

ICT Update

a current awareness bulletin for ACP agriculture

Issue 69
December 2012



<http://ictupdate.cta.int>

Crowdsourcing can improve land tenure security in poor communities

A crowdsourcing experiment in Mauritius aims to locate breadfruit trees

A Jamaican app visualises agricultural information to engage with farmers



Engaging with communities through crowdsourcing

Crowdsourcing and engagement

- 2** Guest editor
Engaging with the crowd
Juliana Rotich
- 4** Crowdsourced land rights
Robin McLaren and Georges Thierry Handja
- 7** Mapping trees for food security
Nawsheen Hosenally
- 8** Springboard for crowdsourcing
Maurice L. McNaughton and Brad Clarke
- 10** ICTs for indigenous knowledge preservation
Niall McNulty
- 11** Bookmark
What can crowdmaps do for me?
Christine Brönnner
- 12** Resources
- 13** Q&A
Funded by the crowd
Dan Kisauzi
- 14** Dispatches
- 16** Tech Talk
Social media is a key advocacy tool
Hudson Werh Shiraku

ICT Update



ICT Update issue 69, December 2012.

ICT Update is a bimonthly printed bulletin with an accompanying web magazine (<http://ictupdate.cta.int>) and e-mail newsletter. The next issue about 'Agricultural research and ICTs' will be available in February 2013.

Editor: Evert-jan Quak
 Editorial coordination (CTA): Chris Addison, Ken Lohento, Dorothy Okello, Giacomo Rambaldi
 Research: Cédric Jeanneret-Grosjean
 Language editing: Mark Speer (English), Jacques Bodichon (French)
 Layout: Anita Toebosch
 Translation: Patrice Deladrier
 Cover photo: CSI Productions / Alamy

Copyright: ©2012 CTA, Wageningen, the Netherlands

<http://ictupdate.cta.int>



This license applies only to the text portion of this publication.

Guest Editor

Engaging with the crowd

Crowdsourcing is booming thanks to innovative technology and new developments, and more and more people are picking up on it. But the logistics of setting up crowdsourcing projects in remote rural areas in developing countries is a major challenge.

Crowdsourcing is a new bottom-up approach to problem solving that is changing the face of the world. The crowd is no longer just bearing witness; the crowd is becoming an actor. Crowdsourcing gathers the public's collective knowledge and uses

chaotic period following the devastating earthquake that hit the island in 2010. Over 80,000 SMS reports were received on the online platform, and more than 3,000 reports were published to the crowdmap. This made it possible to give hundreds of people local relief.

To be successful, crowdsourcing should focus on highly relevant, and hyper-localised intelligence

it to advance a cause or business-related task.

The web helped crowdsourcing go mainstream. But mobile phone technology is taking it a step further. Ushahidi is a good example. Ushahidi means 'to witness' in Swahili. This not-for-profit technology company started out as an ad hoc group of techies and bloggers trying to find out the best way to gather information about the post-election violence in Kenya in 2008. It uses the crowd, maps and cell phones to gather and visualise information in disaster and crisis zones.

Ushahidi's software was also used by aid relief workers in Haiti to receive real-time information during the

New trends

The way crowdsourced information is being collected and used is changing rapidly. The most exciting new trend is called *idle sourcing*. Idle sourcing is crowdsourcing but used in another way. It uses the accelerometer and hardware capability of mobile phones to provide a central system with information without the user having to input anything into the system. Idle sourcing lets sensors in our mobile phones do the work and sends information automatically from the phones. This is an important change, as crowds cannot be contributing non-stop.

There are examples of how this technology has been used successfully. The Street Bump app uses the sensors on smart phones to give city officials a real-time map of road conditions. The Android app uses the accelerometers and GPS technology in phones to register when and where a user's car has experienced a pothole, for example, which it then logs and automatically reports.

The next years could see a convergence between traditional crowdsourcing, where people provide the input, and idle sourcing, where sensors on cell phones provide the input. The interplay between the two will make it possible to generate a more detailed and holistic view of a situation.

Mobile first strategy

What can crowdsourcing mean for people in the rural areas of African, Caribbean and Pacific countries? Crowdsourced information can help farmers, farmers' organisations, academics who need input for

Related links

- Ushahidi's home page:
→ www.ushahidi.com/
- Ushahidi's blog:
→ <http://blog.ushahidi.com/>
- Ushahidi's toolkits for successful crowdsourcing:
→ <https://wiki.ushahidi.com/display/WIKI/Ushahidi+Toolkits>

- Street Bump app:
→ <http://streetbump.org/>
- Article about iRevolution:
→ <http://irevolution.net/2012/09/26/maqsa/>

agricultural research, local authorities and rural companies. Crowdsourcing is a cheap and efficient way to collect and share information for real-time weather updates to market prices, or for sharing localised information. However, to make it work, farmers in rural areas need to be encouraged to provide information. And this information has to pass through a server with huge data processing capacity in order for farmers to receive useful information back.

Setting up crowdsourcing projects in rural areas in developing countries may be a huge challenge, but it can also be seen as an opportunity. People in developing countries are more price sensitive, however, for obvious reasons, and may wonder what is in it for them. So to be successful, a crowdsourcing initiative in rural parts of these countries should focus on highly relevant, easy-to-use and hyper-localised intelligence.

We are just beginning to scratch the surface; it is not yet possible to guarantee the crucially needed scale that would ensure success. Indeed, few agricultural initiatives in Africa manage to reach millions of people. M-Farm, a market price service for farmers in Kenya, comes the closest. Although M-Farm does not yet crowdsource information about market prices, it has the potential to grow further and possibly introduce crowdsourcing models to gather market information successfully on a larger scale.

Ushahidi is also struggling to reach the farmer population. It is thinking about developing software to crowdsource real-time weather updates from farmer to farmer. This could be an interesting tool for dealing with problems caused by climate change. However, for this to succeed the organisation needs to think big, and that means a massive marketing budget to convince enough farmers to participate. Ushahidi has not reached that point yet and it is currently seeking partners interested in their idea.

Location-based services

New technology can help, though. One advantage is that cell phones are already the most important communication device in remote rural areas. But location-based services are typically only available for cell phones with GPS, which means mostly smart phones. Luckily a breakthrough has been made in scientific research enabling people to access and use location-based services on normal cell phones. Crowdsourcing

depends heavily on localised information, which tells the story of a place that has a specific longitude and latitude. Once location-based services become available on normal cell phones, they will reach millions of people in developing countries.

It is also important that the expectations of the participants in crowdsourcing initiatives are well managed. Communication with the crowd has to be crystal clear.

Therefore, it is important to communicate the goal of the crowdsourcing project. Feedback loops are important as well. If someone sends information by SMS, they should receive a message of acknowledgement back. And it is important to always include a link to the information so people can access it online later.

Verification techniques

Feedback loops in alert features can be used as well to the crowd's benefit. For example, people in Nairobi participating in a crime and corruption crowdmapping initiative will want to send and receive real-time information about what is happening in their areas. This is only possible if a radius is set up for every report. Then the crowds can send each other updates about what is happening in their radius.

