and machine learning to close the critical data gap that prevents financial institutions from lending to creditworthy smallholder farmers.

Main audience: Farmers and Financial Institutes
Region: Africa: Kenya
Language: English
Website: <https://farmdrive.co.ke>



Special feature

FarmForce has been created to help smallholders gain access to formal markets by using mobile technology to make traceability and compliance to food safety standards an integral part of smallholder production and to redefine the relationship between growers, manufacturers and markets.

Main audience: Farmers and Farmer Cooperatives

Region: No specific region

Language: English, French, Spanish, Portuguese

Website: www.farmforce.com



FarmForce

FARMIS

FARMIS is an app that manages farmers' agricultural business online allowing them to quickly manage and evaluate their income and expenses. It does this with automated record keeping, market data and linkages, and access to credit services.

Main audience:

Farmers and Farmer Cooperatives

Region: Africa: Kenya

Language: English

Website: www.farmis.co.ke



FieldLook

FieldLook makes use of all data to optimise yields from an office desktop or on a mobile device anywhere in the world. Farmers can compare crop performance on different fields or analyse one specific field's production over the past years. Identify problem areas as soon as they emerge for timely damage mitigation.

Main audience: Farmers and Farmer Cooperatives

Region: No specific region

Language: English

Website: www.eleaf.com/?page_id=3174



Freedom Fone

Freedom Fone is free software that creates interactive, voice-based communication services for organisations or bodies seeking to engage with communities across mobile networks. Freedom Fone uses voice menus to share information with any target audience, SMS polls to organise opinion surveys and callers can also leave voice and text messages on the service where call data records can be safely stored, organised and evaluated.

Main audience: Governmental Institutes, Non-Governmental Organisations, Agribusinesses

Region: No specific region

Language: English

Website: www.freedomfone.org



F-Track

F-Track, is the complete on-the-go farm management app that lets multiple users record and access all their farm information live, wherever they want. It suits especially larger farms with managers and staff able to input data, keeping the most accurate farm book available.

Main audience: Farmers

Region: No specific region

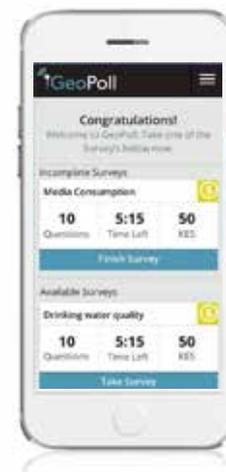
Language: English

Website: www.ftracklive.com



GeoPoll is a mobile surveying platform that collects data directly through all mobile phone devices in developing countries. It conducts surveys via SMS and Interactive Voice Response (IVR) to collect data and information from remote or hard-to-reach populations. GeoPoll has a database of more than 200 million users that are indexed by age, gender, and location to collect information and improve feedback loops within a matter of days.

Main audience: Researchers, Enterprises, Governmental Institutions, Non-Governmental Organisations
Region: Africa and Asia
Language: English
Website: <https://research.geopoll.com>



GeoPoll

GeoTraceability

GeoTraceability provides data collection tools, traceability systems, and on-line data hosting services. Data collection and traceability tools include GPS mapping, GIS technology, mobile phones and barcoding systems. The database is accessed using an on-line platform, whilst data collection and traceability tools work off-line and can be used in remote locations.

Main audience: Farmers, Farmer Cooperatives, Agribusinesses
Region: No specific region
Language: English
Website: <https://geotraceability.com>



GPS Field Area Measure

GPS Field Area Measure enables users to measure distances or area manually within the app or using GPS measurements. Users can make these selections using a satellite or map view, and they have the option to modify settings to their preferred linear and square measurement units.

Main audience: Farmers and Farmer Cooperatives
Region: No specific region
Language: English
Website: https://play.google.com/store/apps/details?id=lt.noframe.fieldsareameasure&hl=en_GB



iCow

iCow is a mobile phone based platform that enables livestock farmers increase their farming acumen, reduce risks, increase productivity and increase incomes. It does this by availing valuable agricultural content to farmers' real time and cost effectively.

Main audience: Livestock farmers
Region: Africa: Kenya
Language: English
Website: www.icow.co.ke



Infonet-Biovision

Infonet-Biovision Information Platform is a web-based information platform that offers trainers, extension workers and farmers in East Africa a quick access to up-to-date and locally relevant information in order to optimise their livelihoods in a safe, effective, sustainable and ecologically sound way.

