Low Cost Radio Broadcasting

Rukmin Wijemanne

In a Box Innovations

ITU Training Workshop, Alor Setar, Malaysia

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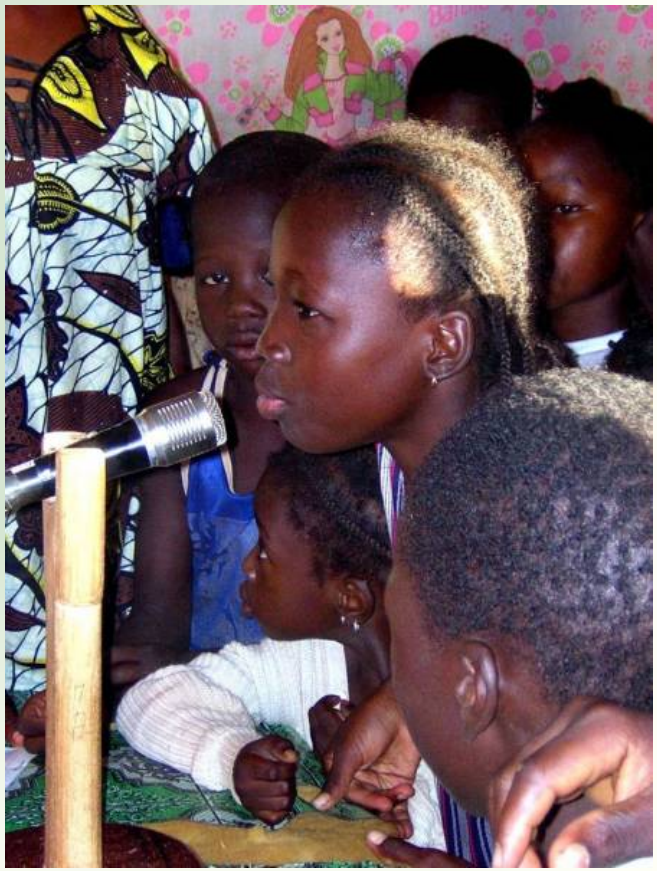
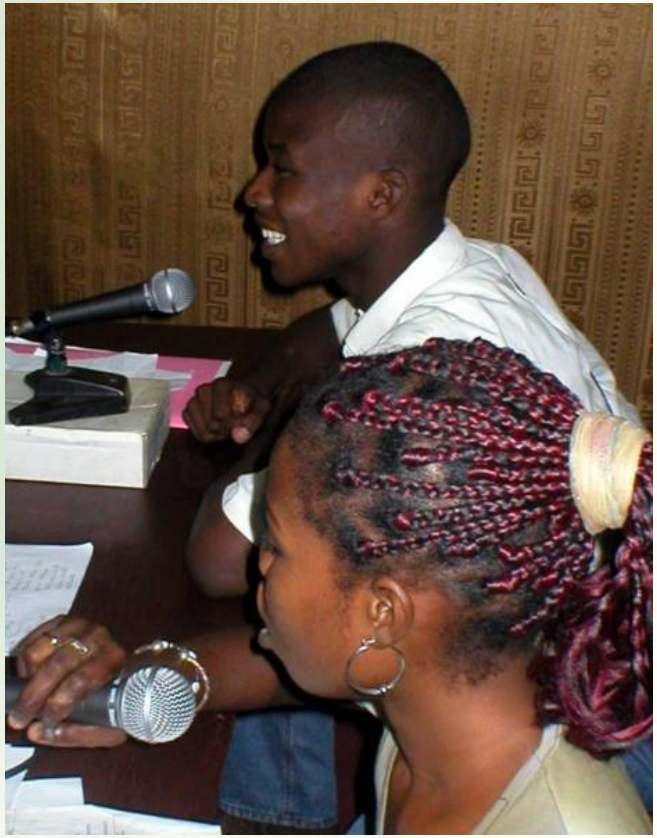


The Beginning

- June 2005 – UNESCO requested me to design and build a “digital studio in a box” at a cost of USD 3500
- I accepted the challenge
- Search for low cost equipment and software began



