

#OSWARRAP: Open Systems Strategies linking FOSS & Open Knowledge to strengthen agriculture in Warrap State, South Sudan

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Abstract. In many parts of the world new civil societies emerging from shattering conflict and revolution are facing the challenge to (re)construct nothing less than entirely new nations. Urgent calls to define political participation, state identity, economic self-determination, basic freedoms and reconciliation among resolute opponents have transformed seemingly local conflicts into issues of global concern. South Sudan, having gained independence from Sudan on July 9, 2011 must now tackle these herculean issues of post-conflict development and create a stable and viable democratic state. Agriculture and an extractives industry primarily based on crude oil reserves, form the nascent state's two pillars of economic and political *raison d'être*. Considering this scenario in the age of social networks, collaborative enterprise and open technologies the #OSJUBA - Open Sourcing South Sudan Initiative¹ is being developed to apply the methodologies of the world's diverse open source and open knowledge communities in creating rapid and innovative new forms of development in regions of lingering conflict and post-war society.

Keywords: Open Source, Post-Conflict Transformation, Agriculture, Open Knowledge, Open Systems, Open Data, South Sudan, ojoVoz, ICT4D, Community, Collaborative Systems, Innovation, Sustainability, Empowerment

1. Applying Open ICTs for Sustainable Agriculture in Post-conflict South Sudan

As a first step towards a comprehensive 'Open Systems Strategy' within the #OSJUBA - Open Sourcing South Sudan Initiative, the country's largest federal state Warrap has embarked on #OSWARRAP (Open Systems for Warrap State), as a model or pilot initiative to empower citizens, and strengthen peace and security through open source technologies and methodologies, open data and open government principles.

¹ <http://r0g-media.org/initiatives-2/>

The Warrap leadership, faced with the challenge of "leading over one million young pastoralists from past conflict into the 21st century"² is intent to strengthen open governance and create peace and prosperity to the advantage of all its citizens. The use of ICTs and open data are intended to act as implementation triggers for the open systems projects being developed in and for Warrap State in order to see and effectively create viable examples of what can be done on the ground in one of the most challenging post-conflict and nascent civil society contexts. In the spirit of multi-stakeholder collaboration, the #OSWARRAP initiative aims to bring together governmental and civil society organizations as well as Warrap citizens including farming and pastoralist communities, engaging them in a dialogue about the ways in which open systems solutions and their implementation can help in mitigating the state's identified key challenge areas which include³:

- conflict resolution, peace and security, in particular with regard to the deep-rooted post-war conflicts related to cattle rustling
- creating participatory, accountable, open governance
- empowerment of marginalized peoples, especially youth and women, as well as the social reintegration of former combatants
- rapid implementation of systems to enable education, communication and economic development
- sustainable, transparent and cost effective management of land and key natural resources (incl. water, forest, extractives)
- innovation in linking traditional with contemporary skills and knowledge

In the development of the #OSWARRAP initiative, South Sudanese agencies and ICT organisations are examining various social media, mobile technology and Community Informatics (CI) tools as key elements their open systems strategy. Given its ease of use, mobility and primarily non-text base interface, they will introduce ojoVoz⁴, a rapid implementation FOSS platform consisting of mobile and web-side applications that help communities make their voices heard.

2 Warrap Governor H.E. Nyandeng Malek Dielic, speaking at the session on 'Open Solutions for Addressing Global Challenges', UNESCO WSIS+10 Review Conference, Paris, February 27, 2013 <https://www.unesco-ci.org/cmscore/events/>

3 key challenges as identified by Warrap Governor H.E. Nyandeng Malek Dielic in a preliminary memorandum for a Warrap State Open Systems Strategy, Berlin, March 2013

4 The ojoVoz open source app developed by Eugenio Tisselli for Android 2.2+ <http://sautiyawakulima.net/ojovoz/>

1.1 The ojoVoz FOSS platform: Knowledge base and citizen empowerment tool

As a practical example of what can be achieved when farmers and citizens in general are able to apply open media to directly address the issues that affect them, ojoVoz, an open source platform which consists of mobile and web-side applications aimed specifically at lowering the barriers of complexity and access to technology for non-expert users, is being introduced. The ojoVoz platform encourages face-to-face meetings using shared low-cost and readily hardware, and doing this in areas with low telecommunications coverage and limited infrastructure. ojoVoz has been successfully applied in projects such as 'Sauti ya wakulima' ('The voice of the farmers') in Tanzania⁵, where a group of small-scale farmers used smartphones to document their observations of the effects of climate change, and communicate them to extension officers, local authorities and scientific researchers.

