



Without Wires..

wireless Internet connection for schools in Harare

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Connect Africa – Zimbabwe

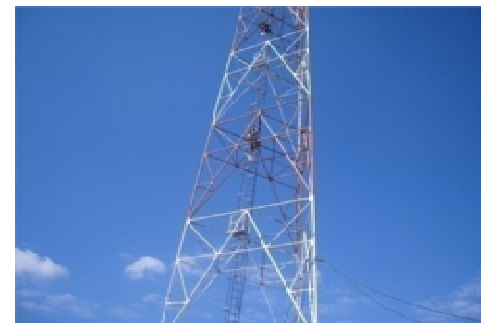
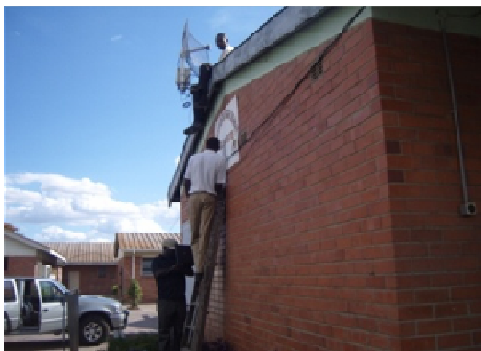
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Profile of project area

- **Describe the area you serve (Population, terrain, income, local partners, current ICTs, electricity/power, GPS co-ords, etc)**
 - High density low income location in Harare called Highfields, one of the oldest suburbs
 - With an estimated population of about 150 000 inhabitants
 - Located in on an undulating but generally flat terrain.
 - Dotted around the suburb are 40metre high point tower lightening masts.
 - local partners are schools (9 secondary schools), NGO called World Links involved in ICT in education, PowerTel – fiber data network provider, Zarnet – a local ISP providing Internet access, City of Harare to access tower lightening masts, POTRAZ the regulator for permission to use spectrum

Site selection

- **The Population's ICT Awareness** – Population is very aware of ICTs
- **What other ICT infrastructure exists: e.g. GSM** – Fixed land line, Mobile GSM networks, fixed wireless CDMA, satellite (C, KU band), broadcast radio, Television
- **Needs assessment (what has been done, if any)** – Needs assessment of all schools in the Highfields district.
- **The Roles of Various Local Actors: e.g. Entrepreneur, local government, community** – The District Education Officer is informed about the project, The School Development Associations.



Description of project network

- **The Technology Level – backhaul, power, wireless network**
 - Fiber backhaul to ISP. Power from national grid at schools and have back up generators. Building a mesh network linking school locations.
- **Wireless network diagram -**
- **Human Resource and Capacity – available skills**
 - The project has access to appropriate skills from the project team and project partners. There are commercial service providers who are willing to provide support.
- **Financial – how is the project funded,**
 - The project has hitherto been supported by grant funding
- **Regulatory environment – is wireless and VoIP legal**
 - The use of licensed bands is allowed and the project has been given permission to use ISM for our purposes. Additional permission for VoIP can be negotiated

Business models

- **Number of clients, running costs, income**
 - The model is still migrating out of a grant case and seeking to make it into a social enterprise.
- **Do you recover costs?** Not as yet



Challenges & Lessons learned

- ***Lesson 1: Define the technology need correctly*** – just as any development action should be in response to an identified need, the same is applicable to ICTs in school networking. The proliferation of new technologies for connectivity into schools can easily distract the focus of the initiative into a “technology” driven solution rather than a project about connecting schools for better learning and teaching. Invariably it becomes tempting to assume that the more the technological solution, the better, without considering the true underlying need uppermost in the mind of the users.
- ***Lesson 2: Firm partnerships assist in effective implementation*** – Technology focused projects are not without their challenges, particularly when using certain technologies that may require skills that project staff have not used or obtained before. An important lesson that has been learnt is that building technology solutions into existing partnerships, where the need is commonly shared, increases the likelihood of success and can deliver learning effects across the partnerships. Both PowerTel and Zarnet are experts in wireless technologies in Zimbabwe in their own right and their knowledge, skills and access to appropriate assets was invaluable for the project roll out. In instances where the project did not have one particular piece of equipment, the partners were able to locate an alternative from their resources and contribute towards successful implementation.