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Essential Features

- Be portable in a secure road case
- A patch panel to feed external audio material
- Audio mixing facilities
- Playback of CD or audio cassette into mixer/ digital audio workstation or FM transmitter
- Audio editing facilities using a DAW (Digital Audio Workstation)

Essential Features

- Playout of playlists automatically or manually
- Should be able to use a portable digital audio recorder to download audio files to the note book
- Monitoring facilities – to monitor programmes being produced
- 30W FM transmitter with adjustable transmission frequency
- The system to be powered either by 230V mains or 12VDC battery via an inverter

Some Essential Components

- Note book in a heavy duty sliding tray
- Audio Mixer
- The transmitter

Add Ons

- Portable digital audio recorders - Wide range of products available

Nagra, built in memory (1GB), USD$1200

Roland Edirol, SD Card, USD$550

M-Audio, CF Card, US$ 500

Add Ons

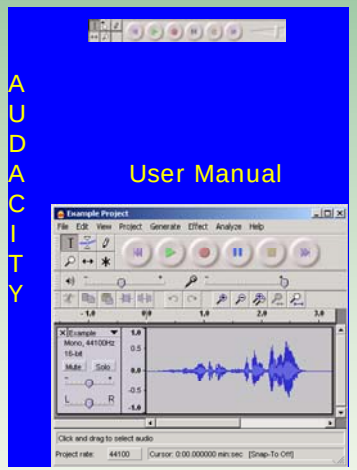
- A portable mast can be sourced on request

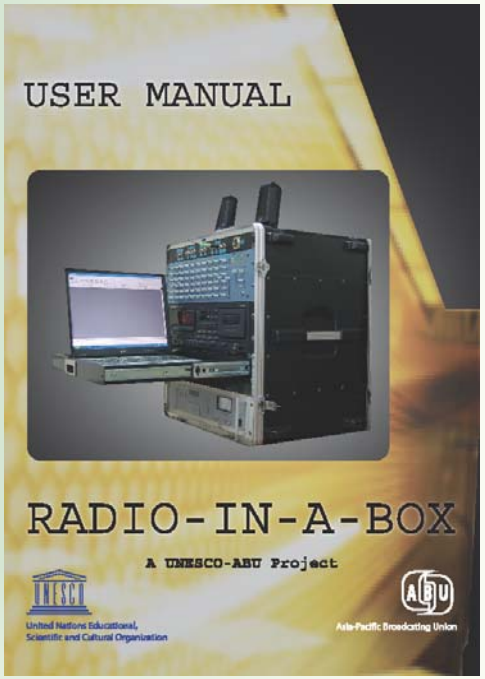
Power Supply Options

- A frequent and obvious question – how can this system be used in rural areas.
- The system consumes 450W
- Three possible ways
  - Grid power – 230V AC
  - Battery – 3 batteries on 100AH capacity and a pure sine wave inverter can run for 2 hours. Need some way to charge batteries, Solar panels an option
  - Portable generators