Always verify the data. Most of the software used for crowdsourcing does not have a specific method for verifying data. People running the software and project have to be aware of this. Verification techniques require different levels of recurrence. Two different



Juliana Rotich (juliana@ushahidi.com) is co-founder and executive director of Ushahidi Inc, a non-profit tech company. She is a technologist, and TED senior fellow. She was named one of the Top 100 women by the *Guardian* newspaper and top 2 women in Technology 2011, and social entrepreneur of the year 2011 by The World Economic Forum.

strategies can be employed. The first is to smart filter data through social media sources. MAQSA is a good example because it provides an interactive topic-centric dashboard that summarises news articles and user responses (comments and tweets, for example) to your selection of topics. It is difficult to do, but well worth the trouble.

Crowdfeeding, also called expert sourcing or bounded crowdsourcing, is the second strategy. This involves a group of observers, who are trusted reporters. They are the pre-trained people who raise the level of trust in the project. These people have the expertise to verify whether the crowd's information can be trusted.

Crowdsourcing is booming thanks to innovative technology. As it continues to develop, it will increasingly penetrate people's daily lives and be used in the private and work spheres. Indeed, crowdsourcing is how we will collect and use information in the future. And a way we can engage with the crowd. ◀



The web helped crowdsourcing to go mainstream. But mobile phone technology is taking it a step further. New software and apps gather information and serve the crowd, mostly in densely populated areas. However, crowdsourcing is engaging with the communities and might be a tool to serve farmers and rural communities. There are constraints, but also opportunities.

Crowdsourcing and engagement

Indigenous communities in the rainforest of Africa's Congo Basin have no legal rights to the land that they and their ancestors have been using for centuries. And with logging, mining, industrial plantation and conservation activities spreading fast in the area, there is a growing urgency to map their hunting and gathering areas and preserve their livelihoods.

Half a million people in the basin are hunter-gatherers, whose lives depend on the biodiversity of the rainforest, according to the Rainforest Foundation UK. The organization has come up with an extraordinary solution: community mapping with GPS technology on cell phones. The forest communities map the land they use for hunting and

GIS technicians from civil society and government in participatory approaches, not to mention over 1,000 local community mappers. To date these have supported over 300 forest communities to produce fully geo-referenced maps of their lands and resources, covering over two million hectares of forest.

Spatial knowledge

GPS and associated technologies help communities express and integrate this knowledge in the context of other data sets such as the presence of logging concessions or mining permits.

This is all about the empowerment of local communities and the promotion of dialogue and communication among

conflicts between forest communities and forest resource extractors. In some cases, they have been used to help revoke the licence of a company that breached the social and environmental clauses of an agreement.

Ownership and control

The Rainforest Foundation UK recently launched a new website, www.mappingforrights.org, which aims to provide easy access to accurate geographical information about the presence, land use and rights of indigenous peoples and other forest-dependent communities in the Congo Basin. 'Through the Mapping for Rights initiative,' explains Handja, 'we intend to significantly scale up our mapping

Crowdsourced land rights

Crowdsourcing initiatives can encourage and support citizens to directly capture and maintain information about land rights. A database of crowdsourced land rights can improve security of tenure for the poorest.

gathering to record how the land is used and what the rate of dependency on the land is in order to help preserve their access to the forest.

Over the last 10 years, the foundation's participatory mapping programme has demonstrated that forest communities are capable of accurately defining the lands they occupy and use with the help of geo-technologies in Cameroon, the Central African Republic, the Democratic Republic of Congo, Gabon and the Republic of Congo. It has so far trained over 200 mapping facilitators and 40

different actors. Community ownership and involvement in the mapping process also means that communities learn about their rights and how to defend them. 'Crowdsourced maps,' says Georges Thierry Handja, mapping coordinator of the London-based foundation, 'are particularly effective when used in conjunction with national laws or international agreements and treaties that protect the rights of communities in forest areas. This is why we have set up a legal capacity-building project to support the outcomes of the mapping work.'

The maps produced can be used in dialogue with state agencies and other relevant actors to facilitate better planning and decision making, and to support legal actions to secure land rights. This has proven to work already in the Central African Republic, where the maps have been used to secure the provisional suspension of a proposed national park management plan that had not been subjected to adequate consultation with local communities and did not take their rights sufficiently into account. The maps are also useful for reconciliation and negotiation in

work in the coming years. This can provide a basis for real-time monitoring of lands under the ownership or control of forest communities.'

And much more is possible if crowdsourcing is fully embraced, says Robin McLaren, director of Know Edge, an international ICT consultancy based in Edinburgh, United Kingdom. Only 1.5 billion of the estimated 6 billion land parcels worldwide have land rights formally registered in land administration systems. So McLaren came up with a solution that he describes in his groundbreaking research report for the Royal Institution of Chartered Surveyors (RICS). Crowdsourcing, according to McLaren, can improve land tenure security in poor communities. It can also establish a new partnership between land professionals and citizens that would encourage and support citizens to directly capture and maintain information about their land rights through ICTs.

Continuum of rights

The mobile phone, in particular, allows citizens to directly record the

Robin McLaren (robin.mclaren@knowledge.com) is an independent management consultant and founding-member of Know Edge. He is an expert in land information management systems through his work with aid agencies implementing national land registration and cadastral systems and national land policies worldwide.

Georges Thierry Handja (georghthierryh@rainforestuk.org) is mapping coordinator at the Rainforest Foundation UK. He is responsible for the Mapping and Forest Governance Programme's community mapping and mapping for rights projects.



DAVID WALL / ALAMY

'Crowdsourced maps are particularly effective when used in conjunction with national laws or international agreements and treaties that protect the rights of communities'

boundaries of their land. This can be achieved in several ways: by marking up paper maps digitally photographed with the phone; a textual description of the boundaries recorded on the phone; a verbal description recorded on the phone; geo-tagged digital photographs of the land parcel recorded on the phone; video and commentary recorded on the phone (this could include contributions from neighbours as a form of verification); the positions of the boundary points identified and recorded on imagery, using products such as Google Maps and Bing, for example; or the coordinates of the boundary points recorded directly using the phone's GNSS capability.

'The results of this crowdsourced or self-service information,' says McLaren, 'could then be submitted electronically to either the land registration and

cadastral authority or open data initiative for registration.' Although the quality and authenticity of the ownership rights information have limitations, it could establish a starting point for the continuum of rights being proposed by UN-HABITAT. This starting point may well be 'fit-for-purpose'.

There are some technological concerns about using ICTs in remote rural areas in developing countries, however. 2G mobile phones are the default service in rural areas in the developing world, with limited data transmission and access to internet. However, 3G services are expanding. 'Although 2G coverage does impose limitations on functionality and the ability to transmit data efficiently,' says McLaren, 'there are novel solutions being developed to counter these

deficiencies.' He gives an example. LUTRA Consulting is developing a solution for forest communities in cooperation with the Rainforest Foundation UK, which uses a smart phone that can collect data without mobile internet coverage. Once the phone has 2G coverage, bursts of SMS messages are used to transmit low-volume data. When the phone has Wi-Fi or 3G coverage, then high-volume data is transmitted.

Open resource communities

Open resource toolkits should support crowdsourcing initiatives for land administration systems. Examples include the Open Data Kit from the University of Washington and EpiCollect.net from Imperial College London. Both support complex forms that allow the capture of attribute data and provide work-flow management to guide users through the capture process. 'These toolkits,' says McLaren, 'are more suited to the capture of land rights information when compared to tools provided by OpenStreetMap and Google Map Maker, for example, which just focus on volunteered geographic information.'