Main audience: Extensionists, Field workers, Farmers, Traders
Region: Africa: Kenya
Language: English
Website: www.infonet-biovision.org



Insyt

Insyt is an application from Esoko that helps users to deploy, collect, monitor and visualise data and impact through customised software development for Android and web, call centre surveys, and agent recruitment, training and management.

Main audience: Governmental Institutions, Non-Governmental Institutions and Enterprises
Region: Africa: Kenya, Tanzania, Ghana
Language: English
Website: www.esoko.com/insyt



Special feature

Kryout

Kryout is a technology that guarantees that the voices of humanity are captured and utilised in a manner that improves our planet. The user leaves a kryout via phone or mobile app and will be made available to the public. Relevant decision makers are notified of the Kryout and respond by leaving a Kryout.

Main audience: Farmers, Farmer Communities, Policy-makers
Region: Africa: Nigeria
Language: English
Website: www.kryout.com



Lôr Bouôr

Lôr Bouôr is an integrated Platform built to bring together actors in the agricultural value chain, a place for advice and promotion of modern agriculture, efficient and adapted to an increasingly digital world. It is also a virtual market, combining offers and demands for agricultural products with a management tool for farmer organisations and their partners.

Main audience: Farmers, Farmer Cooperatives, Agribusinesses, Traders
Region: Africa: Cote d'Ivoire
Language: French
Website: www.lorbouor.org



mAgri

mAgri provides users with prices observatories, standards, guides for good practices, trade assistance, resources management, supply chain management, access to loans, and communication such as messaging, forum and alarms.

Main audience: Farmers
Region: Africa: Senegal
Language: French
Website: <http://magri.manobi.com>



maxiFARM

maxiFARM is an Android mobile app that calculates mixing ratios for livestock feed ingredients. Farmers can formulate their own livestock feed for any livestock using any suitable ingredients.

Main audience: Livestock farmers
Region: Africa: Zimbabwe
Language: English
Website: <https://play.google.com/store/apps/details?id=com.digitalacuity.maxifeed>



M-Farm is a transparency tool for farmers that enables farmers to inquire current market prices of different crops from different regions and/or specific markets; aggregates farmers needs/orders and connect them with farm input suppliers; enables farmers to sell collectively and connect them with a ready market.

Main audience: Farmers and Farmer Cooperatives
Region: Africa: Kenya
Language: English
Website: <http://mfarm.co.ke>



m-Farm

MLouma

MLouma is a virtual agricultural hub that publishes real-time information on the price, location and availability of farm products. Farmers and buyers can receive updates via the internet, SMS notifications or even a call centre to quickly find out where to buy their products at the best price.

Main audience: Farmers and Food buyers
Region: Africa: Senegal
Language: French
Region: www.mlouma.com



Mobenzi Researcher

Mobenzi Researcher is a mobile application that assists researchers to gather data, either by entering text numbers or by answering a series of questions designed to meet the specific needs of the project using simple feature phones to high-end handsets. The information can be sent instantly to the project office or securely stored on the mobile phone until the researcher is back within the range of a cellular network.

Main audience: Researchers, Field Workers, Agronomists
Region: Africa
Language: English
Website: www.mobenzi.com/researcher/home



M-Pesa

M-PESA is an innovative mobile transfer solution that enables customers to transfer money. It allows customers to send money using their mobile phone without requiring a bank account. Additionally, a customer does not need to be a subscriber on the provider's network to receive cash.

Main audience: Farmers, Agribusinesses, Traders
Region: Africa: Kenya
Language: English
Website: <http://www.safaricom.co.ke/personal/m-pesa>



The Musoni System is a cloud-based microfinance software service aimed at financial institutions looking to provide financial services to rural farmers. The Musoni System integrates with M-PESA and Airtel Money so its users can automatically receive mobile money payments. It includes its own SMS module for the automatic sending of payment reminders.

Main audience: Microfinance and Financial Institutes
Region: Africa, Asia
Language: English
Website: <http://musionisystem.com>



Musoni System

MySmartFarm

MySmartFarm is a cloud software solution for farmer's data and technology. It is designed for real-time 'anywhere-access', to empower farmers with scientific advice to optimise decision-making. It features GIS mapping, Remote sensing, Satellite monitoring, Weather forecast, Soil moisture graph, and Irrigation planning.

