

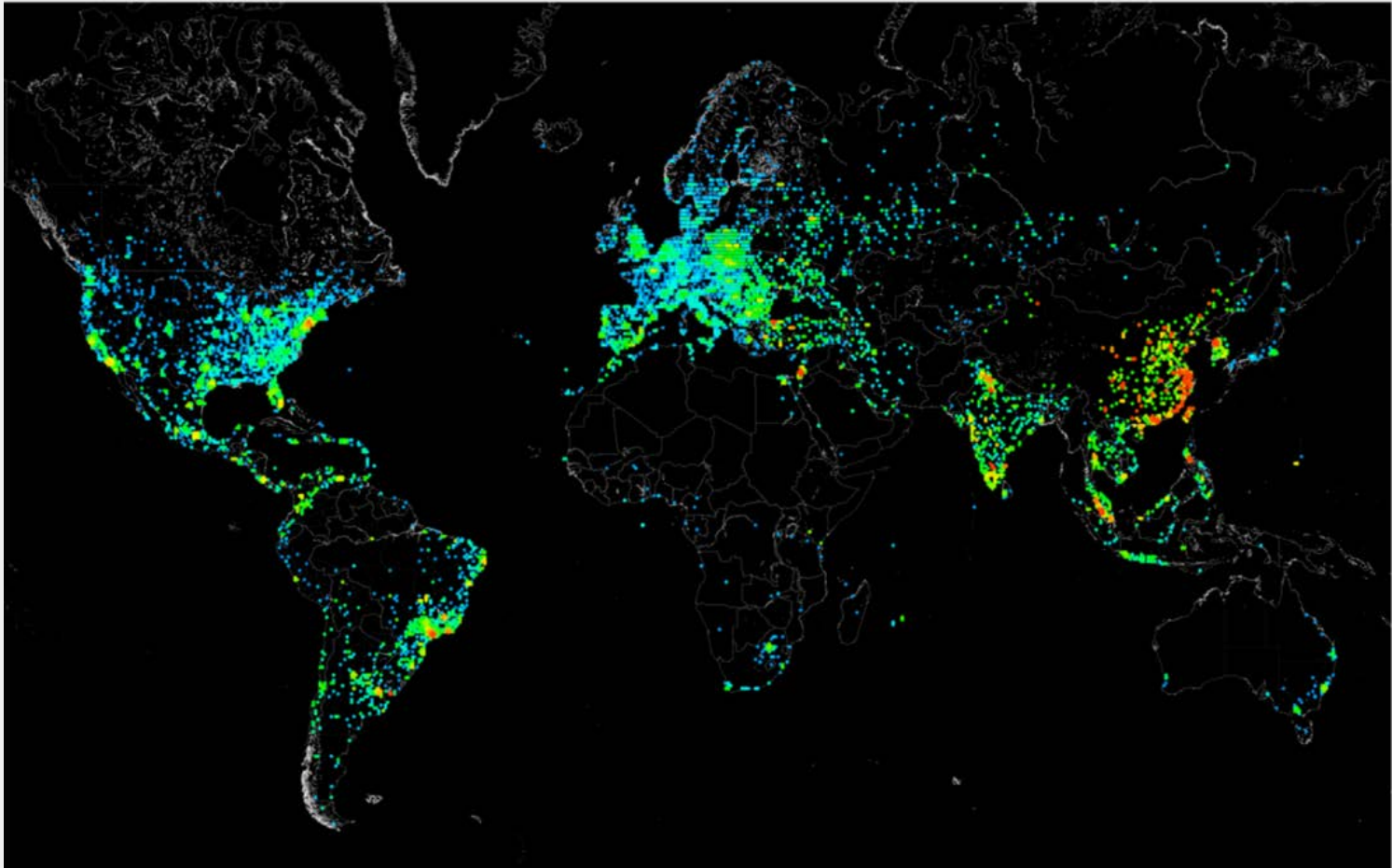
6 April 2016 - ICT4D symposium 2016

Connecting the Unconnected



Romy Blankendaal, Gossa Lô & Stefan Schlobach
Slides from Anna Bon & Victor de Boer

Still, 4 billion people in the world
remain “*unconnected*”