Crowdsourcing initiatives create opportunities to establish a new partnership between land professionals and citizens that would encourage and support citizens to directly capture and maintain information about their land rights through ICTs and crowdsourcing.

Related Links

RICS report *Crowdsourcing Support of Land Administration* (November 2011)
→ <http://goo.gl/SFISg>

Article in *Geospatial World magazine* (July 2012)
→ <http://goo.gl/hgtrr>

CNN news article about participatory mapping in the Congo Basin:
→ <http://goo.gl/4xKuc>

McLaren is currently discussing the possibility of piloting crowdsourcing in land administration with the World Bank, UN-FAO, RICS and the Department for International Development in the United Kingdom. Agreement on a pilot programme, including up to three sites in Africa, will most likely be achieved by the end of 2012. Pilots would then be initiated in 2013 and last for around 18 months. The key objectives of the pilot programme will be to test the participatory or crowdsourced approach's ability to capture land rights information and to understand citizens' and communities' reaction; and to identify the most appropriate technology platforms and to specify areas for downstream improvements. 'The big challenge will involve ergonomics and designing a suitable solution for the "pro-amateur" or citizen,' McLaren says. 'However, the use of mobile phones as the technology platform should help support this requirement.'

Cheap solution

Crowdsourced land registration systems can be a cheap solution, according to McLaren, if the crowdsourcing initiatives follow the open source and open standards approach and are successful in building open source communities, like the UN-FAO's Solutions for Open Land Administration Software Project. Only then will the cost of technology implementation for countries be low, compared to today's equivalent proprietary solutions. The major technology costs will be in adapting to the local culture, the type of tenure and the adopted technology. However, the major savings will be in the capture and maintenance of land rights

information. 'It is estimated that the land rights capture costs per parcel in rural areas could come down to below US\$3 per parcel,' McLaren says.

Trusted intermediaries

Crowdsourcing initiatives open up opportunities for land professionals to develop Land Administration Systems apps and train members of communities to become trusted intermediaries in capturing and maintaining land rights information. 'These newly skilled trusted intermediaries, or leaders, can become entrepreneurs within their communities and network with other communities,' McLaren explains.

But what are the key threats that could potentially stop the crowdsourcing initiative from being successful? 'The land administration agencies, the surveying profession and land investors benefiting from the current chaos are the principal defenders of the status quo,' says McLaren. 'The crowdsourcing initiative will have to ensure that they are not the gatekeepers.' The crowdsourcing process should therefore rely on robust partnerships with groups and organisations that are permanently active in the community.

The initiative will only work if land administration authorities ensure that verified crowdsourced land rights information can be transitioned through an agreed process and be formalised as registered rights. If land



RAINFOREST FOUNDATION UK

registration authorities refuse to cooperate, then there is always the possibility of local organisations starting a shadow property register. 'Worldwide open access to a register of crowdsourced land rights will provide some level of security of tenure to communities that have been ignored by their corrupt governments in securing their land rights,' says McLaren. And the Rainforest Foundation UK's participatory mapping initiative in the Congo Basin already shows that it can work. ◀

Crowdsourced information on international land acquisition

The Land Matrix was established as a crowdsourcing system to monitor land acquisitions larger than 200 hectares by foreign investors. It includes land used for agriculture, livestock, forestry for wood or fibre production, mineral extraction, including petroleum, – essentially all rural land. The database has registered nearly 1,000 land deals. There are approximately 1,300 additional land deals that are in the process of being verified so they can become part of the database. Since the launch of the Land Matrix in late April 2012, users of the platform can report a deal by sending an email, but the International Land Coalition is now in the process of allowing users to submit all of the relevant details in the database. This

Land Matrix Editor tool will facilitate the collection of crowdsourced data and empower researchers in partner organisations around the world to help them manage, verify and organise the crowdsourced information. The bigger the data set becomes, the more powerful the Land Matrix will be in monitoring land acquisition trends. Once it becomes a truly crowdsourcing initiative, it may well have a serious impact on certain deals and may encourage companies to be more responsible and allow more open investment. It will serve as a tool for advocating better land governance by countries, especially in the context of the FAO's Voluntary Guidelines on the tenure of land, forests and fisheries.
→ <http://landportal.info/landmatrix>

Mapping trees for food security

A crowdsourcing experiment was carried out in Mauritius to find out where the island's breadfruit trees are located. However, the contributors' lack of ICT skills made for disappointing results.

Crowdsourcing and engagement

A crowdsourcing experiment in Mauritius to locate breadfruit trees on the island initially failed because the contributors lacked ICT skills. Furthermore, local rural communities are not contributing to the map because it was mainly promoted through social media tools. But now stakeholders of the Mauritius Breadfruit Sector Consortium have started to use the map, especially for scientific research on the development of new varieties.

Breadfruit is a traditional crop in Mauritius that has been produced mainly in backyards. The authorities, however, identified breadfruit as an alternative source of carbohydrates for imported rice and wheat, which are the main staple foods in Mauritius. This resulted in a campaign to increase local breadfruit production for food security and export purposes.

In 2011, in line with the food security policy of the government, the Food and Agricultural Research Council established the Mauritius Breadfruit Sector Consortium. The consortium consists of public and private agricultural institutions collaborating to develop breadfruit production in Mauritius. The initiative is supported by the Platform for African-European Partnership on Agricultural Research for Development (PAEPARD). Its main aim is to develop a value chain approach and an action plan.

Since there are no commercial breadfruit farms in Mauritius and there are no orchards as such in the country, there are no official figures available about annual production. It is estimated to be more than 600 tonnes a year. The geographical location of breadfruit trees on the island is also unknown. For that

reason, a crowdsourcing experiment using Google Maps was launched in Mauritius in February 2012 by the Mauritius Breadfruit Sector Consortium.

First, the consortium needed a platform for communication and information sharing among its stakeholders. They opted for a Wiki, because it would serve as a useful and accessible online platform for information sharing and collaboration. The consortium's wiki supports Web 2.0 applications, so a Google Map was added. Google Map enables users to add breadfruit trees in Mauritius onto the map. It was chosen because it is a free web tool, with a user-friendly reputation. Pinpointing trees on the map is meant to benefit retailers, processors, exporters, and research scientists developing new varieties.

For each new entry, the tree needs to be labeled (for example, Breadfruit001) and people must provide their name and are encouraged to enter a description (for example, date spotted, flowering and fruiting stage, number and shape of fruit). Based on this information and the location of the tree, administrators can differentiate between useful and less useful entries. If there is any doubt regarding the location of a tree, the administrator adds a note to the description, and if no one responds, trees that appear to be wrongly placed will be removed from the map.

Unfortunately, only two members of the consortium initially contributed to the map after it was introduced. Feedback began trickling in from other consortium members who said that they were having difficulty adding trees to the map as they did not understand how to use Google Maps. This led to the development of a tutorial, in order to respond to the needs of the consortium members and the public.