Main audience: Farmers and Farm cooperatives
Region: No specific region
Language: English
Website: <http://mysmart.farm>



MyTraps

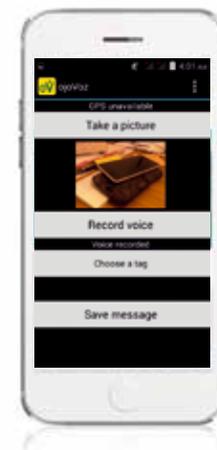
MyTraps and Trapping Insights functionality collects and visualises pest information from traps, to optimising the timing of pest control decisions, to accessing pest alerts, trend data, and more.

Main audience: Farmers and Farmer Cooperatives
Region: Americas: USA
Language: English
Website: <http://spensatech.com/mytraps.html>



ojoVoz consists of an Android mobile app and a web application that allows a group to collaboratively create a dynamic, audiovisual documentation about common topics. By using the ojoVoz app, messages consisting of an image, a sound recording, tags and geographic information can be composed and uploaded to a shared website.

Main audience: Farmers, Researchers, Field Workers, Extensionists
Region: No specific region
Language: English, Spanish, Catalan, Kiswahili
Website: <http://ojovoz.net>



ojoVoz

Special feature

Paydunya

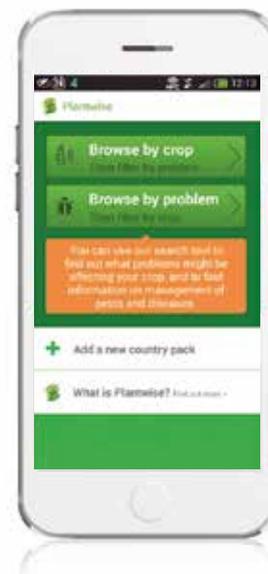
PayDunya is an intermediary that connects companies specialised in e-commerce with clients that are interested in paying for their products online. It has partnerships with mobile money operators, money transfer services and financial institutions that provide online payments both nationally and internationally. PayDunya's service, Clic and Pay, allows merchants who do not have their own professional website to create a webshop on their platform.

Main audience: Agribusinesses and Entrepreneurs
Region: Africa: Senegal
Language: French
Website: <https://developers.paydunya.com>



The Plantwise app has been developed by the Centre for Agriculture and Biosciences International (CABI) and helps farmers to find practical and safe advice for tackling crop problems. It gives a quick outline of how to recognise a crop problem, background information, and step-by-step instructions on how to manage the problem.

Main audience: Farmers
Region: Asia, Africa, Americas
Language: English
Website: www.plantwise.org



Plantwise

Rural eMarket

Rural eMarket is a multilingual (local languages can be added) and affordable tool for smallholder farmers to access market information.

Main audience: Farmers
Region: Africa: Madagascar
Language: French, English, Malagasy
Website: <http://rural-emarket.com/en>



SOKO+

SOKO+ is a digital commodity trading and information system, linking small scale farmers to end retailers/bulk purchasers of produce. SOKO+ provides commodity prices from major markets around the areas of operation and beyond, e-extension services and a listing of various technical and logistical support providers.

Main audience: Farmers, Retailers, Traders
Region: Africa: Kenya
Language: English
Website: <http://sokoplus.sokoape.co.ke>



TractorPal

TractorPal keeps inventory and maintenance records for all agriculture machines and attachments, including cars and trucks of all brands. As an available add-on, you can email these records to service dealers or potential buyers.

Main audience: Farmers
Region: Americas: USA
Language: English
Website: <http://tractorpal.com>



Trade At Hand

Trade At Hand is an International Trade Center (ITC) service that aims at making innovative use of mobile phones by exporters from developing economies. It consists of Market Alerts, a web-to-SMS tool that enables Business Support Organisations to transmit business opportunities, contacts and market news to targeted business people.

Main audience: Traders and Agribusinesses
Region: Africa, Asia, Oceania
Language: English and French
Website: www.intracen.org/itc/exporters/trade-at-hand



Umati Capital is a web and mobile app that replaces manual systems of recording procurement in supply chains, provides traders and business with full visibility within their supply chain, and digitises production data to enable Umati Capital to provide working capital to suppliers.

