2016

Reciprocal Technologies: Enabling the Reciprocal Exchange of Voice in Small-Scale Farming Communities through the Transformation of Information and Communications Technologies

Tisselli, Eugenio

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Appendix C: Relevant documents related to the case studies of this dissertation.

This appendix includes the following documents, which were generated during the development of the case studies in Tanzania and Mexico:

1. Ethical standards certification letters.
2. First presentation of the case study in Tanzania.
3. Visual user's manual of the ojoVoz mobile app.
4. Project report delivered to the Bagamoyo district director.
5. Letter of engagement delivered to the Bagamoyo district director.
6. Visual calendar of the MIAF system (prepared by Mr. Odilón Martínez)
7. Sample presentation of case studies (used for dissemination purposes)

1. Ethical standards certification letters.

ETH

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Tim Bachelor
DTC Administrator Arts & Humanities
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School
305 Link Building
Plymouth University
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Zürich, 09.03.2010

Concerning: Analysis in the PhD Research of Eugenio Tisselli
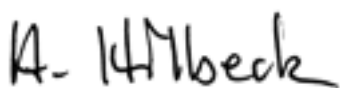
To whom it may concern,

This is to certify that the case study *Sauti ya wakulim,* analysized in the PhD research of
Eugenio Tisselli was part of our combined research work with farmer community groups in
Tanzania.

Sauti ya wakulima in Bagamoyo, Tanzania was a collaborative research between Dr.
Angelika Hilbeck from the Institute of Intergrative Biology at the Swiss Federal University,
ETHZ in Zurich, Switzerland and Eugenio Tisselli, post graduate student of Z-node, The
Planetary Collegium, School of the Arts, University of Plymouth.

This work was supported by ETH research funds and therefore, it fits the standard criteria
and ethics guidelines of all research conducted in the Swiss Federal University of Zurich
(ETHZ).

This cumulative research has already resulted in 2 research grant applications and 2
scientific papers and it has now been incorporated into local development projects of
'Bread for All', a Swiss based non-profit development organization.

Sincerely,

Dr. Angelika Hilbeck
Environmental Biosafety Research Group.

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Estado de México

17/03/ 2105

Tim Batchelor
DTC Administrator Arts & Humanities
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Concerning: Analysis in the PhD Research of Eugenio Tisselli

To whom it may concern,

This is to certify that the case study *Los ojos de la milpa*, analyzed in the PhD research of Eugenio Tisselli, was conducted under the guidance and supervision of the research staff at the Colegio de Postgraduados.

The case study directly involves work with members of the community of Santa María Tlahuitoltepec, Oaxaca, in the context of the PMSL initiative (Proyecto Manejo Sustentable de Laderas - Sustainable Hillside Management Project), originally developed and implemented by a research team supported by this academic institution.

Eugenio Tisselli's case study was closely followed by a team of researchers from the Colegio de Postgraduados, of which I was a member, and therefore I can attest that it fits the standard criteria and ethics guidelines of all research conducted in the Colegio de Postgraduados.

Sincerely,

Dr. Juan Felipe Nuñez Espinoza
Evaluation and Planning of Rural Development Projects Research Group
Programme of Graduate Studies of Rural Development
Colegio de Postgraduados

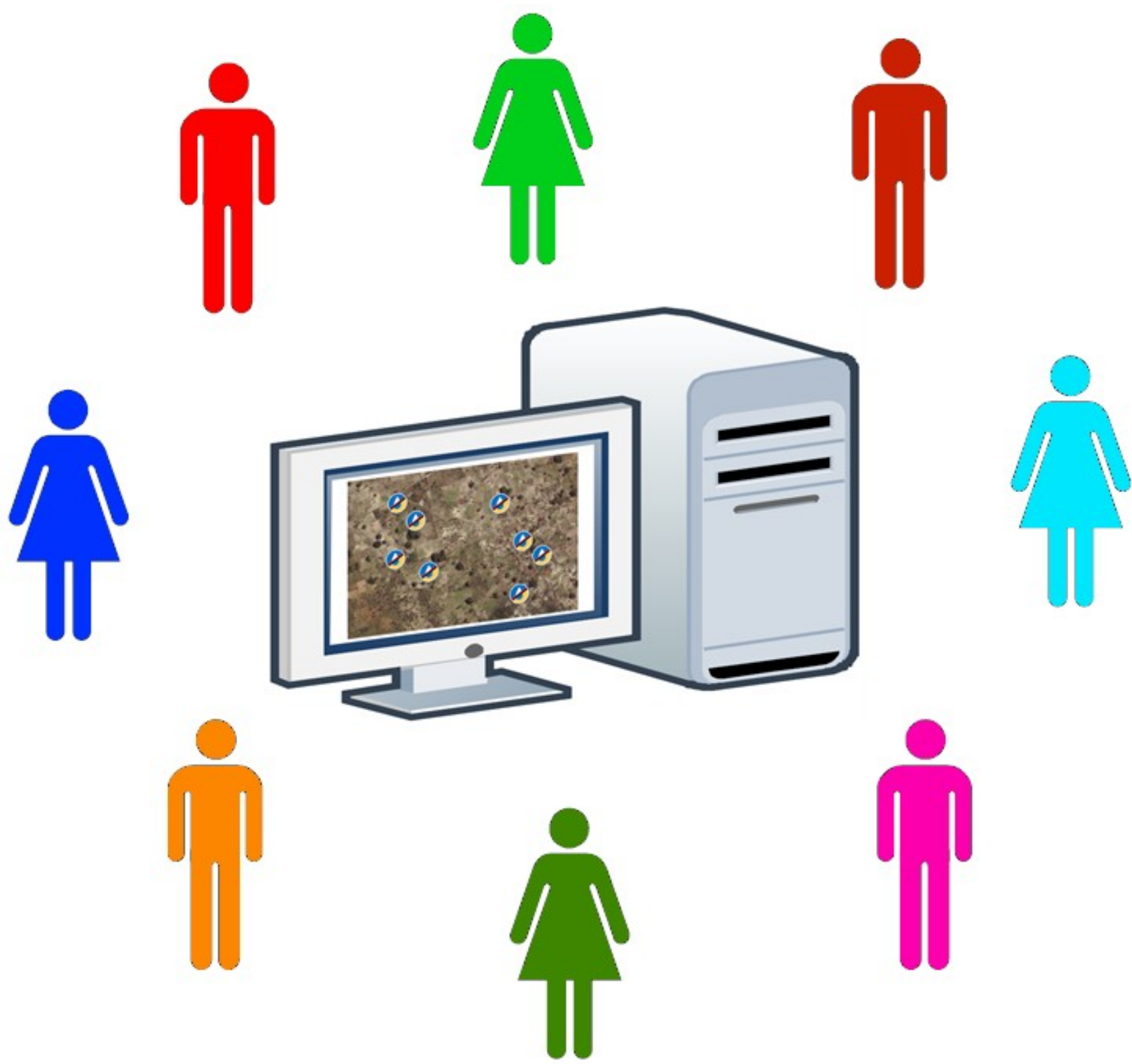## 2. First presentation of the case study in Tanzania.