The tutorial was accompanied by training sessions, and the platform was massively promoted on social media. This led more people to contribute, though it became apparent that the public needed time to understand the use and importance of the Google Map platform before contributing. The main

Related links

Link to the Google Map:
→ <http://g.co/maps/7uydm>

Link to the map on the wiki:
→ <http://goo.gl/9ci3v>

problems are trees being placed in wrong locations on the map (in the sea or in the middle of a street), so the administrator has to check new entries regularly and remove wrongly placed trees.

Moreover, when the crowdsourcing activity started, breadfruit was in season, so trees were easily spotted because they had large leaves and spherical or oblong fruits. As the fruiting season came to an end, contributions to the Google Map slowed down too.

The result is that there are presently over 60 trees on the map with descriptions. A disappointing result so far if one considers that there are an estimated 3,000 or more breadfruit trees on Mauritius. Furthermore, contributors did not use GPS on their cell phones to add a tree. The trees were mainly entered on computers. In some cases, partners confirmed that these tools are meant for the youth, despite training sessions and product demonstrations. Another disappointment is that until now the consortium has been unable to receive any input from the farming community due to a lack of promotion by traditional means, such as radio and national television, since not many farmers use social media networks.

Several months after the implementation of the Google Map, however, consortium stakeholders are already using the map to locate trees for different purposes. For example, by using this map, samples were taken at different locations for research purposes, propagation and sales. The project managers have learned from the difficulties and are continuing with the activity to get the maximum number of trees on the map over time. ◀



Nawsheen Hosenally (nawsheen.hosenally@gmail.com) holds a Bachelor of Science in agriculture and is the agricultural innovation facilitator of the Mauritius Breadfruit Sector Consortium, supported by the PAEPARD Project.



Springboard for crowdsourcing

In Jamaica, extending a mobile app's functionality with real-time information from farmers could create a service that is more practical for them and for extension officers.

Crowdsourcing and engagement

In Jamaica, agriculture is being targeted for modernisation through the more effective use and application of ICTs. The small island state with a population of 2.75 million is moving towards systems and processes that deliver a reliable stream of data, information and applications to integrate planning, production, distribution and monitoring activities.

Maurice L. McNaughton (maurice.mcnaughton@uwimona.edu.jm) is director of the Centre of Excellence at the Mona School of Business & Management of the University of the West Indies in Jamaica (www.uwimona.edu.jm/msb/)

Brad Clarke (bradhclarke@gmail.com) is ICT manager at the Rural Agricultural Development Authority (RADA) in the Ministry of Agriculture in Jamaica (www.rada.gov.jm).

This, in turn, will go far to develop a market-driven, efficient and sustainable agricultural sector.

The Rural Agricultural Development Authority (RADA), a statutory body under Jamaica's Ministry of Agriculture and Lands, expends considerable resources to collect production data in the field and provide extension services to the island's over 159,000 registered farmers. RADA has 211 field staff (extension officers and agricultural assistants) to serve the farmers, an approximate ratio of 1:750. 'That is overwhelming,' explains Maurice L. McNaughton, director of the Centre of Excellence at the Mona School of Business & Management (MSBM) of the University of the West Indies in Jamaica, 'particularly if you consider rough terrain, insufficient travel

allowances, and inadequate means of transportation.'

Research collaboration

The Mona School started research collaboration with RADA to evaluate, explore and develop the potential of using open data, web services and mobile technologies to address some of the information access and management challenges in the provision of agricultural extension services.

At present, the delivery of extension services to farmers is supported by maintaining data about farmers, their farming production capacity and ongoing animal and crop production activity, which are stored in an internal system called ABIS (agricultural business information system - www.abisjamaica.com.jm). ABIS is also a critical resource for supporting

agricultural supply-side planning production and statistical reporting. The agricultural open-data project would seek to facilitate more effective real-time information exchange between farmers, extension officers and the centralised ABIS database, in order to deliver more informed extension services to farmers, and more accurate and current information on the agricultural production sector.

Open-data resource

'The first phase of the project was to convert the ABIS database into an open-data resource that would enable software developers to access and re-use over 10 years of information about registered farmers, farm property, crop production data and farm-gate price data,' says McNaughton. A web services application programming interface (API) that would facilitate the combination (or mashup) of multiple web services into new applications was constructed around the data using CakePHP, an open-source, rapid development framework for PHP. This would enable developers to build a variety of apps that could enhance information retrieval and service delivery without having to download the very large production data sets.

The first application developed on the API was a web-based visualisation application to demonstrate how agricultural data can be made much more meaningful, accessible and user friendly through geospatial representation. 'The application allows the user to view farm and crop data island-wide on a map basis,' says McNaughton. 'Flexible query and aggregate functions also enable data to be summarised as both bar and pie charts, run complex queries and receive results online in either a tabulated, graphical charts or map view.' This enhances the traditional tabular and statistical formats in which agricultural data was typically reported.

The real 'killer app' opportunity, however, lies in extending these capabilities to mobile devices such as cell phones and tablets, observes McNaughton. With a penetration of close to 100% in Jamaica, the mobile is rapidly becoming the platform of choice for access to and dissemination of digital content, and presents significant opportunities for extending the potential reach and impact of official agricultural data, as well as to create opportunities for crowdsourcing as the

basis for more participatory engagement with the farmers themselves.

Agro assistant app

To directly augment the effectiveness of extension services in the field, a companion mobile app was developed to interface through the agricultural open-data API. The Agro Assistant mobile application, developed for the Android smart phone and tablet, provides RADA field officers with remote decision support and information access to both aggregate and individual agricultural data stored within the ABIS production database.

The application provides the field officer with full access to farm, crop and price information stored in the remote database. The extension officer can also perform specific search requests based on any select fields, such as farmer name or ID and parish, district or extension. The location-based searching function allows an extension officer to look up farmer, price or crop information within a geographical area or use the Android's built-in GPS device. Farmers would be able to use these integrated mapping visualisations too, to retrieve information about farms and production activity within a chosen area.

Another function is crop support. The application facilitates searching various crop-related information and aggregates, such as top farmers for a particular crop, top parishes for a crop and expected or past crop production. With the remote data entry the extension officer would be able to update farmer records, such as the location of a farmer's property or submitted crop information, using the phone's mobile data connection.

Proof of concept

The effectiveness and robustness of the open-data API has been validated using the Agro Assistant app as well as several other apps developed in local hackathon competitions, and we are now seeking to extend its functionality and deploy some of these applications in the field to exploit these capabilities.

The possibility of combining this official government data about agricultural production with crowdsourced, or real-time information directly sourced from the farmers is also a compelling opportunity. 'The prototype applications that were developed,' says McNaughton, 'and the interest and discussions they generated, help to demonstrate one of the important principles and benefits of

'Innovators should take publicly accessible data and build applications to reuse those data and to deliver new and valuable services to the public'

open data, namely that of creating opportunities for independent developers and innovators to take publicly accessible data and build powerful applications for the individuals and businesses to access, consume and reuse those data and to deliver new and valuable services to the public.'

Jamaica does not, as yet, have an official open-data government policy, however, so these applications were developed as feasibility proof-of-concepts to demonstrate the potential of open data as a catalyst for innovation. 'We are now in discussions with various government agencies to formalize and institute open-data policies as an extension of the current freedom of information legislation,' says McNaughton. 'This would then allow us to streamline feeder data collection processes for agricultural production and retail pricing data using mobile devices, in order to enhance the currency and accuracy of the agricultural open-data resources.'