Documentation

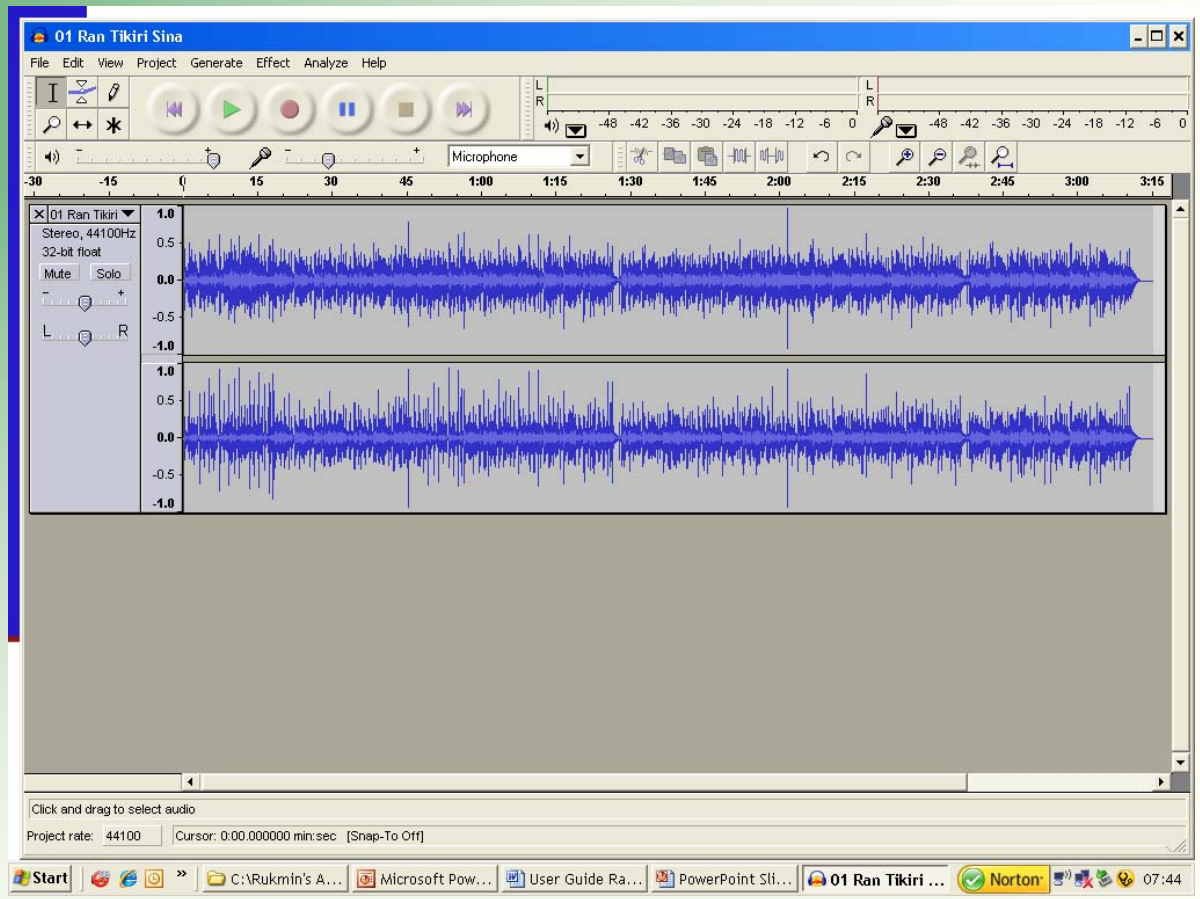
- The Radio-in-a-Box user manuals





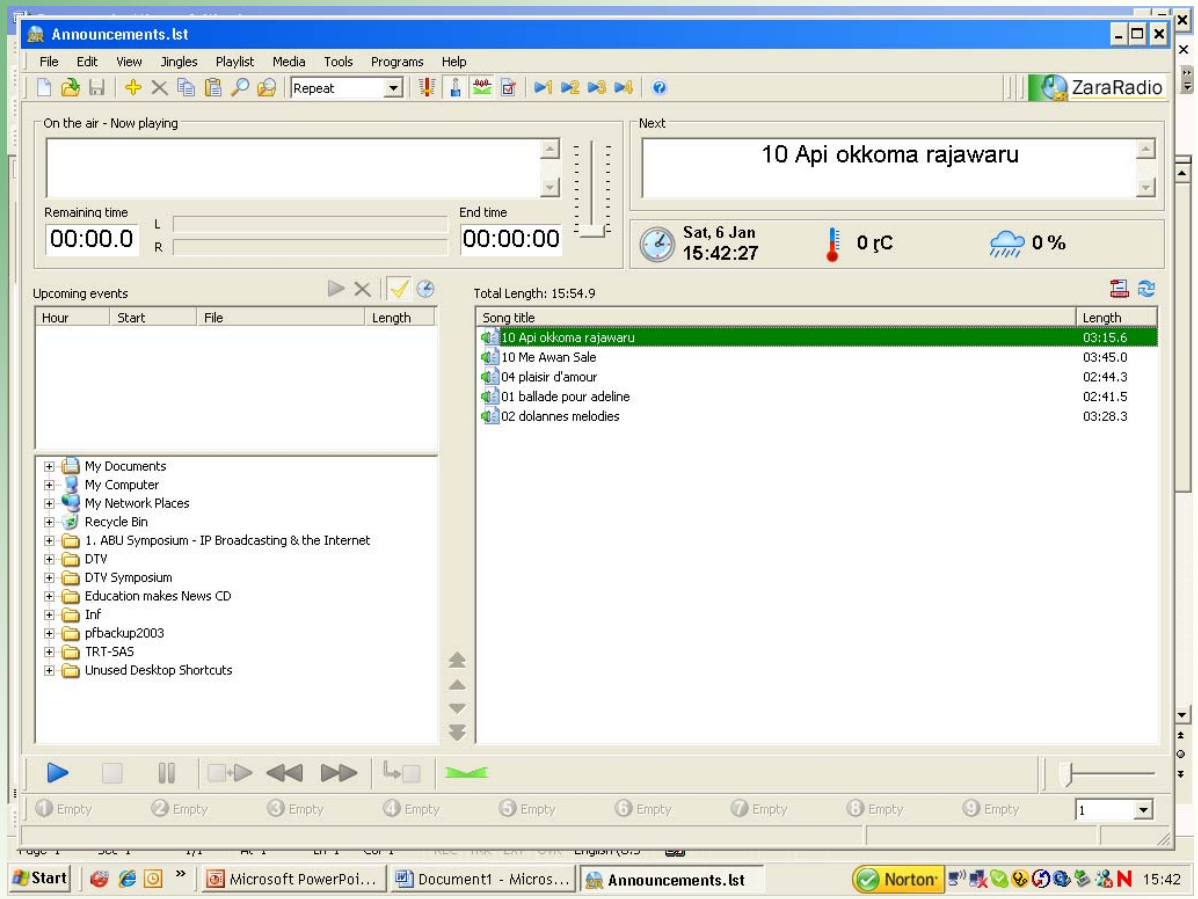
Software

- Editing Software



Software

- Play-out software



The Final Product

Uses

- Provide instant broadcasting facilities in disaster ravaged areas. Takes around ½ - 1 hour to set up. Time taken mostly to install antenna at a suitable height.
- Set up low cost community broadcasting facilities
- Provide broadcasting to remote areas, where national coverage has no reach.

Use of RiB in a Disaster

- In the event of a disaster, effected population need to be informed of relief operations
- If the existing broadcasting infrastructure is destroyed by the disaster this is not possible
- Radio-in-a-Box can be deployed within one hour to provide a broadcasting service.

Use of RiB in a Disaster

- The easiest mode of power is a portable generator.
- The antenna can be fixed on to an existing building or a field erectable pipe mast can be used.
- Programmes can be brought in in USB pen drives or external hard discs.
- Programmes can also be made locally

Current Status

- Costs around USD 6300 to build and supply) a 30W version. Prices have increased a little now.
- There is a 100W version and a 300W version which will cost around USD 12,000
- Has attracted interest from many parts of the world

300W Fixed Radio Station

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Current Status

Deliveries made so far:

- UNESCO New Delhi - 2 x 30W units
- UNESCO Accra, Ghana – 2 x 100W units
- UNESCO Maputo, Mozambique - 1 x 30W unit
- UNESCO Bamako, Mali - 1 x 30W unit
- UNESCO Dakar, Senegal - 1 x 30W unit
- UNESCO Porto Novo, Benin - 1 x 30W Unit
- UNESCO Paris, France – 1 x 30W units
- UNESCO Burundi – 300W unit
- UNESCO Jamaica – 2 x 100W units

Future

- UNESCO Tanzania – 100W unit
- UNESCO Jamaica – 2 x 100W units
- UNESCO Burundi – 300W unit
- UNESCO Kenya – 100W and 300W unit
- Designing different configurations for more portability and different price tags

For more information:

Rukmin Wijemanne: rukmin@bigpond.com

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Thank you for your attention