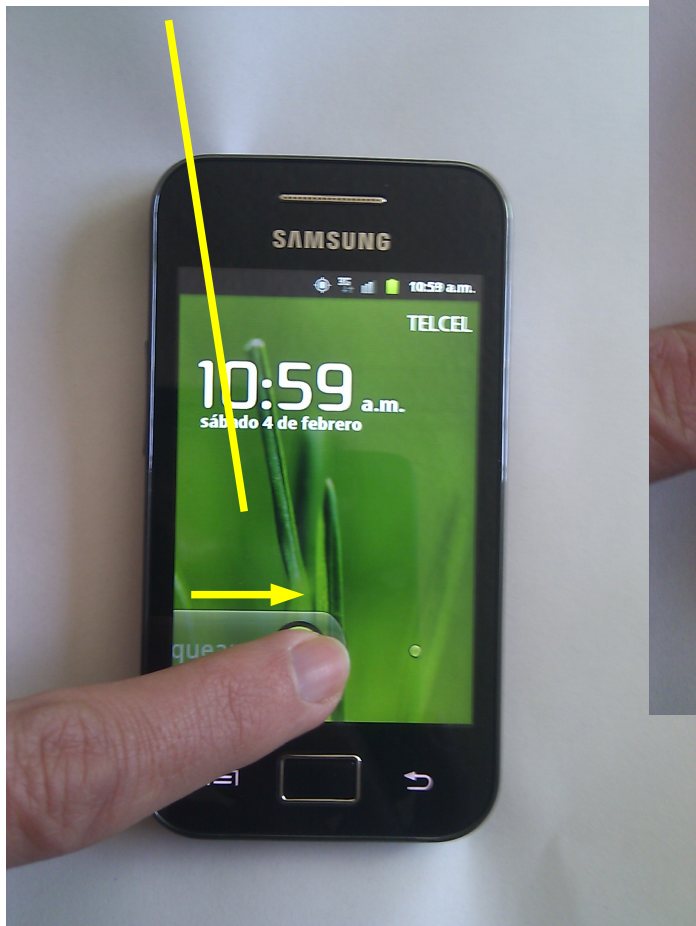# 3. Visual user's manual of the ojoVoz mobile app.

Sauti ya wakulima: phone application manual
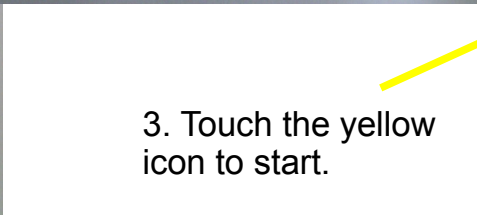Written by: Eugenio Tisselli for **http://sautiyawakulima.net**
Contact: cubo23@yahoo.com

1. How to start.

1. To unblock the phone, slide the green circle from left to right.

2. To turn on the GPSP, slide your finger from top to bottom of the screen. Touch the button labeled "GPS", which will turn green whenever the GPS is activated.

3. Touch the yellow icon to start.
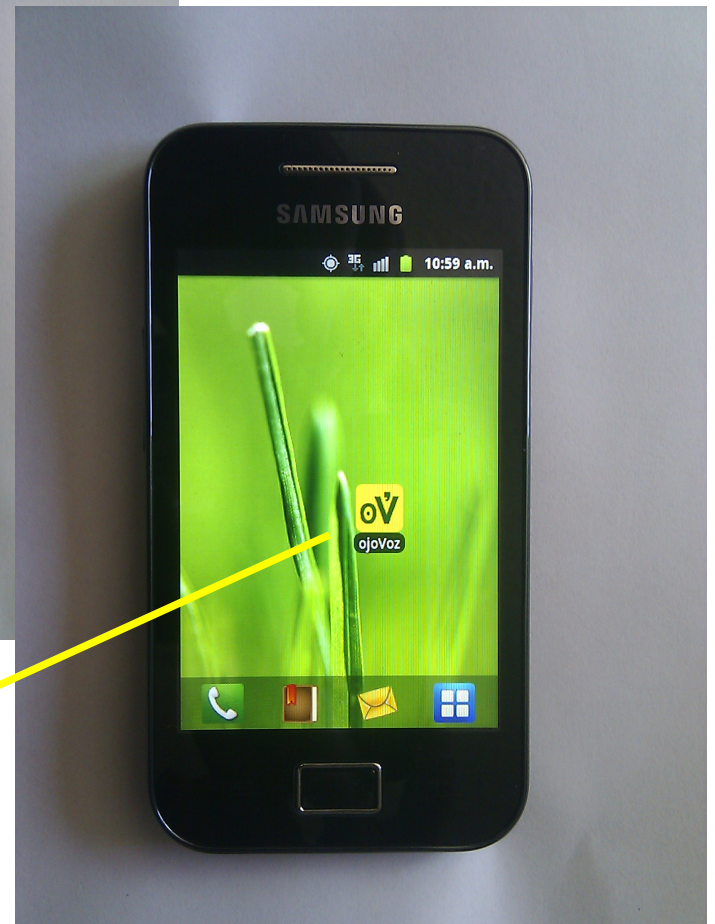
2. How to take a picture.

1. Touch the button labeled "Take a picture".
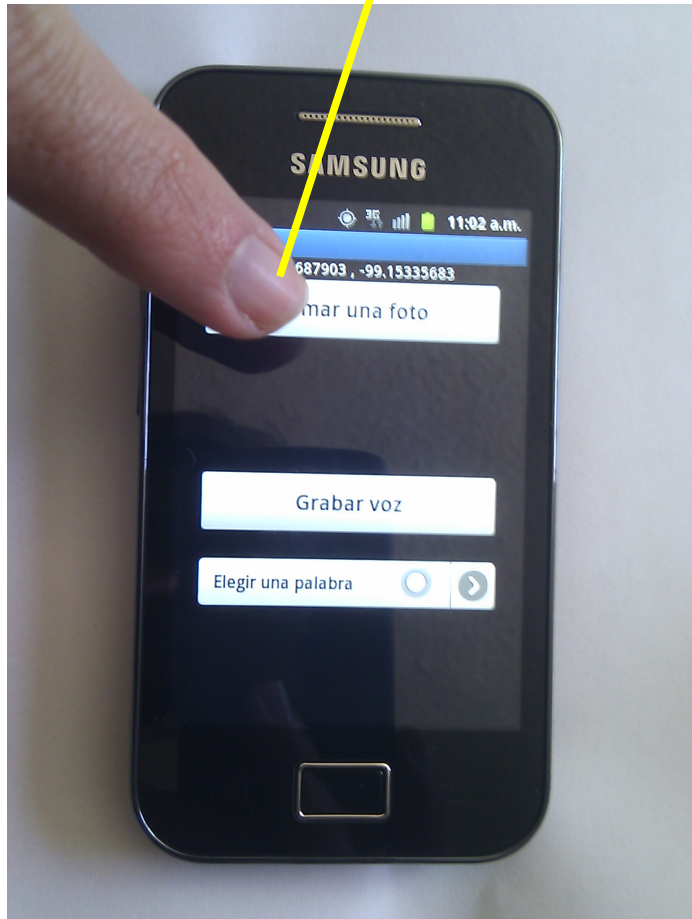
2. Hold the phone horizontally and touch the button on the right..