Although the Agro Assistant application is not yet fully deployed, it has the potential for delivering considerable utility to agricultural extension officers and small farmers. This also presents the possibility for augmenting that data with crowdsourced peer information, thus creating new models of innovation that are more participatory, more collaborative and driven by greater engagement with the farmers themselves. ◀

It is important to build first a robust, centralised open-data system that enables distributed applications and processes to crunch data into accessible information before starting crowdsourcing. This is the principle on which the Jamaican Agro Assistant mobile application was built. It now creates the opportunity to extend the functionalities into the system that can take advantage of crowdsourced information and make it practical for farmers and extension officers.



ICTs for indigenous knowledge preservation

Public libraries in South Africa engage with local communities to preserve indigenous knowledge. This involves teaching them to use ICT tools.

Crowdsourcing and engagement

ICTs can play an important role in documenting and disseminating indigenous knowledge. In Durban, South Africa, public libraries started a crowdsourcing experiment to collect local indigenous knowledge, by engaging with local communities and encouraging them to use ICTs to share their knowledge.

Indigenous knowledge affects the well-being of the majority of people in developing countries. Some 80% of the world's population depends on indigenous knowledge to meet their medicinal needs, and at least 50% rely on indigenous knowledge for their food supplies. Because it is mostly stored in people's minds and passed on through generations by word of mouth rather than in written form, it is susceptible to rapid change.

Nowadays, ICTs can help to document and disseminate indigenous knowledge. In South Africa, it is mainly libraries that have accepted the challenge of preserving indigenous knowledge systems. For example, the consortium of eThekweni Municipal Libraries, which serves 89 local public libraries in the Durban area (Durban is the second-largest city of South Africa), started a crowdsourcing experiment to collect local indigenous knowledge.

This Ulwazi programme mainly records Zulu culture, but it has the broader aim of capturing the mix and

interaction of different cultures in the Durban area. Examples of indigenous knowledge collected through the Ulwazi programme are traditional celebrations, traditional clothing, Zulu proverbs, traditional folk tales, the use of spiritual herbs and traditional agricultural methods.

The Ulwazi programme has a collaborative online community memory database of local indigenous knowledge. It relies on the community to deliver content and post it on the web. The community assumes ownership of the database, while the library focuses on custodianship of the information resource. Community participation ensures that local knowledge is collected, recorded and preserved, and in the process it therefore shares knowledge, develops people's skills, creates job opportunities and empowers local communities.

The Ulwazi Community Memory website has been developed in the form of a wiki, an open-source webpage designed to enable contributions and modifications from multiple users.

Since the development of the mobile interface in 2010, which can be used on the simplest of internet-enabled mobile devices, access via mobile devices has increased dramatically, now accounting for 20% of all visitors. At the moment Ulwazi does not have a process for collecting indigenous knowledge via mobile phones, but this has been under discussion and should be rolled out in the next year or so.

Indigenous knowledge is collected from local communities through community journalists, members of the public who can register an account and submit a story on a more ad-hoc basis, and through direct engagement with local residents often through community groups. Community journalists are actively recruited. They are generally younger people from the communities with some ICT skills, an interest in heritage and culture, and a desire to acquire new skills and gain work experience. The community journalists collect stories through personal interviews, in the form of

audio recordings and video interviews. As such, this ground-level approach generates a much richer quality of content than external researchers could collect as they already have a relationship of trust with members of the community.

Community journalists are required to submit at least three stories a month and attend the monthly feedback meetings, where they discuss new entries. The real checks and balances are made by the community, whose knowledge it is.

The Ulwazi Programme keeps the costs to a minimum through the use of open-source software, existing government infrastructure and volunteers. However, some limitations to the model have been discovered. These include a high turnover of community journalists, who, because sourced from an unemployed sector of the community, leave the programme once employment opportunities arise. This places additional stress on the recruitment and training aspects of the programme.

While the decision to embrace a multilingual approach towards content has been successful, this has also created the need for selective translations. Content management takes time and requires a certain set of skills and relevant experience. Training and development of volunteers and community journalists has proven to be time-consuming, as the development of ICT skills is generally slow among rural communities in the municipality. The training of small groups and one-on-one support, while effective, is labour intensive. But in the end, the sharing of knowledge strengthens social coherence within communities and enhances tolerance between cultures. ◀



Niall McNulty (niall@mcnulty.co.za) is a partner of McNulty Consulting (www.mcnulty.co.za), a digital heritage consultancy with a focus on community-oriented projects, Web 2.0 technologies and open-source software in an African context. He is responsible for the technological development of the Ulwazi project.

Related links

- www.ulwazi.org
- <https://twitter.com/ulwaziprogramme>
- <http://vimeo.com/channels/ulwazi>

What can crowdmaps do for me?

A crowdmap is a tool that allows people to collect, visualise and map crowdsourced information in support of spatial decision making and information dissemination.

Crowdsourcing and engagement

A crowdmap can be created by going to crowdmap.com, the open-source platform hosted by Ushahidi. The service provides all the tools for creating and maintaining a dedicated crowdmap for report submission, data visualization and browsing.

What are crowdmaps? They can be events-related and transitory in nature, but can also become a means to collect and display information more permanently. They are being widely used in many application areas, often in humanitarian assistance and emergency response, where 'the crowd' has submitted spatially referenced information of a type that often is not collected through established channels and would thus not be available for decision making.

An example of a crowdmap is ICT in Conflict & Disaster Response and Peacebuilding, which is a platform that collects information, which people can browse, about who is doing what worldwide in the field of ICT for disaster and conflict early-warning, management and resolution, and peacebuilding. It offers a unique resource currently

A crowdmap offers great opportunities for organisations that work in the agricultural and fisheries sectors as it is a free, user-friendly, open-resource platform for managing the collection and dissemination of crowdsourced spatial information.

documenting over 800 projects, programmes and initiatives at various levels of society. Its value is that it supports the decision making of those who are helping people affected by conflict and crisis by sharing information about their activities in a cross-disciplinary way. Being a crowdmap, it enables the 'crowd' both to populate the map with the available tools and techniques, and to share experiences and lessons learnt with ICT in disaster response and management.

Crowdmaps are tools that aid collaboration and support flexible and dynamic interactions beyond the merely institutional. They offer opportunities for those who are looking for a free, user-friendly, open-source platform for managing the collection and dissemination of crowdsourced spatial

Related links

- <https://crowdmap.com/>
- <https://ict4peace.crowdmap.com/main>

After information has been submitted and reviewed, the administrators of the map activate the entry for display on the map and in the list of reports that are then available for browsing to the public. On the administrator side of the crowdmap deployment, the information collected, including the time and location reference, can be downloaded as a CSV file and imported into other applications for further analysis. Administrators can also upload other geographic features

Crowdmaps are tools that aid collaboration and support flexible and dynamic interactions beyond the merely institutional

information. Therefore, they are suitable for the agricultural and fisheries sectors, for example, for use by local initiatives, farmer groups, organisations or community initiatives.

To start developing a crowdmap, a login needs to be obtained on crowdmap.com, and a URL name has to be indicated for the crowdmap that is going to be created. Once a crowdmap has been created, the map can go public and people can submit information about events and information in the form of a so-called report to the map.