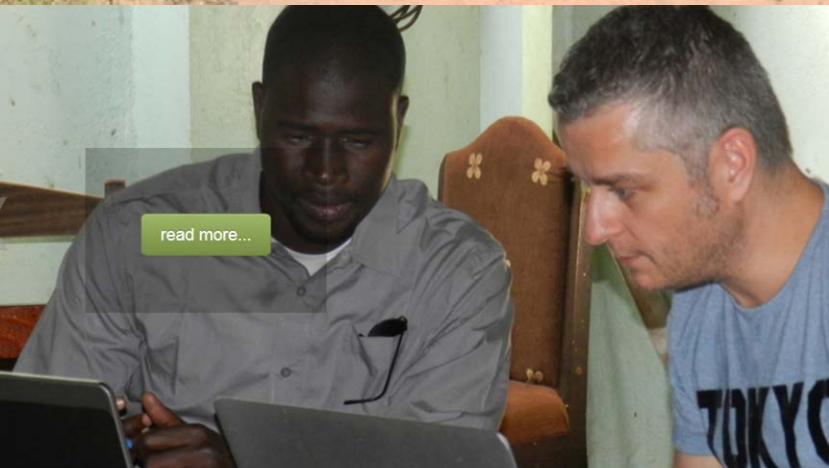
Constraints to knowledge sharing: *a few examples from West Africa*



- Low levels of literacy
- Many different languages spoken
- Poor infrastructures: (no electricity in the villages, no internet, only radio/2G mobile)



W4RA team and researchers from the University for Development Studies, Ghana held a Living Lab workshop in the rural community of Guabuliga, Northern Ghana



[read more...](#)

User centered approach



Web alliance for greening in Africa

services, especially mobile ones, the potential to play a major role in shaping social and rural development in emerging economies. Market penetration and rural community adoption of basic telephony and services have been

 **Apps for Food Security in Mali – W4RA and AOPP team up**

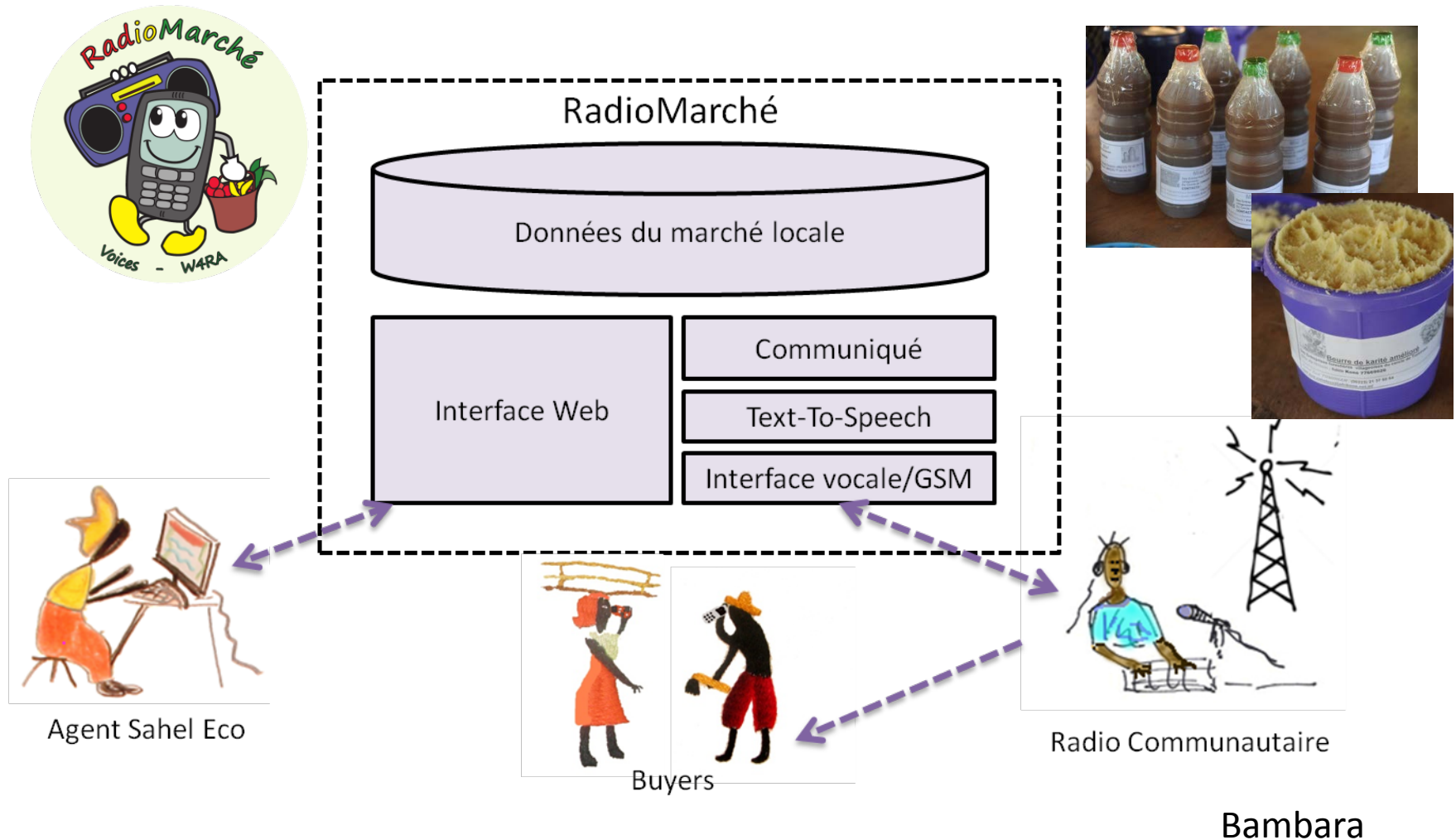
From 9 to 14 October 2015, W4RA team visited Mali, to kick-start a new research project to support farmers to improve resilience and food security. This project,