3. If you wish to keep this picture, touch "Save". If you wish to take a different one, touch "Discard".
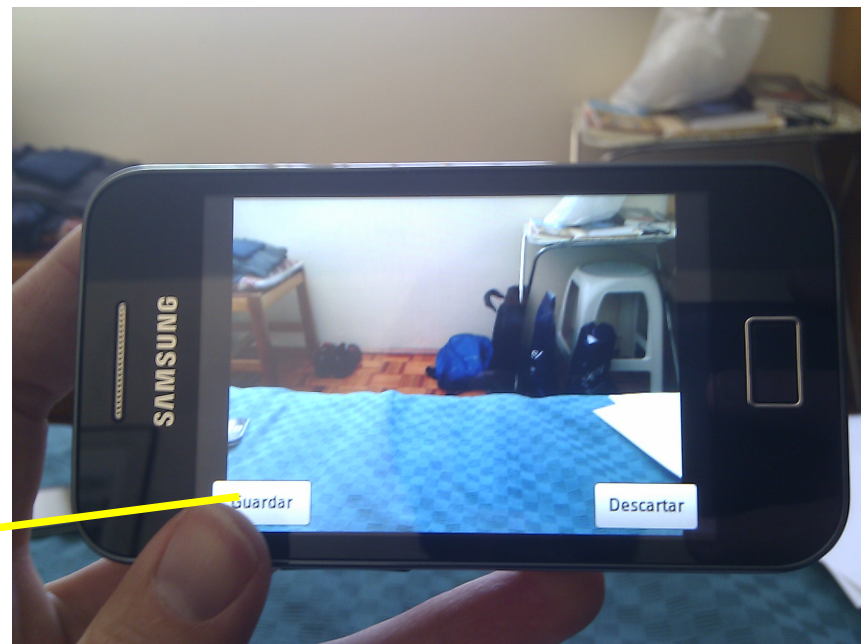
3. How to record voice.
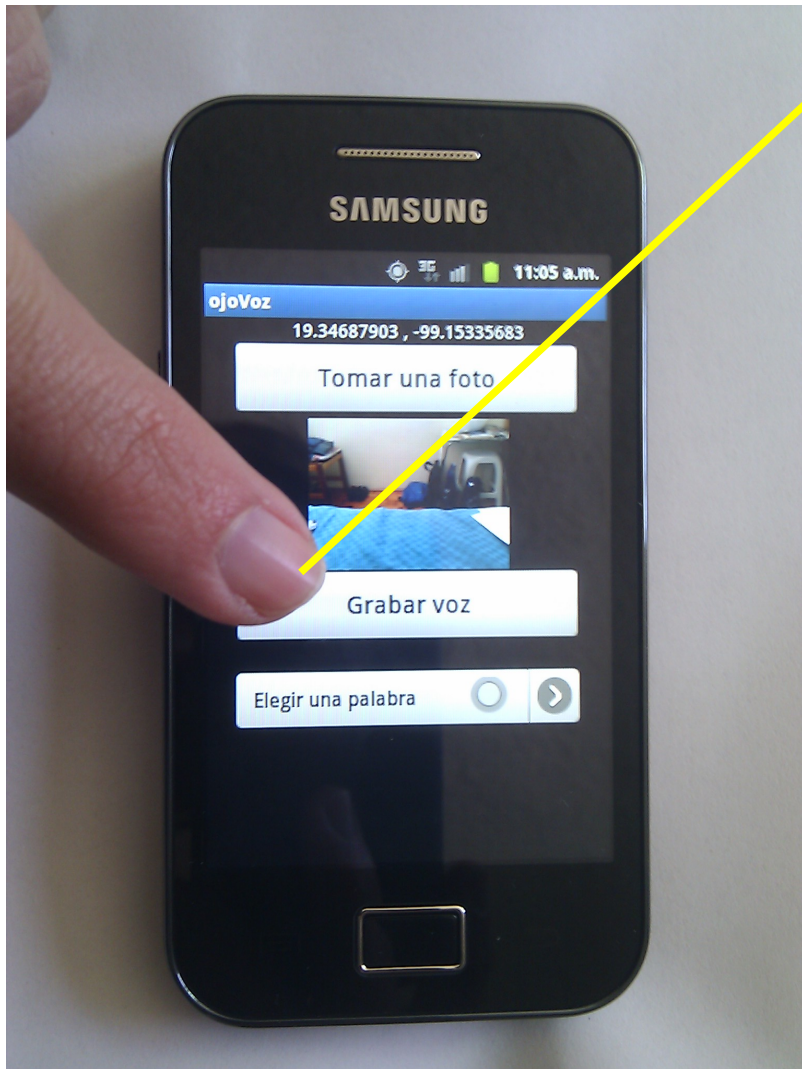
1. Touch the button labeled "Record voice". You can immediately start speaking. Remember to speak close to the phone, so that the voice can be heard.

2. To stop recording, touch the same button again. If you didn't like the recording, you can start over by pressing the button.