There are several submission options. For example, you can fill in the online report form that is part of the standard crowdmap application; you can send an SMS or Twitter message; or you can send an email to an address that has been created or chosen for the purposes of the crowdmap application.

The minimum requirement for submitted information is that it carries a name, a spatial location reference, a date and time for the reported event and that it be assigned to one or more categories upon submission. These categories are application-specific and have been defined by the owners of the map when the map is set up.

stored in KML files into the map display.

The text information that can be submitted by the 'crowd' to the map is not formatted and structured according to a certain standard, yet might be invaluable for an integrated understanding of contexts and interactions that are captured in non-standardised ways.

There are several options for browsing the map. Information can be retrieved for individual entries in a location by clicking on a dot in the map that represents a report on a project or initiative in that location. Entries can also be displayed per category in the map by clicking on a category of interest in the map legend.

For example, the ICT in Conflict & Disaster Response and Peacebuilding crowdmap has various categories that refer to the kind of activity described in the reports related to disaster and conflict early-warning, management and resolution, and peacebuilding. Information can be searched by terms as well, such as 'peace', or 'GIS', or an organisation's name. The results of the search will then be displayed as a list in text format. The map interface, furthermore, has a 'report' tab that allows users to retrieve a list of all the submissions in alphabetical order. ◀



Christine Brönnner is a spatial information management consultant (www.whenmapsmatter.com). She developed the ICT in Conflict & Disaster Response and Peacebuilding crowdmap together with Laura Morris, an independent researcher in crisis communication. Christine and Laura can be contacted at ictinemergency@gmail.com.

Crowdsourcing and engagement

Documents

Indigenous knowledge systems



RITA VILLARDET

Mobile phone technology can help people to gather, store and disseminate indigenous knowledge (IK), and safeguard and transfer this knowledge and the best practices around the world in using IK systems for development. This paper discusses the link between indigenous knowledge and global knowledge systems and some of the lessons from knowledge for development initiatives, based on a case in Ethiopia. The aim is not to come up with a scientific and detailed analysis but rather to raise points about the intersection between ICTs indigenous knowledge systems.

→ <http://goo.gl/PSoXh>

Enabling mobile crowdsourcing in developing regions

mClerk is a new platform for mobile crowdsourcing in developing regions. It sends and receives tasks via SMS, making it accessible to anyone with a low-end mobile phone. mClerk also leverages a little-known protocol to send small images via ordinary SMS, enabling the novel distribution of graphical tasks. This paper discusses the social ecosystem surrounding the pilot in India and evaluates the potential of mobile crowdsourcing to both deliver and derive value from users in developing regions.

→ <http://goo.gl/WyypP>

Crowdsourcing crop improvement

Crowdsourcing could inspire new approaches to upscale farmer-participatory seed innovation, specifically aimed at household food production. Mobile technology could encourage African farmers to engage in the massive evaluation and distribution of seeds. One article in *IDS Bulletin's* 2011 special issue, *The Politics of Seed in Africa's Green Revolution*, argues that crowdsourcing would not only be scalable, but also inclusive through the strengthening of crop diversity as an open informational resource.

→ <http://goo.gl/2GWy8>

Web resources

Creative ideas

Idea Bounty is a South African initiative that they call a social think tank that provides a secure channel for the world wide creative community to offer solutions to creative briefs. Clients can hire thousands of creatives to think with them and only pay for the ideas they want to implement. The idea belongs to the creatives until they get paid. Only clients can see submitted ideas. The company Disaronno, for example, posted a problem on the website and gave Kevin Baldwin US\$20,000 for his innovative response. The highest prize anyone has ever won on the web initiative.

→ www.ideabounty.com

Rewards for completing surveys

What started as a way of paying small rewards to the poor for crowdsourced information, txteagle, changed into Jana Mobile, a global organisation that engages directly with emerging market consumers in over 85 countries via their mobile phones. Through partnerships with 232 mobile operators, Jana's proprietary technology and consumer database targets and rewards 2.1 billion consumers with free mobile airtime. Jana's technology platform enables marketers to connect with those hard-to-reach consumers quickly and efficiently and give the poor a reward for their help.

→ www.jana.com

African tech startups



ERIK HERGMAN / WHITEAFRICAN

Startup Africa Fund is a crowdsourcing project that provides an enabling environment for Africans and friends of Africa to fund innovative and disruptive technology startups based in Africa through a pool fund. The website is the place where projects are coupled with their new investors. Conceptualised in August 2012, the fund serves as a catalyst to spur larger funds specifically targeted at African technology startups.

→ www.startupafriafund.com/

Projects

uReport in Uganda

Speak out on what's happening in your community. uReport is a free SMS-based system that allows young Ugandans to speak out and work together with other community leaders for positive change. Nearly 140,000 people are already participating in the project. uReport can increase citizen's awareness by means of citizen feedback.

→ <http://ureport.org/>



NATHAN LAURELL

Geo-Wiki Project

The Geo-Wiki Project is a global network of volunteers who wish to improve the quality of global land cover maps. Since there are major differences between existing global land cover maps, current ecosystem and land-use science lacks crucial accurate data (e.g. to determine the potential of additional agricultural land available to grow crops in Africa). Volunteers are asked to review hotspot maps of global land cover disagreement and determine, based on what they actually see in Google Earth and their local knowledge, if the land cover maps are correct or incorrect. Their input is recorded in a database, along with uploaded photos, which can be used in the future to create a new and improved global land cover map.

→ www.geo-wiki.org

P3DM where?

www.p3dm.org is an interactive world map based on Google Maps technology maintained by participatory mappers. Participatory 3D Modelling (P3DM) is a community-based mapping method that integrates local spatial knowledge with data on elevation of the land and depth of the sea to produce stand-alone, scaled and geo-referenced relief models. The map was developed to locate P3DM exercises worldwide. Placemakers on the map lead to web pages or blogposts where the case is further described. The most important aspect of the map is that it shows how the method is spreading across the globe.

→ <http://pgis-tk-en.cta.int/m10/index.html>



Dan Kisauzi (dkisauzi@afaas-africa.org) is managing consultant at the African Forum for Agricultural Advisory Services (AFAAS – www.afaas-africa.org). His consultancy and innovation incubation firm (www.nida.or.ug) focuses on rural development. He is a graduate in veterinary medicine and holds a PhD in animal physiology.

Funded by the crowd

Crowdsourcing and engagement

Crowdfunding enables non-patronising relationships to emerge between social investors and recipients. It is not bureaucratic and highly transparent. It taps into the vast resources of millions of individuals who want to contribute to human development. The possible downside is that crowdfunding approaches can be difficult to coordinate towards a common development goal.

There are more and more crowdfunding initiatives to finance development projects. How is this helping development, and agricultural development in particular?

→ In the rural development context, crowdfunding opens up space for small social investors to link up in a more direct way with people at the bottom of the rural pyramid who want to finance their ventures in a business-like way. In particular, it enables non-patronising relationships – a characteristic of donor support – to emerge whereby social investors can, if they wish, get their money back with a profit. A vivid example of this kind of crowdfunding is Kiva (www.kiva.org), and contrary to what one might expect, this example shows that poor people pay back loans while governments rarely do so on time.