In Warrap State the preliminary focus area for the implementation of a community communication and knowledge base platform such as ojoVoz will be to identify, define as well as introduce the key agricultural challenges faced by civil society, i.e. cattle rustling and its related social, political and economic contexts⁶. ojoVoz could help communities create their own 'sharable memory' resources with which to build new narratives to address the challenges associated with the post-conflict transformation, moving a young population from armed conflict to peaceful economic development, as well as enabling new forms of communication with officials to improve government responsiveness with its citizens.

As such the ojoVoz Android mobile app allows non-expert users to easily take pictures, record sounds and upload them to a web server, along with descriptive keywords and geographical metadata. Correspondingly, the web-side application receives and organizes these multimedia messages, allowing users to browse them by following different criteria: time, keyword or geographical location. These messages and data can be created in any language, or by using icons and other non-text elements. By collaboratively documenting, discussing and sharing their common issues, small groups of people with specific interests can also use ojoVoz to strengthen their voice and create awareness. Every effort has been made to design ojoVoz so that its user interface can be quickly adopted by non-expert users. This is precisely what makes ojoVoz different from other similar platforms, and collaborative mapping tools which rely on greater ICT literacy and experience. In field trials, non-expert users were able to take up ojoVoz in a matter of minutes⁷. The philosophy of ojoVoz is that

5 <http://sautiyawakulima.net/bagamoyo/about.php>

6 i.e. Annette Weber "Transformation Backlog in South Sudan: Security Sector Reforms Stall in the Face of Growing Autocracy" (SWP, August 2013) http://www.swp-berlin.org/en/publications/swp-comments-en/swp-aktuelle-details/article/south_sudan_transformation_backlog.html

7 "Sauti ya wakulima: listening to the voices of the farmers in Tanzania." Research paper (2012) by Tisselli, Eugenio; Schläpfer-Miller, Juanita; Hilbeck, Angelika, Institute of Integrative Biology, CHN Universitätstrasse 16, 8092 Zurich

tools should make documentation tasks as simple as possible, so that complexity won't become a barrier for entry-level users. Moreover, ojoVoz has an offline feature, which is especially important when working in areas with low or no cellphone coverage. All the contents captured while offline can be uploaded later, when the phone enters a connected area.

1.2 Preliminary methodology for creating an ojoVoz project for #OSWARRAP includes

- For each implementation identifying a specific challenge faced by the citizens of Warrap State:
 - What is the nature or root cause of the problem?
 - Who are the actors involved?
 - What are its social, political and environmental implications?
 - What are the potential dangers when dealing with this problem?
- Inviting a group of citizens to participate in a collaborative documentation of the problem:
 - Explain the project and its possible implications.
 - Provide adequate training in the usage of smartphones and web interface.
 - Secure organizational logistics (ie. meeting space, access to hardware, internet connection)
 - Identify, train and actively support a local coordinator
- Providing continuous monitoring and technical support
- Actively participating in the project discussions, reshaping the platform according to participants' feedback.
- Disseminating the project thoroughly (local and country-wide authorities and organizations, local and international press and broadcast media, social media)

1.3 Key Take-Aways

- The usage of FOSS ICT platforms in agriculture can be a crucial factor for strengthening farmers' empowerment.
- Open Knowledge and education through ICTs may help to address the challenges faced by government and citizens of Warrap State, South Sudan.
- Connecting traditional knowledge with Open ICTs to create new, sustainable and hybrid paths of cultural, economic and societal development

The government of Warrap State, headed by its Governor H.E. Nyandeng Malek Dielic, is interested in taking more initiative to help develop open ICTs to strengthen and support grassroots communities as well as rural pastoralists who make up a

significant portion of the population.⁸ It has been clearly identified that any future development of a vibrant, stable and prosperous civil society means that these people, who have been marginalised through war, corruption and harsh effects of misguided colonial development, are now essential in becoming part of the policy development process. The task of bringing diverse groups and organizations together, especially people from various backgrounds and ways of life - and who may have been, or still are, engaged either in the lingering conflict of the past decades, or through new conflicts that have arisen through new pressures on agricultural, livestock and land development and transformation, is a major challenge in itself.