4. How to add a word.
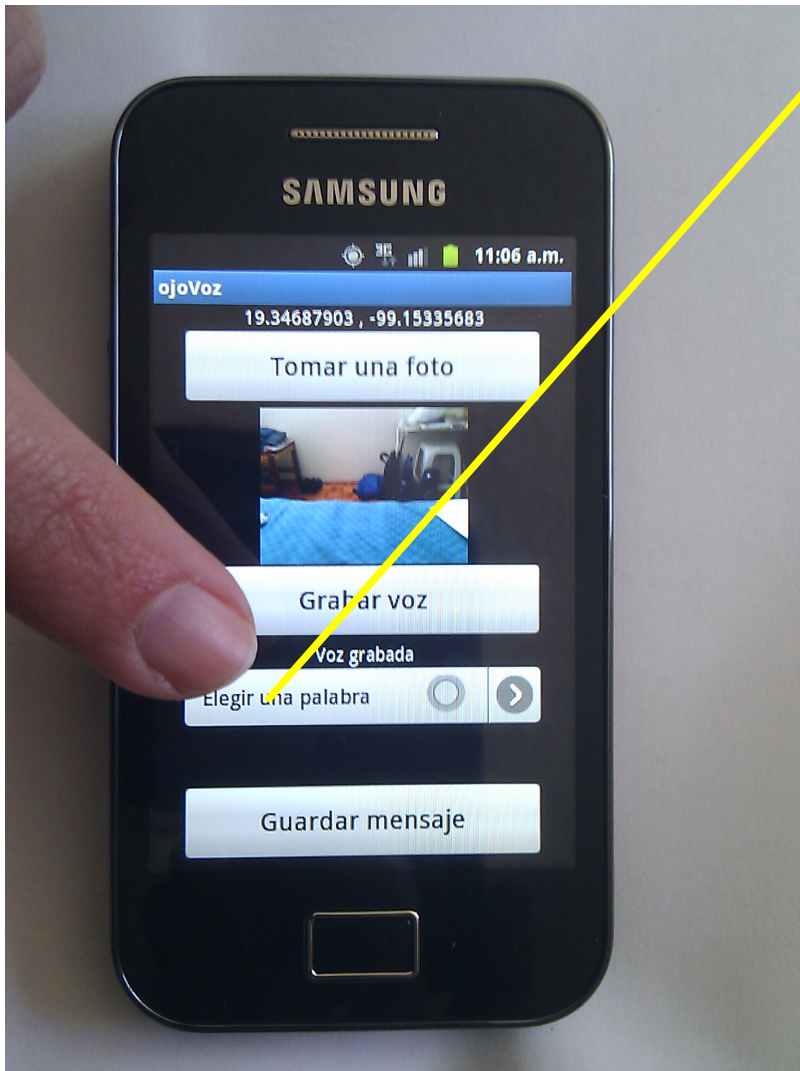
1. To add a tag to your message, touch the button with the title "Choose word".
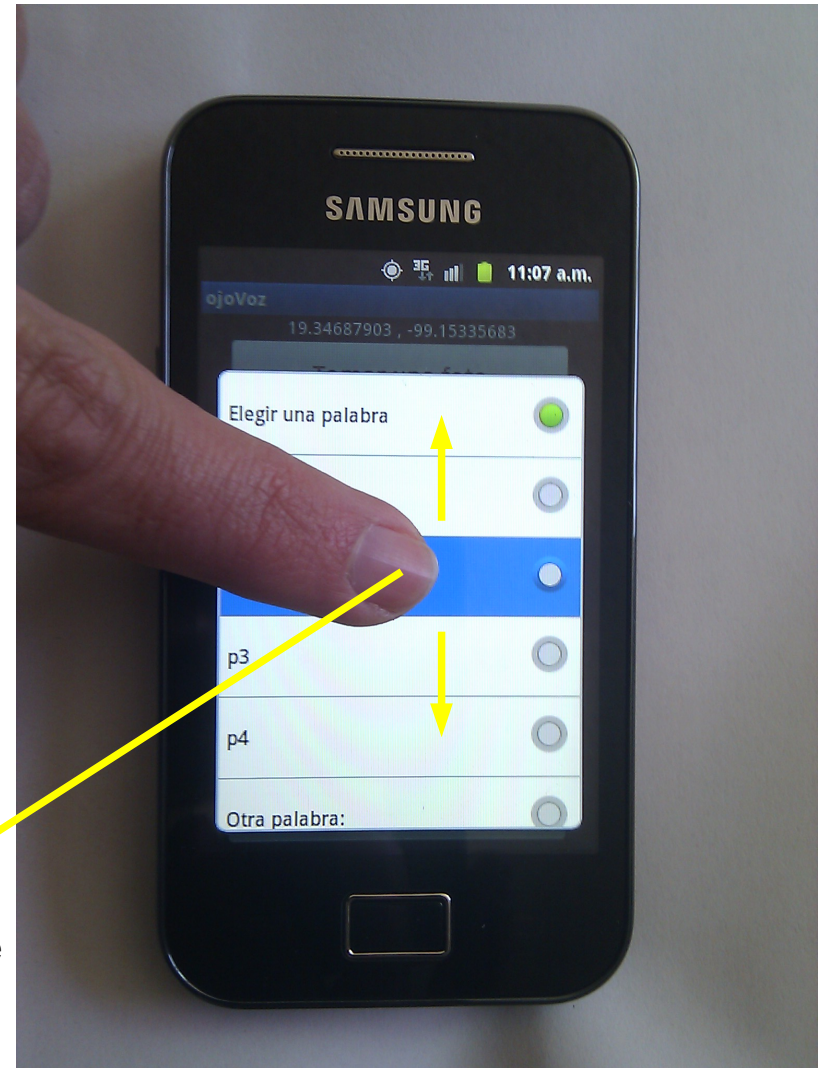
2. You can select a word from the list by touching it. The list can be moved by sliding it up or down. If the word you want to add is not on the list, you can choose the option "Add a new word". A field for typing the new word will appear underneath.

5. How to save your message.
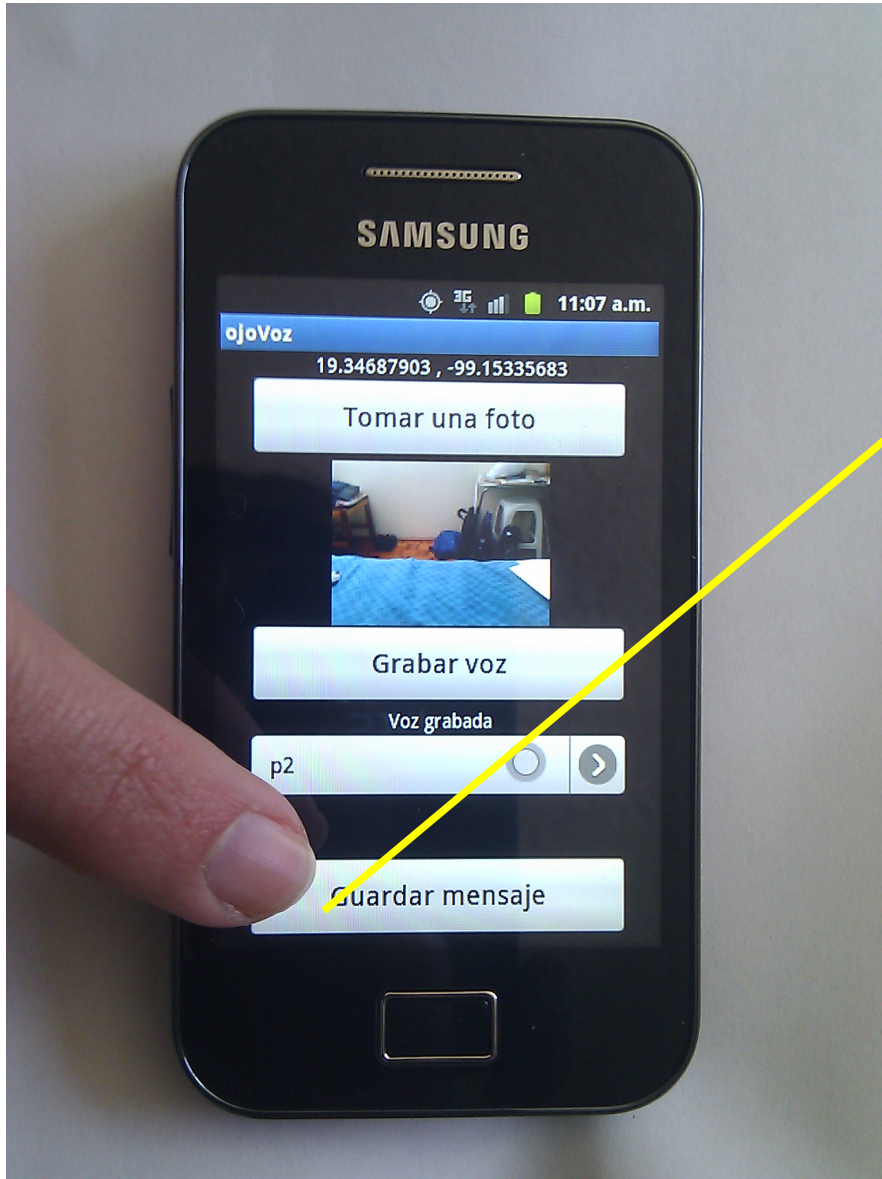
After taking a picture, recording voice and adding a word, you must save your message so you can send it to the Internet later. You only have to touch the button labeled "Save message".