The crowdfunding process also allows social relationships to develop between the parties, thereby fostering human-centred

development. Unlike government loans, which are more prone to corruption, crowdfunding can substantially reduce bureaucratic overhead so that most of the invested money reaches the intended recipients. A key development outcome is that recipients move from having a 'begging bowl' mentality to a more accountable 'I have to pay back' mentality. Development comes from individual effort and enterprise and not from handouts. Furthermore, in the crowdfunding context the main feedback is to investors. The

environmental outcomes out of their investments. They generally want their money back for re-investment or with a small profit. In the South, crowdfunding provides the possibility for salaried workers – including those in the diaspora – to support the rural areas of their origin. Many are doing this already but in ways that do not lead to sustainable development and indeed that exacerbate a dependence syndrome among their rural kinsfolk.

Can NGOs or other institutions use crowdfunding to finance new projects?

→ It is more important that a window is opened for individuals and social investors to finance new projects that are closer to the rural people than it is to have institutions or NGOs entering and financing new projects. In fact, the advantage of crowdfunding is to avoid over-institutionalising funding processes. All that needs to be put in place are (i) a platform for investors and entrepreneurs to

higher transparency and regular reporting is a positive, rather than a negative, attribute of crowdfunding.

What are the downsides of this development?

→ The possible downside is that crowdfunding approaches can be difficult to coordinate towards a common development goal. There's the issue of investors 'cherry-picking' catchy projects. This in itself is not necessarily a bad thing. It opens a new paradigm to development planning whereby the idea of starting with a common vision, goal and strategy is replaced by what one might call a guerilla approach to fighting poverty. It may well be that this is the way to go in situations where conventional planned approaches to fighting poverty through governments and NGOs have failed to deliver results for those who need development faster. The slowest movers set the pace in these conventional approaches.

'Crowdfunding initiatives are tapping into the vast resources available from the millions of individuals who want to contribute to human development in their own small ways'

find each other (ii) a due diligence mechanism, and (iii) a fund management mechanism that can be a rural investment micro-finance institution that is already in the business.

Funding for rural development has been through bilateral arrangements between governments and development agencies as well as from big philanthropic organisations and individuals. These mechanisms do not lend themselves well to financing small-scale individual projects and therefore leave out the many individual entrepreneurs. The micro-finance institutions are not adequately filling this gap. Furthermore, none of these mechanisms are tapping into the vast resources available from the millions of individuals who want to contribute to human development in their own small ways. Crowdfunding may be one of the ways (not the panacea) for resolving these weaknesses in the current funding mechanisms. ◀

How about small rural ICT projects? Can they succeed with crowdfunding?

→ Not all projects lend themselves to crowdfunding. The most suitable ones are those that are packaged as enterprises and can therefore be easily marketed for crowdfunding. Many small ICT projects can be designed as enterprises but they have to be embedded in robust business models that provide other services, not just ICT. ICT projects appeal to young people, and this is where the new energy for development has got to come from.

Does crowdfunding transcend the North-South divide?

→ Social investors and social entrepreneurs want to invest in socially and environmentally responsible enterprises. They want positive social and





DEAN YANG / UNIVERSITY OF MICHIGAN

Fingerprints for loans

A field experiment in Malawi shows that fingerprints can help farmers to apply for a loan. The study was executed by the Ford School of Public Policy and the economics department at the University of Michigan and involved 3,000 farmers who, thanks to digital fingerprinting, applied for micro-loans for an average amount of US\$117 to grow paprika. These farmers did not have access to these kinds of loans previously because they did not have any kind of national identification. In remote areas even basic identification such as a birth certificate is rare. In the October 2012 publication of the *American Economic Review* the researchers conclude that the intervention improved the lender's ability to implement dynamic repayment incentives, allowing it to withhold future loans from past defaulters while rewarding good borrowers with better loan terms. 'Fingerprinting led to substantially higher repayment rates for borrowers with the highest ex ante default risk,' the researchers and World Bank economists Xavier Gine and Jessica Goldberg, and Dean Yang write. 'We provide unique evidence that this improvement in repayment rates is accompanied by behaviors consistent with less adverse selection and lower moral hazard.' The researchers used biometric identification, a high-tech method of fingerprinting that uses a laptop, fingerprint scanner, and fingerprint capture software.

→ Read the article in *American Economic Review* <http://goo.gl/QZeA3>

→ Read article on *Futurity.org* <http://goo.gl/cJg6v>

ICTs in climate change adaptation

Although the Rio+20 summit of June 2012 was not very innovative when it comes to new policies for promoting sustainable and equitable development, there have been various interesting publications and initiatives related to the event, such as the report *Information and communication technologies (ICTs) and climate change adaptation and mitigation: The case of Ghana*. The objective of this report, published by the International Telecommunication Union (ITU), is to

illustrate the integration of ICTs into national climate-change adaptation policies and strategies, based on the case of Ghana. According to the report the 'effective use of ICTs in climate change adaptation can play a crucial role towards sustainable development goals and improved environmental management, particularly in developing countries.' Ghana's advances in the development of a National Climate Change Policy Framework occur through the Ministry of Environment, Science and Technology in coordination with the Ministry of Communications. Ghana understands the

Long battery use on smart phone

African mobile phone company Mi-Fone has launched the Mi3000 model, the first smart phone with a 60 day battery standby time and 15 hours of talk time thanks to a Lithium Ion 2700 mAh battery. The model serves the African market, and suits for the special needs at demand for affordable prices in the continent. A long battery use is essential as a smart phone device runs quickly out of battery to access the internet and applications - especially in Africa where the power supply can be a problem at some places. The Mi3000 is similar to some of the Android smartphones Mi-Fone sells but at a lower price point. Mi-Fone has already differentiated itself from other low-cost handset manufacturers with its focus on music, local talent and its new "Mi-Apps Java" store. This will be instrumental in linking the acquisition of local music in capturing revenue streams, which are often lost to piracy. Established in April 2008, Mi-Fone has sold over 1.3 million units and is shipping to 12 African countries including Kenya, Uganda, Tanzania, Rwanda, Ghana, Senegal, South Africa, DRC, and Mauritius.

→ Read the original article: <http://goo.gl/xvqSy>



MI-FONE

increasing need to design and implement innovative, e-enabled approaches to address the opportunities and challenges posed by climatic impacts. The report concludes with four proposals for action. First, to foster coherent, long-term strategies based on content, structures and process. Second, to promote awareness on ICTs' current and emergent areas of potential. Third, to support inclusive and participatory processes and structures, led by trusted institutions. And finally, to address prevailing challenges of connectivity, access and use.

→ www.itu.int/itu-t/climatechange

Agro-ecological solutions on DVD



CCIRAC CLIMATE

Groupement Semis Direct de Madagascar published an interactive DVD in cooperation with CIRAD with everything you need to know about conservation agriculture and agro-ecology. The aim is to boost the ecological efficacy of farming systems by copying natural, particularly forest, ecosystems and optimising existing

bio-geochemical processes. The DVD combines texts, videos, informational diagrams and photos, and presents conservation agriculture and direct seeding. It also includes an overview of DMC systems worldwide, with a particular focus on the experience of Madagascar. A wide range of technical solutions is available to respond to the main bio-physical constraints of the environments concerned. These agro-ecological techniques also include agroforestry, conservation and potentially organic agriculture, and integrated pest and disease management. The DVD can be used on PC, Mac and Linux systems.