[Read more](#)

Living Lab workshop in Guabuliga, Ghana, by W4RA and UDS researchers

A market information system for Malian farmers



Kasadaka:

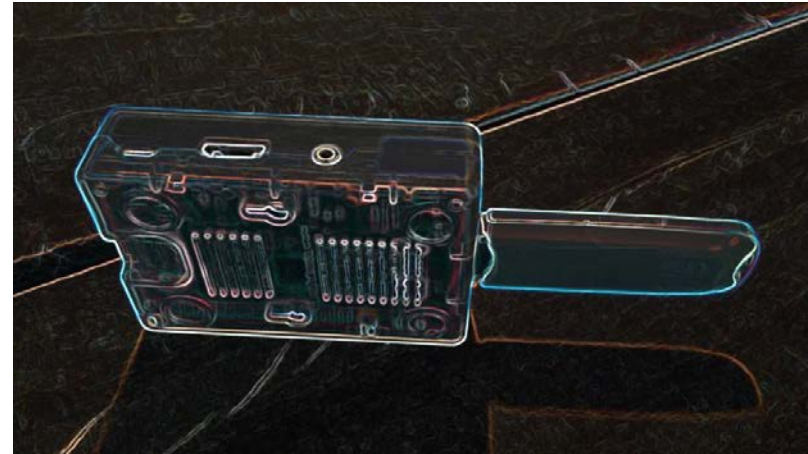
a rapid prototyping platform for the rural poor



KASADAKA(.com)

Benefits:

- Low-power, cheap hardware
- Rapid Prototyping + deployment
- Access information
 - Voice services
 - SMS-based
 - Visual
- Data store (Linked Data)



André Baart
(Bsc project)



Onno Valkering
(Msc Project)

Field trip to Northern Ghana



The Web, a platform for Information and knowledge sharing *examples from the field:*



- Find local customers
- Treat/prevent animal disease
- Combat soil degradation
- Predict rainfall
- Know more about *regreening*



Use case

Contextualized story board project DigiVet

Supporting animal, rural farmers to maintain a healthy life for their cattle with the use of an ICT tool (Dossa 14)



Step A: Activating the application

- Farmer Kofi notices one of his animals fell ill.
- Luckily, there is a DigiVet in his village. He logs into the DigiVet software and answers to the different questions regarding the sick animal that are asked in his local language by the voice calling from the small ICT device.
- Answering the questions is done by tapping on the touchscreen, which shows contextually relevant images.



- Kofi logs into the system and his language of choice is recognized. The voice guides him through the different questions.
- <<Welcome farmer Kofi, please select the species of the sick animal.>>
- Cow
- <<Now enter whether the symptoms can be seen on the body or not. The red part of the screen means no, the green part of the screen means yes.>>
- Yes
- ...etc



The outcome –heatmap

The veterinarian will have access to the DigiVet software. The outcome of the application's test will be shown, together with a heatmap of places where the same symptoms have surfaced. Based on this information, the vet can make a better estimate what medications are needed to cure the animal.