6. HOW TO SEND THE MESSAGES

Whenever the phone has an Internet connection, you will be able to send the messages that you previously saved in the phone's memory.
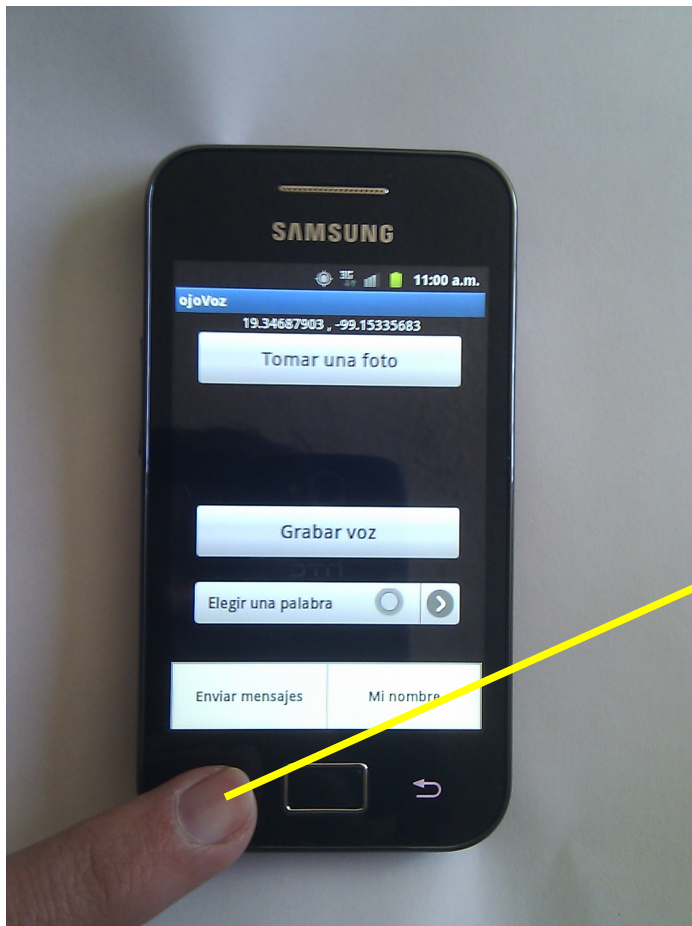
1. Press the "menu" key on the lower left side of the screen.
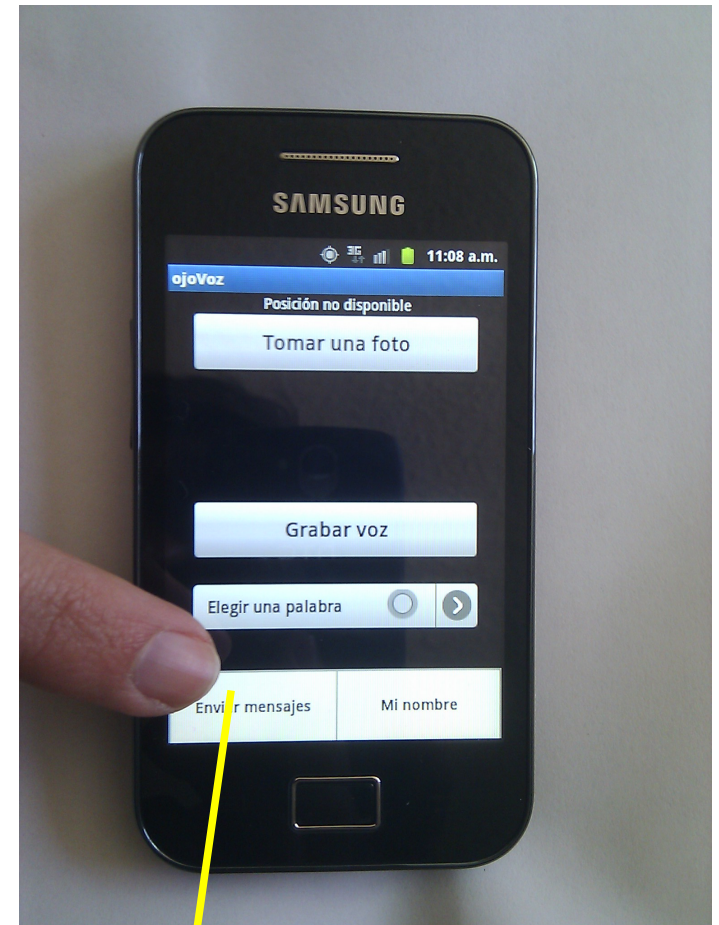
2. Choose the option "Send messages." SENDING THE MESSAGES MAY TAKE A FEW MINUTES, depending on the quality of your Internet connection.

4. Project report delivered to the Bagamoyo district director.

Sauti ya wakulima – The voice of the farmers.
Project report

Brief summary
Groups of farmers in the District of Bagamoyo use multimedia mobile phones to create an audiovisual database of their observations about climate change and other emergent issues relevant to their activities.

Goal
To establish and foster an Internet-based platform for the self-documentation of farmer groups in the District of Bagamoyo, enabling them to gather and share a structured database of images, maps and voice recordings that reflect their observations, knowledge and experience related to their activities.