→ <http://goo.gl/XbXGx>

Severe weather warnings



JOCELYN SAURINI

Ugandan cattle farmers will benefit from ICTs and meteorological data to improve their ability to adapt to climate change-induced hazards such as water stress and prolonged droughts. Herdsmen in Uganda's 'cattle corridor' can benefit from seasonal forecasting information and early warnings of severe

weather events that will be disseminated in local languages, through media such as text messages, voice messaging and radio. 'We believe that climate proofing, adaptation and the promotion of mitigation actions are areas where ICT is critical,' says Chebet Maikut of the Climate Change Unit in Uganda's Ministry of Water and Environment in a statement for SciDevNet. The project is called Climate Change Adaptation and ICT, and is a two-year project launched in Kampala in August 2012 and funded by Canada's International Development Research Centre. The project will build more weather stations, and strengthen data collection for local weather and water.

→ Read the original article: <http://goo.gl/zl4rD>

Boost for e-government in Ghana

Ghana aims to push for e-government in the country's rural areas. Now Alcatel-Lucent and the Ghanaian National Information Technology Agency (NITA), in cooperation with the country's Ministry of Communications, have agreed to expand links between government offices in rural areas of the country. The new network, which will link Ghana's north and south as well as international submarine gateways via its eastern corridor, will use Alcatel-Lucent's 600 km fibre-optic network to enhance business efficiency between central and regional government offices. According to a press release from Alcatel the network can easily expand to support anticipated increases in future demand: the government intends to extend the use of e-services to the health, education, justice, immigration, parliament and other sectors over the next few years. Financing for the programme is being assisted by the Danish International Development Agency. Alcatel-Lucent will implement voice communication, e-mail and other data services to enhance communication across all government bodies, while managing the complete operation of the e-government network, including the backbone, data centre and services, for three years beginning in late 2012. The network being installed in Ghana will apply the 1830 Photonic Service Switch to transport large volumes of data over long distances and can support a mixture of 10G, 40G and 100G channels on the same fibre pair, ensuring support for future needs as demand grows. Alcatel-Lucent will work with local IT hardware and services provider, IPMC, to establish a large-scale data centre. Also a training programme will be rolled out for NITA's employees to ensure a seamless transfer of knowledge.

→ Read the press release: <http://goo.gl/wTSxd>



ICCD

3 times as many urban residents in Zimbabwe use the internet on a weekly base than rural dwellers. Nearly 3 times as many urban residents are on social networks. <http://goo.gl/onz1F>

227 % growth in average connection speed in Kenya to 1.8 Mbps in the last quarter. Cote D'Ivoire saw a drop of 29% to 0.4 Mbps. <http://goo.gl/Zh8yw>

100 US\$ a month for a fixed broadband plan (128kbps) in Burundi is the highest in Africa. Cheapest is Sudan at \$US6.90\$US <http://goo.gl/oQYUj>

Social media is a key advocacy tool

I am an environmental scientist but my passion for ICT has really grown over time. And I'm not alone. ICT has changed many things, including the way the world works, plays, communicates, shops, does politics and even dates (a friend of mine who recently got married met his spouse on Facebook).

Websites

Working in the NGO world, I frequently find myself on www.fundsforngos.org. This site provides me with useful pointers on how to manage various aspects of NGOs. CTA's new catalogue website is also very useful. I visit it regularly and browse through their new publications and occasionally order one.

I use my blog (www.infonet-biovision-wereh.blogspot.com), called 'The youth and agriculture', to manage the flow of information on the internet. This blog is a way of injecting new energy into the sector, and I use it as a tool to address food insecurity, unemployment among the youth and how they can employ ICTs to advance their goals. I have linked a variety of interesting sites to my blog. I have bookmarked my favourite sites on delicious as well (www.delicious.com/hwshiraku).

ICT has changed the way we do many things, particularly through social media and information-sharing tools. I am a member of several social networking sites, including Facebook, Twitter, Google+ and LinkedIn.

I basically use these platforms to socialise, but I have also integrated them into my work. Social media is very useful for publishing and disseminating our organisation's news. They can be a key advocacy tool. I use social media, especially Facebook and Twitter, in advocacy work for organic farming.

Web tools and software

My ICT journey experienced a turning point in November 2010 when I attended a CTA-sponsored Web 2.0 training. Before then, my ICT knowledge was limited to emailing and Facebook, but the training opened up a new world for me. I learnt about new and different ways to use Facebook (marketplace, creating pages and promoting events) and many other services, such as Google documents, online mapping, video conferencing (Skype), YouTube and Vimeo.

The web is also a good place to publish videos. We are running a participatory video production project with farmers at the Biovision Farmer Communication Programme, and YouTube has been very useful in disseminating these videos.

I use Google Maps to show our presence in the field, and these maps have been embedded into our websites. I have both my personal and organisational presentations on Slideshare (www.slideshare.net). Furthermore, there are several software programs that have been useful in my private life that I have now integrated into my work. For example, CoreIDRAW and Photoshop help me to design promotional materials. I am also using SPSS and Quantum GIS (open source) for my data analysis and GIS practice, respectively.

Devices

My phone and I are inseparable. This gadget has made my life much easier – it has even become my bank thanks to a special feature called M-Pesa. I keep in touch with my friends and colleagues through my phone by sending text messages and making phone calls. I don't have to use my laptop or visit a cyber café to access the internet. I can check my emails, Facebook and tweets on my phone.



Hudson Wereh Shiraku (HUDSON_WEREH@HOTMAIL.COM) is a project assistant at Biovision Farmer Communication Programme. He runs two organisational sites: <http://biovisionafricatrust.org> and www.eoa-africa.org

Hudson Wereh Shiraku's use of ICTs experienced a turning point after attending a CTA-sponsored Web 2.0 training. He is now dedicated to advocating organic farming in Africa through ICTs. (Photo below: two men working on a community information centre project in Ghana).



My phone has numerous other apps, many of which I am completely unfamiliar with, but the one I use the most is WhatsApp (www.whatsapp.com). I use it to stay in constant touch with my pals. For my work, I have an app installed on our android phones that connects to our website's content at www.infonet-biovision.org for dissemination to farmers. To enable this, the phones have pulse, CKW Search and CKW Surveys apps. These systems allow community knowledge workers (CKW) to submit questions from farmers about harvest preparation, crop disease and more (<http://goo.gl/b0StV>).

Besides my phone, I've always loved cameras as well. This is largely due to my childhood admiration for our village photographer. I acquired my first gadget when I was 14 for US\$50, and my desire for more advanced cameras has been insatiable. Now I have a much more expensive digital camera for professional photography.

My laptop and I are also inseparable. It helps me work from anywhere, provided I have my modem for internet connectivity. I have my documents in Dropbox (www.dropbox.com), Skydrive (<http://goo.gl/YeuVc>) and Google Docs, where I can conveniently access them. Aware of my memory's limitations, I have acquired extra memory space for myself in the form of an external hard drive and a flash disk. These ensure that all my information is secure and readily accessible. I am also a bookworm, and so have bought a Kindle, onto which I have downloaded all the books I want. ◀