The outcome

- After having answered several questions by tapping the touchscreens, DigiVet shows Kofi a list of probable outcomes.
- Depending on the severity of the illness, DigiVet may call a veterinarian or tell the farmer to contact a veterinarian.
- If the situation requires immediate intervention, the two most suitable veterinarians are shown on the screen.
- Clicking on one of the images means that the vet will be contacted immediately through the device.
- If the situation is not severe enough, a QR code will be generated, scanned by another smartphone.
- The information about the animal in question is provided by the system to the selected vet, which will save time and decrease medication.



"Kofi taps screen to contact dr. Annan, the phone dials dr. Annan."

"Good afternoon doctor, did you have a chance to look at the outcome of the test?"

"Hello Kofi, the outcome of the test in combination with the frequency of the symptoms in cases in your area show me that I will be able to cure it. Tomorrow I will come by with the proper medication to solve your problem."

"Wonderful dr. Annan, tomorrow suits me perfectly. Thank you for your quick response."

Black box or Kasadaka

The Kasadaka is an inexpensive voice-application server, developed specifically for rapid-prototyping under rural conditions.

It consists of (i) a Raspberry Pi, (this is a low-cost, credit-card sized computer that uses a standard keyboard and mouse) (ii) a USB- Dongle with connects the black box to the local GSM network, allowing to stream audio and receive inbound phonecalls using a local sim card, and (iii) a Waka waka, or solar battery. The server is powered by Linux and runs Asterisk, a free and open source framework for building (voice-based) communications applications. The cost of this hardware device is currently about 100 EUR.

The KasaDaka is tested under rural conditions:

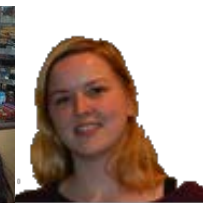
No internet connection, temperatures of up to 42 degrees Celsius in the shade, electricity outages, and using local mobile networks in Ghana.

DigiVet

Network Institute
Academy Assistant
project 2015

Multi-disciplinary team

Knowledge-based
system
(CommonKADS)



Gossa Lô, Myrthe van der
Wekken & Romy Blankendaal

Three KASADAKA use cases

- Poultry vaccination service (Mali)
- Seed market (Mali and Burkina Faso)
- DigiVet (N-Ghana)

Use Case: Poultry vaccination service



| A | B | C | D | E | F |
|---|---|---|--|-----------------|---|
| PLAN DE PROPHYLAXIE RELATIF AUX MALADIES PRIORITAIRES DE LA POULE | | | | | |
| Periode (jours) | Maladie de NEWCASTLE | Maladie de GOMBORO | Bornchite infectieuse | Variole aviaire | Déparasitage interne |
| 1 | Primo vaccination entre le 1er et le 4ème jour (pas au delà du 15ème jr) avec PESTOS (vaccin vivant simple contre Newcastle flacon de 500 et 1000 doses pour boisson et trempage). Il existe aussi un Vaccin vivant complexe qui s'appelle PESTOS + H120 contre la maladie de Newcastle et la Bronchite infectieuse (500 et 1000 doses pour boisson et trempage) | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |
| 5 | | Primo vaccination le 5ème jour avec GOMBOPEST (vaccin polyvalent) | | | |
| 6 | | | | | |
| 7 | | | Primo vaccination le 7ème jour avec H120 (vaccin vivant de 500 et 1000 doses pour boisson et trempage) | | Primo déparasitage le 7ème jour avec le VPV (comprimé jaune) 1/4 de comprimé pour poussin de 2 semaines, 1/2 comprimé pour poussin de 1 mois et 1 comprimé pour une poule de 1 kilo |
| 8 | 1er rappel une semaine après primo avec ITANEW (flacon de 100 doses) | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | 1er Rappel avec Gombopest 7 jours après la primo vaccination | | | |
| 13 | | | | | |

Amadou Tangara
FARM RADIO
INTERNATIONAL MALI

Use Case:

Welcome to the **Seed market** application. Would you like to
1) Sell 2) Buy 3) Have more information

What type or seeds
1) Rice 2) fonio 3) nere 9) back

What quality or seeds
1) De base 2) R1 3) R2 9) back

What is your Cercle
1) Tominian.... 9) back

You are offering...
Is this correct?
1) yes, 2) no

Please enter phone nr.
[phone]

You will now return to the main menu. You can also hang up

What type or seeds
1) Rice 2) fonio 3) nere 9) back

What quality of seeds
1) De base 2) R1 3) R2 9) back



DigiVet

Domain: A knowledge based system to support rural farmers in Ghana in diagnosing their sick animals.