Main audience: Business, Financial Institutes, Traders
Region: Africa: Kenya
Language: English
Website: www.umaticapital.com



**Umati
Capital.**
Intelligent Lending

Umati Capital

VirtualCity

Virtual City Collateral Management app is meant to track the quantities and qualities of the raw commodities delivered to buying centres by the farmers. The cloud-based service intends to automate the whole upstream supply chain and generate the relevant productivity reports across the value chain.

Main audience: Farmers and Traders
Region: Africa: Kenya, Tanzania, Uganda
Language: English
Website: www.virtualcity.co.ke

 VirtualCity | innovation lives here

Vistār is a software application that helps farmers to get direct access to market or buyer information so that they can sell their crops at an optimum price. It offers market information to the farmers and centralizes bids and offers. Farmers can sell perishable crops at fixed interval and avoid crop damages.

Main audience: Farmers and Farmer Cooperatives
Region: Asia: Bangladesh
Language: English
Website: www.grameen-intel.com/products/vistar



vistār
Technology for Better Sales Planning

Vistār

VOTO

VOTO amplifies the voice of the under-heard. The mobile phone notification and survey platform removes the barriers to insightful mobile communication between citizens worldwide and the organizations that serve them. Users can send messages, build polls, and offer menu-driven call-in services to connect people to the information they need.

Main audience: Farmer Cooperatives, Enterprises, Governmental Institutes
Region: Africa
Language: English and French
Website: www.votomobile.org



WeFarm

WeFarm is a free peer-to-peer service that enables farmers to share information via SMS, without the internet and without having to leave their farm. Farmers can ask questions on farming and receive crowd-sourced answers from other farmers around the world in minutes.

Main audience: Farmers
Region: Africa
Language: English
Website: <https://wefarm.org>

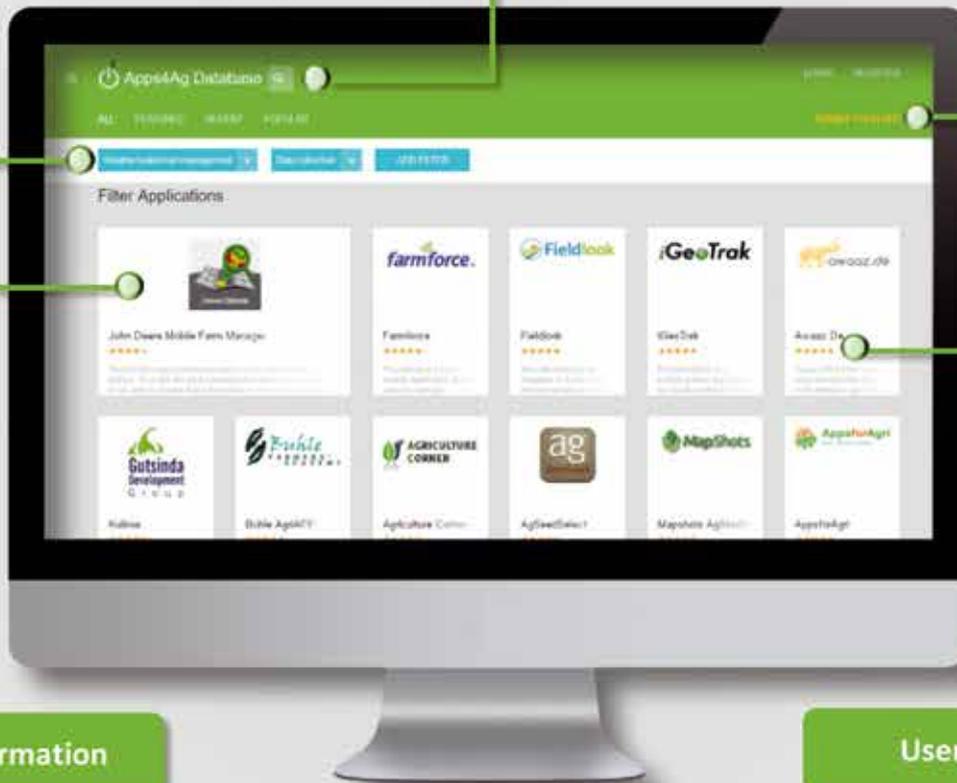


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