Specific goals
- Create an evidence-based multimedia database of the farmers' observations about climate change and related phenomena, their effects on their crops and practices, and the strategies and solutions they implement in order to adapt to change.
- Create a collaborative map of the farms in the District of Bagamoyo.
- Generate a common lexicon of keywords through the practice of collective tagging, which will reflect the farmers' top priorities and issues.
- Encourage the formation of an online network of farmers within the district of Bagamoyo, and facilitate the exchange of knowledge among them through a common web page and periodical face-to-face meetings.
- Establish a communication interface that will improve the flow of information between farmers, researchers and district officers, and to document this as a case study which could be scaled up and used in other areas of Tanzania.
- To train farmers in the basic usage of IT communication tools, such as web pages and GPRS mobile communications.

Parties directly involved
- Dr. Angelika Hilbeck, Institute for Integrative Biology, Swiss Federal Institute of Technology Zurich
- Dr. Flora Ismail, Department of Botany, University of Dar es Salaam
- Mrs. Juanita Schlaepfer-Miller, PhD candidate, Z-Node, University of Applied Arts, Zurich
- Mr. Eugenio Tisselli, PhD candidate, Z-Node, University of Applied Arts, Zurich
- Mr. Hamza, extension officer, Agricultural Office, District of Bagamoyo

Detailed description
"Sauti ya wakulima" (The farmer's voice) is a research project in the fields of climate science, farming and communication, with a strong IT component. A digital communication platform was developed to enable farmers to publish images and voice recordings on a web page, using mobile phones which are provided by the researchers. This platform consists of a mobile phone application which runs on devices equipped with GPS modules and GPRS connectivity, and a web page which includes a set of tools for visualizing the multimedia database created by the farmers.

The mobile application was designed to make the multimedia publication process as easy as possible, even for people without technical expertise. It allows users to take pictures which are automatically located on their geographical context, whenever a GPS signal is available. Voice recordings can be attached to pictures, in order to describe what is being portrayed. Pictures and recordings can be classified using either a predetermined list keywords or by inserting new ones.

Finally, these multimedia messages can be sent to the project's database only by pressing one key.

The project's web page[1] is an audiovisual repository of the farmer's publications: something that we call a "community memory". A community is a group of individuals that cooperate to manage a particular commons, and community memories are distributed information systems that help the group do so[2]. In this community memory, which can be freely accessed by all of its contributing users and other involved parties, the pictures and sound recordings published by the farmers can be visualized through different criteria: they can be viewed by date, by keyword, or by using a mapping interface which indicates the geographical location where they were taken. The web page offers additional tools, such as the possibility of adding comments or editing its content.

The IT tools in the "Sauti ya wakulima" project are used to achieve the goal of creating an online platform of self-documentation done by farmers, in which they record observations, knowledge and experience related to their activities, with a specific emphasis on issues related to climate change. Through its continued usage, this platform will eventually become an evidence-based repository that will support the research of climate scientists and the decisions of local policy-makers. From our initial observations, we have found that strategies for adapting to climate change are already being carried out. For example, water-efficient varieties of crops are being developed by researchers and agricultural officers. Cropping patterns shift from long-standing crops with a higher need for water over a longer period of time (e.g. maize and cassava) to crops with lower water needs/shorter cropping period (e.g. cow peas) being grown during the short rainy season in their spring time (northern fall). Some water saving measures may be installed such as small barriers keeping water in paddies. Other practices are being adopted in accordance with the changes that have been observed regarding the rainy seasons. "Sauti ya wakulima" aims to record these ongoing strategies, and also to provide a communication interface that will allow scientists and decision-makers to follow, study and improve them. However, the project has also the potential of becoming a platform for mutual learning. So far, farmers involved in the project have expressed that, by seeing others' pictures and listening to their recordings, they have gained important insights and knowledge.

Methodology

The tasks which are necessary to activate and maintain "Sauti ya wakulima" can be enumerated as follows:

1. **Identify a group of farmers willing to take part in the project:** Through the guidance of Dr. Flora Ismail and Mr. Hamza, we contacted a group of farmers that regularly gathers at the Chambezi Station in the Bagamoyo District. We had a meeting in which we explained the project and asked them whether they would be interested in getting involved. The group decided that they were willing to do so.
2. **Visit the farms and learn about the farmer's activities:** During two days, we visited a total of eight different farms, in which we learned about the farmers' problems and necessities, as well as solutions and success stories. Through interviews, we assessed the impact (both perceived and real) of climate change on their activities. Additionally, an activity led by Juanita Schlaepfer-Miller, in which farmers were asked to gather in groups and make drawings of their activities and the main problems that they encountered in their farms, revealed the priorities and common issues. This method is known as "Rich Pictures", and is part of the Soft Systems Methodology[3].
3. **Evaluate the technical feasibility of the project:** We tested the strength of the GPRS

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[1] http://sautiyawakulima.net/bagamoyo
[2] Luc Steels, Eugenio Tisselli, "Social Tagging in Community Memories" Proceedings of the 2008 AAAI Spring Symposium
(Social Information Processing) Stanford University, California. March 26-28, 2008
[3] John Naughton, "Soft Systems Analysis: An Introductory Guide", The Open University Press, 1984

telephone coverage and the GPS satellite signal during our stays at Chambezi and the farms. We concluded that both signals were strong enough to have direct phone to web transmissions. We also asked the farmers about their knowledge about technologies such as mobile phones and the Internet. Regarding the phones, practically every farmer owned at least one, and was quite familiar with its usage; in the case of the Internet, they said that they had heard about it, but had not accessed it before. However, they said that their children knew about Internet.

4. **Identify a local project coordinator and provide initial training:** Mr. Hamza, agricultural officer at the Chambezi Station, was chosen as the local project coordinator because of his closeness to the group of farmers and his knowledge about IT. He was given a mobile phone to do initial tests, and was trained on how to navigate the project's web page.

5. **Carry out training sessions with a selected group of farmers:** Mr. Hamza was asked to choose a group of ten farmers who were willing to take part in the first phase of "Sauti ya wakulima": five men and five women. These farmers attended a training session at the Chambezi Station, during which they learned how to use the mobile phone application, and how to visualize their pictures and listen to their voice recordings on the web page. During these sessions, common keywords were decided. These keywords, which can be associated to the pictures taken with the mobile phone application, become common topics which set the focus of "Sauti ya wakulima".

6. **Establish the dynamics of phone sharing:** There are two available mobile phones for the project. Considering that there are ten participating farmers, it became necessary to establish a way through which these phones could be shared. The group, coordinated by Mr. Hamza, decided that on each of their Monday meetings at the Chambezi Station they would pass the phone to a different farmer.

7. **Carry out follow-up meetings and generate reports:** Periodical meetings with farmers are necessary to reflect on what has been published, and to listen to their suggestions for new and improved modes of usage of the platform. It is important that "Sauti ya wakulima" becomes a useful tool for farmers, and that it remains flexible enough to be redesigned to suit their needs. These follow-up meetings will provide crucial information about how to reshape the platform. They will also become an opportunity to meet face-to-face, and make collective decisions about matters such as what to publish on the web page, or what to do with what has already been published. The project coordinator will generate reports of these meetings, and will communicate outcomes and decisions to the parties directly involved in the project.

