LOW COST SOLUTION

INTRODUCTION

The EVR project is one of the unique projects in the health sector in Malawi. It has been set up to digitize registration of birth and deaths in the villages. Despite the importance of this project, EVR system has faced a number of challenges. The major one is that it requires high investments. Upon looking at the importance of the project,there is need to device a cost effective and reliable way of sustaining this project. Therefore, this proposal aims at proposing the most effective way in which this system can easily be deployed and sustained throughout Malawi .

PROJECT BACKGROUND

EVR is an abbreviation for Electronic village register project which is managed and run by Baobab Health Trust whose main objective is to scale up electronic village registers for measuring vital statistics in rural villages in Malawi. The project started in 2013. It has been deployed in 83 villages in traditional authority Mtema,Lilongwe. This is an area without electricity and the system sorely depends on solar power. Apart from deploying the System in villages the system has also been deployed in 4 health centers around this area, the health Centres include; Ngoni, Ukwe, Mbabzi and Mbang'ombe respectively.

The EVR system consists of the following things; two Raylite Batteries, Solar panels, Mini tower,Desk, Touchscreen,Printer,Scanner,Radios,antennas,Dc-Dc modules,Low Voltage Disconnect,Charge

controller,switch,server, Reset switch, front rear switch, PoE injector for powering a radio.

PROBLEMS ANALYSIS

As stated above, the current system poses a number of challenges, some of the challenges are as stated below;

1. High Investments

- The system consists of power and connectivity equipment which is installed at every transmission point(GVH premises).These equipments(Desk and mini tower) leads to high installation costs.Since installation of the mini tower needs manual labour. Therefore the more the mini towers the higher the cost.

- It also requires intensive user training. This does not take place once since the people the project is dealing with are not conversant with the touch screens.Therefore,to ensure that the people are able to use the system effectively,more trainings are conducted hence increasing the costs.

2.Maintenance costs

- Traveling costs
  The system needs more support. Due to its high downtime, Baobab staff are supposed to conduct frequent site visits to rectify all the issues connected to the site's downtime and make the system usable again.In addition to this, the team is supposed to conduct routine supervision. These are conducted to make sure that all the users that were unable to capture data into the system are assisted accordingly.

- Hardware costs.
  Most of the hardware used do not perform as expected. That is,they report to have a short lifespan(LVDs DC-DC modules and batteries).Therefore, there is need for more replacement hardware to keep the sites up always .

3.Time

- International procurement also poses challenges to the projects timeline. Hardware purchases take longer to be shipped for installation

INTERVENTIONS

There has been different interventions to improve the performance of sites from the time this system was deployed. Some of them includes;

1.Power

- installation of front rear switch
- Introduction of the Low voltage disconnect
- Replacement of charge controllers models(BSV to Steca)
- Change in charge by changing solar panels from 50W to 85W and from one battery to two batteries

2. Network

- Introduction of key transmission points for the mesh network
- Replacement of 5GHz mesh with 2.4GHz mesh
- Replacing Mikrotik base box 5 with Mikrotik metals in some of the sites

3.Touch-screens

- Replacement of the tablets(Nexus 7) with the j2-225 and EBN Touch-screens
- Replacement of the Touch-screen with Tablets and Raspberry pie

4.Support

- Introduction of back to office reports
- Introduction of sites checklist

5.Costs

- Employment of a Community Development Assistant
- Increased battery lifespan (Battery maintenance)
- Replacement of the ATAs with network Jumpers
- Remote site monitoring

RESULTS

Despite all these interventions,the system has been inefficient , being with connectivity less than 80%.Meaning ,both system users and the EVR team can face challenges if the system is be deployed throughout the whole country. The system can not be easily sustained hence making it impossible to be deployed throughout Malawi hence the development of the low cost solution.

SUGGESTED LOW COST SOLUTION

- The system is powered by a single 12vdc 100ah Gel battery
- The battery is charged by a stecca charger controller supplied by 2 solar panels rated 12vdc 85w
- A single boost DC-DC converter with 19.5VDC output for powering a Zebra label printer
- Two 12VDC cigarette sockets

2. NETWORK/CONNECTIVITY

- Each site uses a mikrotik Metal52ac / mikrotik Basebox 5 Radio for mesh connectivity at 2.4Ghz
- The radio also provide wifi connection at 5ghz
- The radio is powered by 12Vdc power supply using a Poe injector and outdoor ethernet cable.
- The workstation is connected to the Radio using LAN through the Poe injector.
- The radio issues Dhcp address for the workstation

3. WORKSTATION

- Raspberry Pi
- Label Printer
- Desk
- Scanner

4. SOFTWARE

5. SUPPORT

ANALYSI*S*

ADVANTAGES OF USING A RASPBERRY PI

- High site uptime.The system consumes less power
- It is portable
- It utilizes small desk space

SECURITY

- Introduction of an alarm system