Lessons

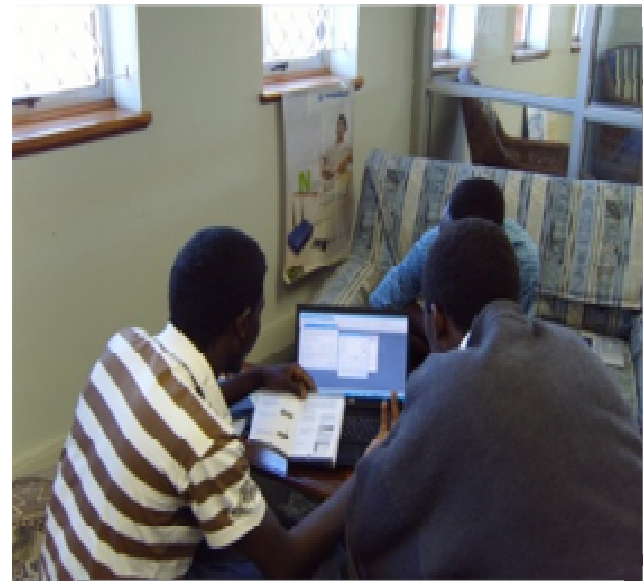
- ***Lesson 3: Correct project timing, can enhance implementation success*** – It was fortuitous that the other partners (PowerTel and Zarnet) were also considering similar interventions and the arrival of this project allowed them to channel their resources into this work. In other words the project came just at the right moment because the partners were also in the process of planning for similar school connectivity interventions.
- ***Lesson 4: Gain the support of stakeholders and document expectations*** - Whether a technology is to be implemented within a new or existing partnership, a pre-requisite for success is to gain the support of all relevant stakeholders. Introduction of a new technology often demands significant financial and human resource investment, and may demand changes to work practices and/or acceptance of an unfamiliar tool. In such situations, it is essential that all those affected have a clear understanding of the purpose of the technology, or it will be a challenge to secure support for investment in, or regular use of, any new system. The project achieved this understanding through signed memorandums of understanding with the partners and the role and responsibilities defined in sufficient detail. It was made very clear to the school that the project would only be able to support the initiative for a period of 12 months ending in December 2007, and beyond that it had to support the investment using its own internal resources, as they have already been doing.

lessons

- ***Lesson 5: Be careful with commercial external service providers*** – It is important to think carefully before embarking on relationships with external technology suppliers. Whilst external suppliers are keen to secure your business and will often offer a preferential rate at the outset, if you are dependant on the provider for technical support be sure to have a clear understanding of the cost and what that support will cover. Equally be sure of their technical competencies and that they will take responsibility for any technical failing.
- ***Lesson 6 – Find a technology champion*** - The presence of an individual with a particular interest in, and commitment to the technology will help to sustain enthusiasm for the use of new tools. In the projects case the headmaster of Kwayedza School Mr Ruzani provided this champion role and his motivation and enthusiasm kept the project going in instances where the challenges seemed overbearing.
- ***Lesson 7 – Economic challenges influence project implementation.*** – It is common cause that Zimbabwe is going through a prolonged and difficult economic period and invariably this has affected the way the project has rolled out. Without doubt, what could have been achieved in a shorter time frame, took much longer and what should have cost less became more expensive since some of the equipment had to be imported. It has been a challenge indeed.

Way forward

- **Plans for replicability and scalability**
 - Participating in this COIN initiative to develop a social enterprise model.
 - Future to replicate in the rest of Harare and Bulawayo