8. **Disseminate the project among scientists and policy-makers:** Even during its initial stage, "Sauti ya wkulima" will be disseminated among scientists working at the Botany Department of the University of Dar es Salaam, so that they can learn about the project and how it can be used to support their research activities. They will also be invited to get involved in the project and provide feedback to the farmers using the web page. "Sauti ya wakulima" will also be introduced to policy-makers and members of the Agricultural Office in the District of Bagamoyo through personal meetings or written reports. They will also be invited to participate by using the web-based interface to navigate through the contents published by the farmers, and to provide their feedback to the farmers.

9. **Find funding to sustain and expand the project:** "Sauti ya wakulima" is currently seeking sustainable sources of funding, in order to extend the project's duration and expand its base of participants. It is crucial that the project can become a stable, long-lasting platform. The main expenses of "Sauti ya wakulima" are the broadband communication packages for the mobile phones, needed to send pictures and voice recordings to the web page. The project also aims to expand, in order to include other groups of farmers in the Bagamoyo District. These new groups will also share mobile phones, and will publish contents on the same web page as the currently active group, creating thus a virtual meeting point for a farmers' network.

The web page of "Sauti ya wakulima", showing both the geographical and the keyword interfaces, through which images and voice recordings published by the farmers can be viewed.

A farmer learns how to use the mobile phone

Farmers use the mobile phone to interview each other

Strengthening communities by providing them with accessible networked media.

The above mentioned goals and methodology exemplify what can be achieved by providing communities with the technical means and group dynamics necessary to express their issues and concerns in a participative, unfiltered way.

"Sauti ya wakulima" is the latest development of a series of projects in which communities in risk of social exclusion around the world have used mobile phones and the Internet to publish images, sounds and maps of their conditions and daily lives. These projects, in which Eugenio Tisselli actively collaborated from 2003 until 2010, can be viewed in the website http://megafone.net.

The technology involved in "Sauti ya wakulima" represents the expertise developed along the last nine years. The software used, both mobile application and server-side scripts, are published under open source licences, and freely available. The following list enumerates the technical specifications of the platform.

- **Mobile application:** The application "ojoVoz" (eyeVoice) makes it easy to send georeferenced and tagged images and voice recordings from a phone directly to the Internet. "ojoVoz" is compatible with most Android 2.2+ mobile phones (tested on HTC Desire, Samsung Galaxy S, Samsung Galaxy Ace and IDEOS phones). The application is available for download (including source code) at: http://sautiyawakulima.net/ojovoz

- **Database:** Built using MySQL, an open source server-side database platform.

- **Server-side scripts:** The scripts that transform the multimedia messages sent from the phones into a simple, user-friendly and low-bandwidth web page are written in PHP. These scripts include a back-office application which allows to edit both the structure and the contents of the database. The full scripts will be published very soon, but are currently available upon request.

Contact:
Eugenio Tisselli
Address: c/Hospital 105-1, 08001, Barcelona, Spain.
Phone: +34 652 693 180
Email: cubo23@yahoo.com

5. Letter of engagement delivered to the Bagamoyo district director.

ETH

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MEMORANDUM OF UNDERSTANDING: SAUTI YA WAKULIMA

The agreement is made this _____day of _____ 2012, between the District Executive Director of Bagamoyo, known as "First Party", and Dr. Angelika Hilbeck, Institute of Integrative Biology, Swiss Federal Institute of Technology, Zurich, known as "Second Party", and farmer groups of Bagamoyo District, known as „Third Party".

This Memorandum of Understanding is based on the following provisions:

1. That "Sauti ya wakulima" is a project inititated by the Second Party on March 2011, and has since engaged ten farmers at Chambezi in the creation of a collaborative knowledge base.
2. That during the initial phase of "Sauti ya wakulima", the Second Party has provided the farmers with mobile phones, a personal computer and mobile broadband connections to allow the farmers at Chambezi to use the phones as shared means of documentation, and a web page to disseminate their knowledge.
3. For this time, the extension officer Mr. Hamza S. Suleyman has been appointed as coordinator of "Sauti ya wakulima", and has received a compensation for his tasks from the Second Party.
4. That the farmers at Chambezi have expressed their willingness to continue "Sauti ya wakulima", as they find it very valueble. The farmers have also expressed that "Sauti ya wakulima" could be greatly improved by making it available for other farmers in Bagamoyo.

On the basis of these provisions, the First Party agrees:

1. To provide the farmers at Chambezi with sufficient credit for mobile broadband connection so that they can continue contributing audiovisual materials to "Sauti ya wakulima".
2. To ensure that Mr. Hamza S. Suleyman (or other person in charge in the future) obtains a proper compensation for his (her) weekly task as coordinator of "Sauti ya wakulima".
3. To select, together with Mr. Hamza S. Suleyman, up to three additional groups of farmers within the District Bagamoyo, who are willing to take part in "Sauti ya wakulima".
4. To provide these new groups of farmers with sufficient credit for mobile broadband connection.

and the Second Party agrees:

1. To provide a continued support for the database and web page of "Sauti ya wakulima", and modify its elements as needs arise.
2. To provide up to two phones and one notebook computer for each additional group of farmers joining "Sauti ya wakulima".
3. To communicate fluidly and constantly with Mr. Hamza S. Suleyman, in order to provide for the technical needs that may arise.
4. To disseminate "Sauti ya wakulima" within relevant networks worldwide, and to always credit the Government of Bagamoyo as the lead supporter of the project.

and the Third Party agrees:

1. To respect the rules for use of the provided smart phones (i.e. rotation of phones to different individual farmers on an agreed schedule, maintain and caring for good condition and functioning of provided phones) and provided computer(s)
2. To document the agreed content and use it for agreed purpose

3. To attend the weekly meetings
4. Inform Mr. Hamza or any other person in charge from the District about problems that might occur with the phones

Invalidity or unenforceability of one or more provisions of this agreement shall not affect any other provision of this agreement.

This agreement is subject to the laws and regulations of the District of Bagamoyo.

