

PUBLIC RADIO CONTENT ANALYSIS TOOL

Supporting decision-making through analysis of public radio content

Pulse Lab Kampala developed the prototype of a tool that can analyze public radio content to reveal a detailed picture of the priorities of Ugandans. The Radio Content Analysis tool works by converting public discussions that take place on radio into text using 'speech-to-text' technology. Once converted, the text can be searched by topics of interest related to the Sustainable Development Goals (SDGs) such as health, education or employment. The topics can be further broken down by location and timeline. The new capability afforded by this tool could help policymakers better understand, in real-time, Ugandans' priorities, as voiced publicly on the radio. The prototype was built in collaboration with Makerere University and South Africa's Stellenbosch University.



WHY RADIO?

In Uganda, where some 90% of the population lives in rural areas, radio serves as a vital platform for public discussion, information sharing and news. Radio broadcasts have the advantage of easily conveying information in local languages, strengthening community values and the sense of belonging. There are currently over 250 FM radio stations across Uganda, which are often open to contributions from listeners and used for a variety of purposes such as information sharing, discussion, advocacy and capacity building.

The radio content analysis tool is designed to leverage public radio content as a new source of data that can help measure progress towards achieving the Sustainable Development Agenda and inform emergency response in case of natural disasters.



WHAT ARE THE OBJECTIVES?

Develop a tool that uses speech-to-text technology to convert words into text for "Ugandan English," Luganda and Acholi, which are dialects spoken widely across the country.

Analyse radio content by searching for topics of interest for development and humanitarian action such as health, education, or the impact of localised disasters such as floods, landslides or crop failures.

Break down topics relevant to sustainable and humanitarian contexts by location and timeline.

"This tool allows us to contribute to the national dialogue on topics of interest to improve lives. It gives us the opportunity to become active participants in achieving the SDGs. The tool transforms observations and suggestions from Ugandan citizens into potential inputs for decision-making on development."

Rosa Malango
UN Resident Coordinator in Uganda

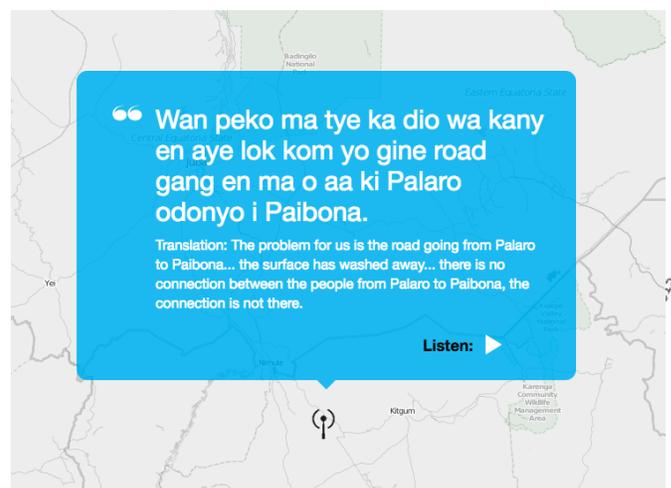


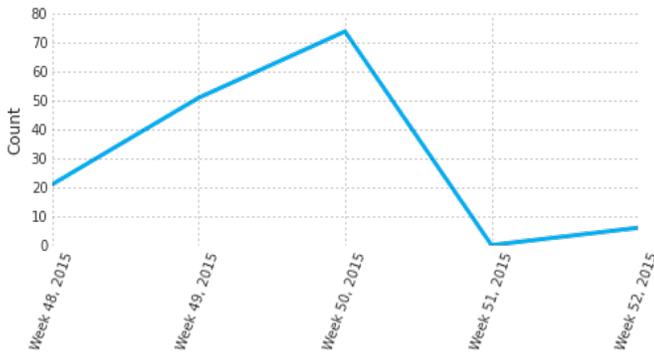
HOW DOES THE TOOL WORK?

Approximately 7.5 million words are spoken daily on Ugandan radio.

Speech-to-text technology trains software to recognize and convert recorded speech into text. For radio content, the technology implies the following steps: (1) manually transcribe audio files to create in-context examples of words that are spoken on radio; (2) the words are entered into a 'pronunciation dictionary,' which shows the most common sequences of sounds people make as they utter each word. This dictionary represents the basis for an acoustic model of all sounds recorded for a particular subject of interest; (3) a language model, which is an estimate of how likely each word is to be spoken, is built into the software. Currently, the model has been completed for English as spoken in Uganda and is 75% finished for Luganda and Acholi.

Once the speech-to-text technology has been built in, Big Data analytics can help create an automated search function of radio content by topics of interest for development such as losses due to localized disasters, public service delivery or gender based violence. These topics can be even further analysed by location and trends.





This visualization displays the number of flood-related reported events at community level that took place on radio over a one week-period corresponding to the heavy rains cause by El Nino in Kampala, in December 2015.

Generating data for analysis on a topic of interest requires four steps:

- **Data streaming**, which extracts content from multiple radio channels in various languages at the same time.
- **Defining relevant keywords and phrases**, for example, to understand public perception on agriculture, a set of keywords such as staple foods, crops or rainfall, needs to be defined.
- **Applying qualitative and quantitative methods of analysis** to transform radio content into a Big Data source.
- **Generating data visualizations** to maximize the use of the analysis and inform decision-making.



DATA PRIVACY

Although radio is used as a platform for public discussion, the results of the analysis are anonymised and presented at a level of aggregation that preserves the privacy of individuals and groups.

Pulse Lab Kampala does not release any raw data collected from content spoken on radio, but produces visualizations that serve as an analysis based on the aggregated findings.



POTENTIAL APPLICATIONS

Potential applications of the tool include:

- **Real-time reporting of the impact of local natural disasters (such as floods and landslides).** In rural areas, radio is the main platform for dynamic reporting of the occurrence and effects of natural disasters. People share information on the most affected areas, where populations are moving to escape disaster or what sort of assistance they are in need of. The content radio analysis tool could help identify in real-time population needs and inform emergency response.

- **Monitoring in real time the programmes designed to improve public service delivery.** Call-in talk shows are used by many people to express their concerns about the quality of the service at health centres. Such insights gathered in real time can help policy makers address these issues.
- **Providing an early warning system of emerging public health challenges** (such as disease outbreaks). Analysis of radio broadcasts can help identify instances where communities are misinformed or the degree with which a rumour is spread. Detecting such trends at an early stage can inform strategic communication.
- **Tracking in real time the effectiveness of campaigns on cultural related behaviours.** UN agencies and government entities use radio as a platform to broadcast campaigns on cultural related behaviour such as child marriage and involve listeners in discussion. The radio content analysis tool could help monitor and evaluate the effectiveness of such campaigns.

Piloting the radio content analysis tool

Pulse Lab Kampala initiated a pilot with the Department of Political Science at the University of Gothenburg to use public radio content analysis to support local governance processes. The focus of the pilot is to use the analysis to better understand public discourse about public health service delivery in Uganda. The objective is to use the results to inform strategies to address bottlenecks in quality of health service delivery at local level.



WHAT'S NEXT

The radio content analysis tool could provide real-time insights on the priorities voiced publicly by Ugandans on radio. Further case studies will be identified together with development partners to test the use of the radio tool in various contexts. Pulse Lab Kampala will continue to work on improving the precision and speed of the tool. The Lab will also analyse, together with its partners, the potential and benefits of adding one or more dialects to the tool to provide for a more comprehensive view of content expressed on radio.

Learn more about the tool and its functionalities:
<http://radio.unglobalpulse.net/uganda/>