Network diagram current

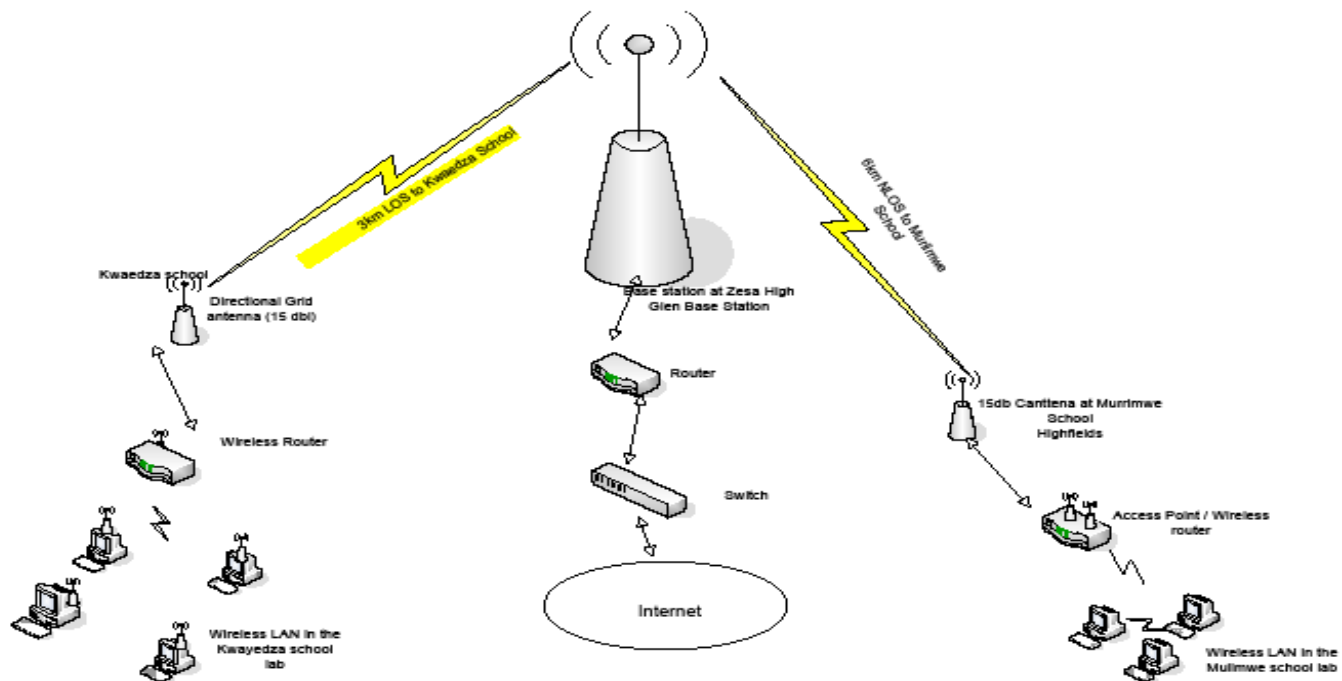


Diagram 1.0: Physical Network layout for 2.4 GHz WiFi, first mile first inch low cost broadband internet connectivity into Murrumwe and Kwaedza Secondary schools in the township of High field Harare, Zimbabwe.

Network diagram future expansion

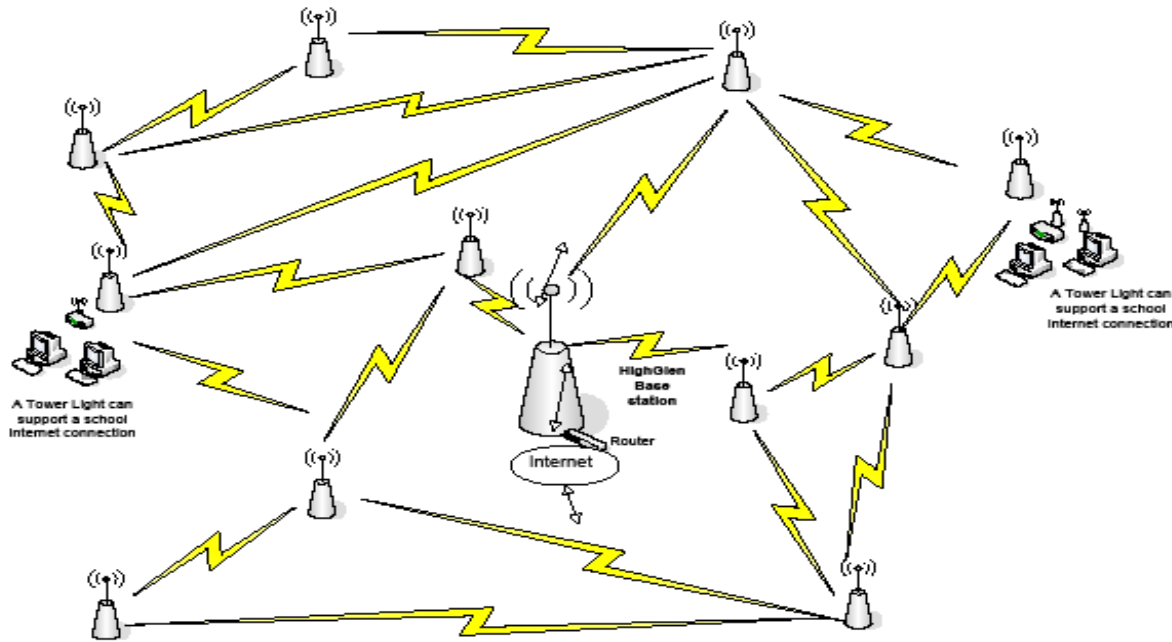


Diagram 1.0: A Mesh network lay-out where every Tower Light node can have multiple paths to the HighGlen base station without a single line of failure.