



Grassroots Radio FACTSHEET #02

ROOTIO

Technological changes high connectivity and participation all fits in a bucket

WHAT IS ROOTIO?

RootIO is the free/open technology stack facilitated within the GW project. In a nutshell it combines low-power community FM with contemporary internet communication technologies for a very low cost.

- A web based radio studio with an easy to navigate UI (User Interface), for management of routine radio operations, creation and management of radio stations and radio networks
- An Android Mobile App to synchronize with the cloud-based studio to download and upload content, program information, emergency broadcasts, etc.
- An innovative integration with Text To Speech technologies
- SIP telephony (internet telephony) for conference calling and live talk shows
- Radio hardware (i.e. transmission equipment: FM transmitters, antennae, antennae towers, cables)
- Facilities for streaming, podcasts, and other contemporary audio channels



CONTEXT

RootIO facilitates the operation of low power FM radio stations in communities that depend on FM radio the most. Rather than have one station span a large area, RootIO advocates for the proliferation of more but smaller stations, each serving a local neighborhood or town, a segment of the would-be listenership of a large radio station. To this effect, RootIO stations are low power and cover a fraction of the area of a typical station, with lower cost implications for capital and operations. This also means that local issues can be easily discussed and deliberated, and local music and culture can be heard. That said, stations can also join together for regional or national programming.

In more detail... The Rootio architecture relies on 3 main components

Production site

1. WEB BASED STUDIO [<https://rootio.eu>]

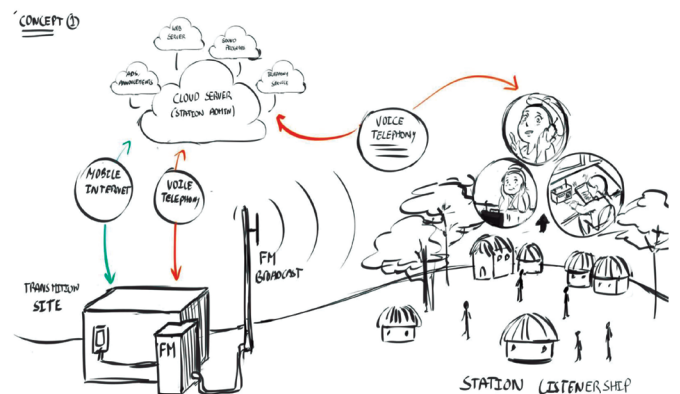
Instead of the typical production studio, the Rootio web based studio, among other things allows for:

- Creation and management of stations and networks of stations
- Upload of pre-produced audio content for broadcast (News, Podcasts, serialized programs) which can be transferred to local stations by voice call or digital download
- Automatically placing calls to stations, hosts, or listeners
- Receiving calls from anyone
- Full IVR interactions
- Full SMS interactions
- Creation of ads or community announcements through an IVR system through a publicized number
- Creation of call-in programmes, and/or programs using uploaded and downloaded content
- Definition of program hosts and scheduling talk shows
- SMS votes, comments, and emergency push notifications
- Monitoring of the performance of the transmission site

Transmission site

2. SMARTPHONE/ ANDROID APP

The Android RootIO phone app, which sits next to the FM transmitter, works together with the web-based



Depiction of interaction of various components in a RootIO station setup

studio to replace much of the functionality of a typical FM radio station. The phone hosts pre-recorded audio content like music or development programmes, which can also be updated through a mobile network. The RootIO app is capable of:

- Playing recorded audio content according to schedule and playlists that can be modified via the web based studio
- Automatically answering/rejecting regular GSM calls from the cloud, allowing voice-quality live programming
- Reporting information about the station, including current location and system health, to the web
- Synchronizing and transferring digital information, from podcasts to emergency Information

3. FM SETUP

The RootIO transmission sites consist of a low power FM transmitter (<=50 Watt), an Android smartphone, solar power equipment, a 15-25 meter tower, and an FM antenna.

The phone is connected to the FM transmitter using an RCA cable -- this way, whatever audio the phone is playing through its headphone connector is piped into the FM transmitter and broadcast to the surrounding community.

The FM transmitter itself is connected to the antenna using 50 ohm RF cable and the antenna is hoisted atop a light (~10Kg) telescopic fibreglass pole not exceeding 25 meters above the ground.

The mobile phone and FM transmitter are hosted in a plastic case for protection against the environment and interference or theft.

This ensemble is capable of broadcasting 24 hours