Signed:

First party:

_____   _____
The District Executive Director of Bagamoyo   Signature

Second party:

_____   _____
Dr. Angelika Hilbeck, IBZ, ETHZ   Signature

Third party:

_____   _____
Farmers group representative   Signature

6. Visual calendar of the MIAF system
(prepared by Mr. Odilón Martínez)

CALENDOGRAMA DE ACTIVIDADES DEL SISTEMA MILPA INTERCALADA CON ARBOLES FRUTALES– REGION SIERRA NORTE DEL ESTADO DE OAXACA

ELABORADO POR: M.C. ODILON MARTINEZ MARTINEZ ESPECIALISTA EN PRODUCTIVIDAD AGRICOLA

ACTIVIDADES	MESES	OBSERVACIONES									
	ENE	FEBR	MAR	ABR	MAY	JUN	JUL	AGO	SEPT	OCT	
PERIODOS	FLORACION Y BROTACION	DESARROLLO	MADUREZ	DESRROLLO VEGETATIVO	LETARGO	DORMANCIA					
TRAZO Y CEPEO											
PLANTACION DE ARBOLES											
VIVERO E INJERTO											
PRIMERA Y SEGUNDA FERTILIZACION O ABONADO											
PODA DE INVIERNO/ PODA EN VERDE											
APLICACIÓN DE SULFATO DE COBRE											
APLICACIÓN DE PASTA BORDELES											

CONTROL DE ENFERMEDADES

CONTROL DE PLAGAS

RALEO DE FRUTOS

CONTROL DE MOSCA DE LA FRUTA

CONTROL DE MALEZAS

COLOCACION DE FILTRO

COSECHA

MILPA	ENE	FEBR	MAR	ABR	MAY	JUN	JUL	AGO	SEPT	OCT

PREPARACION DEL TERRENO (barbecho y surcado)

SELECCIÓN DE SEMILLA

INOCULACION CON MICORRIZA

SIEMBRA

PRIMERA Y SEGUNDA FERTILIZACION

ACLAREO DE LA MILPA

ARRIME DE TIERRA y DESESPIGUE

CONTROL DE PLAGAS

COSECHA

7. Sample presentation of case studies (used for dissemination purposes)

Listening to the voices of farmers

Eugenio Tisselli

MEME FEST

IMAGINATION

INTERVENTION

INVESTIGATION

The story begins in Tanzania ...

There is a growing need to gather local data and observations related to the effects of climate change.

The local effects of climate change may be varied and unexpected, and need to be taken into account in the design of adaptation strategies.

Subsistence farmers are particularly vulnerable to effects such as drought, pests and plant diseases.

Contextualizing and democratizing scientific research.

Farmer-led Research:

"Since response to climate change is **variable** from place to place we cannot make overarching recommendations. The best approach is a **participatory** one." (Jones et al., 2005)

"Incorporating **indigenous knowledge** can add value to the development of sustainable climate change mitigation and adaptation strategies that are rich in **local content**, and planned in conjunction with local people." (Nyong et al., 2007)

Chambezi agricultural station, Bagamoyo, Tanzania. February 2011.

Sauti ya wakulima, "The voice of the farmers"
http://sautiyawakulima.net

Ten farmers share two available smartphones to document the effects of climate change and their strategies for adaptation, and publish them on the Internet.

"We have faced a lot of challenges including absence of autumn rains, something which has made us to have only one cropping season (long rain season only) while as coast regions we used to have two cropping seasons in a year."

- "What do you advice your fellow farmers and the government in general with respect to climate change?"
- "For the government, they should put an irrigation system that will help farmers to water their plants in dry season or build some wells where they can easily get water for that purpose. To my fellow farmers, when it is too dry they should think of planting those crops which can tolerate droughts like cassava, sweet potatoes etc."

The farmers gather every week at the Chambezi agricultural station to discuss the observations and interviews that others have done.

Appropriation: Farmers redefine the research goals by using the phones to socialize, report problems and start a process of mutual learning.

Contextualizing and democratizing technology.

Appropriation:

- *"Differences in the way social groups **interpret and use** the objects are not merely extrinsic but make a difference in the nature of objects themselves ... What the object is for the groups that ultimately decide its fate determines what it becomes as it is modified. If this is true, then **technological development is a social process** and can only be understood as such." (Feenberg, 1995)*

- *"Technology is only what it is in some use-context" (Ihde, 1990)*

Mr. Haeshi Shabani

Message sent on Sunday 1 of May of 2011

This maize has been planted on terraces so as to prevent water logging.

Message sent on Tuesday 28 of June of 2011

This is maize that I grow on terraces after getting advice from my colleague. I got advice on cultivating on terraces during the winter and not in summer as previously. This maize has begun to dry up and is ready to eat.

On August 2012, the farmers received a grant from the local government to document an agricultural fair in Morogoro.

What the farmers at Chambezi had to say about the project:

"The project is about education and learning."

"Very few farmers know about the Internet, and there is a need to provide more training and resources."

"The project brought more cohesion to the group."

"The project helped me learn that phones can be used for other things besides calling people, and that computers can also be used to solve problems: they are not just a fancy thing for the rich people in towns."

"Farmers have a lot of things to say, but no means where to say them."

How the farmers at Chambezi would improve the project:

"By having more phones and more participants. We also need more training on how to use these tools."

"This project is very valuable, it can't be limited only to us, it has to extend to other farmers."

"Include people from different areas, so we can learn from those who are far away, doing different things."

"How can we get feedback when we report a problem?"

In June 2013, farmers from Chambezi visit Zanzibar to invite other groups of farmers to join the project.

The story continues in Oaxaca (Southern Mexico)...

In Santa María Tlahuitoltepec, Oaxaca, agriculture is practiced on hillsides because of the state's mountainous geography.

To prevent soil erosion, an agroforestry project was implemented. Fruit trees are intercropped with maize, beans and squash in the milpa.

However, the agroforestry project entails learning new techniques such as pruning, thinning or fighting new kinds of pests.

Los ojos de la milpa: Families from Santa María Tlahuitoltepec, Oaxaca (Mexico) use mobile phones to create an online community memory about everything that grows in their fields. http://ojosdelamilpa.net

"That's what the peach trees need, one has to loosen the soil and check them constantly. That's the only way the peaches can grow well, that's the only way we'll be able to get money from them. This image is just for the record, so that we'll all work like this, even if it's hot, what can we do about it?"

"That's right, I am fallowing the soil of my peach trees. And why am I clearing? Because some weeds may cast their shade on the flowers and fruits of the trees, that's why I'm stirring the soil."

Agriculture is culture, and it is connected with everything that happens in the community. Here we see the forging of a new bell for the local church.

Brewing of the local mezcal.

*Los ojos de la milpa (The eyes of the milpa) is a **community memory** that captures, through images and voice recordings, a moment of transition in these complex times.*

*This is a place where the precious pace of the passing seasons **coexists** with a growing pressure to produce more, to extract from the earth not only nourishment, but also more and more profit.*

*Throughout a crop-growing cycle, families from the Juquila and Santa Ana ranches use **smartphones** to capture **images** and **record sounds** of whatever happens in their milpas, and to post them on a **website**. By doing this, they **share** their knowledge, their concerns, their ways of doing and their ways of thinking. They make themselves present by presenting their stories to us, by showing us how they live and work in a community which resists as it transforms.*

ojoVoz: *Collaborative creation of audiovisual knowledge bases and documentation using Android smartphones.*

Thank you!

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