Task type: Diagnosing

Input: symptoms animal diseases

Output: decision whether or not to go see a veterinarian



DigiVet

Interviews:

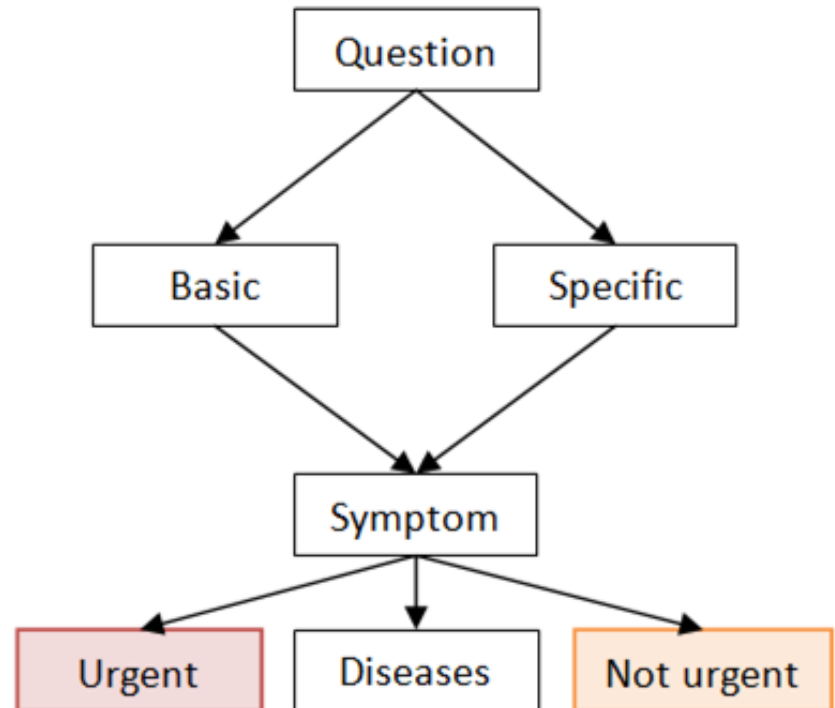
Dutch veterinarian
Three Ghanaian
veterinarians



Scoring:

Urgent/ non urgent symptoms
Basic and specific questions

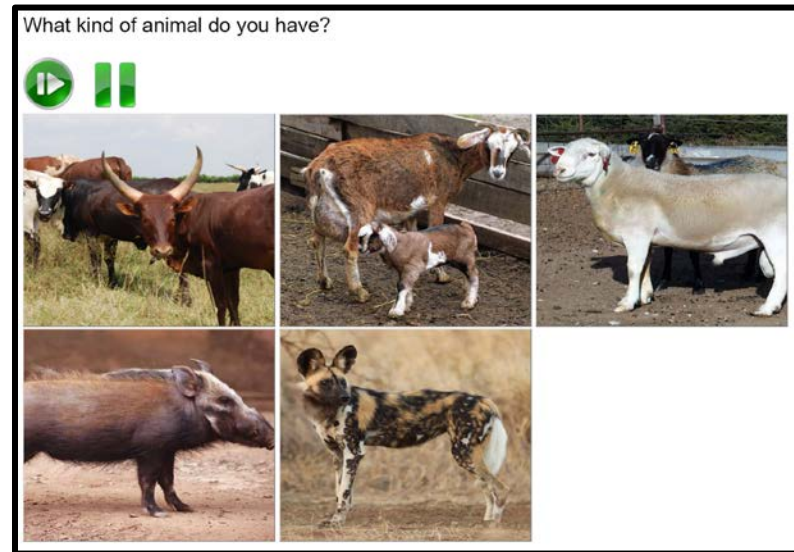
Threshold symptoms



DigiVet: Demo

Languages used:

- PHP
- HTML / CSS
- SQL
- JavaScript



DEMO

DigiVet



DigiVet

Difficulties:

Symptom classification

(type of disease, urgent or not)

Experts at a distance

→ hard to collect good information

→ different methods
to cure diseases



Conclusion: How can we connect the unconnected?



- Develop offline (voice-based) information services
- Close collaboration with local population
- Better access to expert knowledge

A photograph of a field of pink flowers, likely a cotton field, with a large tree in the background. The flowers are in the foreground, and the tree is in the background. The sky is blue with some clouds. A dark horizontal bar is overlaid across the middle of the image, containing the text "KASADAKA.COM".

KASADAKA.COM