# Terms of reference

## Consultant – GIS-based Impact Evaluation

This position will support impact evaluation efforts of Jokalante (http://jokalante.com/), a Senegalese social enterprise that uses information communication technologies as agricultural extension tools. Jokalante was created through the New Alliance ICT Extension Challenge's project in Senegal, TICmbay (https://public.sbc4d.com/ticmbay/).

## Background

Jokalante works closely with radio stations in Senegal, and possibly in neighboring countries in the future, to organize interactive radio campaign for its customers. With respect to this, it is essential for Jokalante and its customers to be able to evaluate the reach of the radio campaign in terms of population, disaggregated whenever possible by gender, age groups, income groups and activity sector.

## Objectives of the work

The overall aim is to provide Jokalante with the skills and capacity to evaluate the reach of radio campaigns and to present the results in a way that informs and interests current and future clients

This aim can be split into 3 components:

**Methodology**: The first component is to establish processes and identify data that are required to compute the radio station population coverage. This methodology will be applied and validated on two radio stations that are already working with Jokalante. The consultant will propose to either conduct validation tests in the field or to supervise Jokalante staff and partners to do this.

**Training**: The second component will be to ensure Jokalante staff can reproduce and apply the methodology for all current and future radio stations partners of Jokalante. In addition to practical skills training the consultant will provide a User manual/guideline

**Tools**: The third component, after the methodology has been tested and validated, will be to develop specific tools to ease the work for new radio

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stations as well as to provide easy-to-use visualizations for Jokalante customers to estimate the reach, of their radio broadcasts both geographically and by population (total and disaggregated)

Concerning the first component, the methodology, there are 2 modules to consider:

**Radio Coverage**: Based on the specific geography and on the radio station equipment (mast height, amplifier, etc.), and using well-established propagation model (for example Longley Rice http://lrcov.crc.ca/main/), the consultant will define the radio coverage in the form of a shape file that could be represented on any GIS system (ARC-GIS, Google maps, OSM, etc.). The model and results will be validated in the field with specific measure of signal reach on the edge of the coverage region.

**Population Coverage**: Based on the coverage map, the consultant then will define a methodology, identify relevant datasets and develop tools to evaluate the population within the area of coverage. At the very least, the information will be disaggregated by gender. If possible, it should also be disaggregated by age group, income group, and activity sector. It should be possible to use different datasets to compute the values. Some datasets are more accurate on some elements but don't provide disaggregation. As a minimum the approach should at least allow the use of worldpop data (http://maps.worldpop.org.uk/ ) and census data (available from http://senegal.opendataforafrica.org/SNCD2015/senegal-census-data-2013)

Candidates may apply for all or for some of the elements only.

## Deliverables

1. A methodology with tools to build radio station coverage shapes (Shape5 <u>not</u> bitmap5) using Longley Rice model for any radio station based on the radio station equipment characteristics. This methodology is validated on 2 radio stations in 2 regions, with field testing at the edge of the coverage.

2. Two (2) Jokalante staff trained and able to use the methodologies to build radio station coverage shapes on other cases. User manual developed

3. A methodology with tools to compute population coverage (Shape5) on a given coverage shape (from deliverable1). The data should be disaggregated by gender at least, but preferably also by age group, income group and activity sector. The methodology and tools must allow the use of different population datasets and at least integrate worldpop and Senegal census data.

4. Two (2) Jokalante staff trained and able to use the methodology to compute disaggregated population data for other cases. User manual developed

5. A web based tool provided to i) ease the data collection work for new radio stations and ii) visualize the output of the two modules and enable Jokalante customers to see the impact of their radio program

## Requirements:
- Extensive experience and references on technologies related to each module
- Ability to travel to Dakar to train Jokalante staff.
- Fluent in French (preferable)
- English proficiency a plus.

## Submission process:
Please send any questions by April 30, 2017 to mgt_ticmbay@sbc4d.com

Please send completed Technical and Financial offers to mgt_ticmbay@sbc4d.com by 9am Dakar time Tuesday, May 02, 2017

The technical offer should include: a description of the proposed approach by component; the capacity and experience of the consultant; the CV of key personnel.

The financial offer must include all costs (fees, travel, etc.) including costs related to any proprietary software that is required. Preference will be given to solutions that use open source software.