Where interaction with the government sometimes means asking for weapons to either protect your assets or attack your enemy (real or perceived) defining the role of government as a partner of its citizens must be achieved. The means to discuss ideas related to human rights, agriculture and social development are therefore aimed at these diverse groups and communities by using the prevalence of ICTs and social media in close collaboration with the creation of films and short video documentaries in the form of narrative public service announcements that can be accessed via a number of media, including radio. These are meant to augment the participative methodologies that dialogue and mapping platforms such as ojoVoz can create. Even using some of the visual and mediated language that prevailed as part of the propaganda campaigns from the 'days of struggle' before the Comprehensive Peace Agreement of 2005 and turning these into compelling, contemporary and progressive messages on the challenges faced by the country, the need to gain new skills and the engagement in collaborative practices can be employed as effective means of message creation.

Organisations such as the Juba based Kapital Movie⁹ collaborative, a community based, non profit network of visionary young designers, documentarists and IT professionals who are interested in sharing and nurturing a vibrant civil society through the power of open media play a crucial role in the development of such hybrid Community Informatics (CI) structures¹⁰. As a group committed to empowering the communities they live and work in, Kapital Movie focuses its messages on health, peaceful methods of association and active conflict mitigation - in which agriculture, land grabs and cattle rustling pose major South Sudan post-independence challenges - through the power of films and short public message clips.

Together with development outreach organisations such as the Community Empowerment and Progress Organisation (CEPO) Kapital movie aims to share the skills of 'mediated message creation' through sound, image and video such that affected citizens are engaged directly in the production of expression and opinion

8 <https://soundcloud.com/sourcefabric/governor-nyandeng-warrap-state>

9 Kapital Movie Industry Corporation, initiated by South Sudanese medical student and film maker Lagu Stephen Samuel, <http://kapitalmovie.net/>

10 http://en.wikipedia.org/wiki/Community_informatics, see also (Michael) "Gurstein's Community Informatics" <http://gurstein.wordpress.com/>

which can be made available through publicly accessible online knowledge bases. Such 'open' knowledge bases can be understood and used as experiential basis material as 'community reconciliation' centers where the accumulated content responds to the many of parts of South Sudan that still engage in rudimentary and negative tribal activities such as inter-communal and criminal conflict that are exacerbated by the economic, social and political pressures that underpin the cattle raiding issue.

The establishment of resources such as a 'community reconciliation knowledge base' ideally would be networked with South Sudan's rural regions where information is collected. Resources, using mobile, open and energy self sufficient ICTs could be made accessible in order that the citizens, and their communities actively become the producers of the knowledge and experience illustrate, develop and offer solutions to solve some of these complex social, cultural and economic problems. In a recent and preliminary background research excursion to Warrap State, hosted and facilitated by the Warrap Government, and carried out by CEPO and Kapital Movie members, the desire for feedback by the government to the concerns raised by the citizens of Warrap was paramount. The direct collaboration of the government in the process of interviewing, recording and meeting directly with citizens in itself acted as catalyst to the task of knowledge and information collection. It also served as trust building measures in areas where information could also be considered a weapon or strategic device that may be used against citizens.

Taken as a broad methodology to help rural communities, especially those engaged directly in agricultural tasks platforms such as ojoVoz can thus be effective in helping to galvanize people's voice, bring them together, and initiate discussions because they are in fact able to control the process and see its outcomes - regardless of technical ability or level of literacy. As such the people's means of collaboration - even across seemingly antagonistic agricultural communities who are the backbone of Warrap's population and future - can become a process of governance and thus government itself.