

## **The other side to the \$100 laptop story**

**By Paul Cullen**

### **Introduction**

How did the farmer in Kenya get a fair price for his pig? How did the fisherman in India get a fair price for his sardines? The answer: simply by knowing what the market price was and not getting hoodwinked by the middlemen. The examples are myriad: people who are poor can improve their standard of living, just by having simple access to information, something we in the developed countries take for granted.

### **Background**

I was prompted to write this article by the publicity surrounding the \$100 computer, the idea being that each child in a poor country should have one. It struck me that not much was being said about the network to which the \$100 computer would connect to. So imagine the child, or the fisherman has a low-cost computer, but couldn't connect to a network! This would eliminate much of the value of possessing such a device. There are 2.5 billion users on mobile networks today, yet only 300 million of those have a broadband Internet connection. What needs to happen to remedy this situation?

### **Market situation**

Network operators are reluctant to serve low-income subscribers, due to the allegedly unattractive business case i.e. high investment per subscriber contrasted with low monthly revenues. We can even observe this phenomenon in a slightly different form in Europe, where network operators don't serve sparsely populated areas. Switzerland recently announced a USO (universal service obligation) which stipulates that every household must have a broadband connection. But what happens if a country lacks a USO, or the means to enforce one? What happens if there is an enforced USO, but people cannot afford the broadband connection? The answer is, that many people will not have access to the Internet.

### **The „telephone booth” paradigm**

Right up until the early 1980s, many people used public payphones, simply because the telephone company had a two-year waiting list, or because the line rental cost was too high. In essence, this was a form of “connection sharing” prepaid with coins. I envisage connection sharing for Internet connections, as the solution to make low-cost Internet access available in developing countries.

### **Network operator economics**

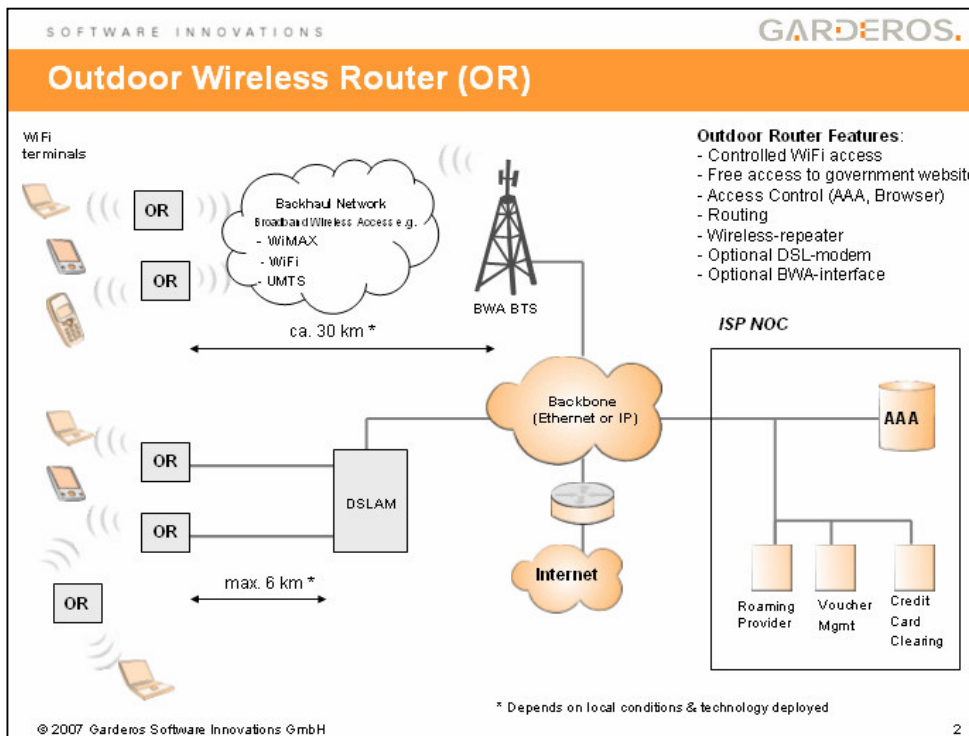
Let's say ten people share one broadband connection e.g. by means of wireless LAN. This reduces the capital investment cost of an Internet connection per “sharing-subscriber” by a factor of ten, meaning that the business case still works even if subscribers are only paying a tenth of the amount that a “non-sharing-subscriber” is paying. Using prepaid vouchers and browser-based authentication keeps down the cost of customer care.

**Government subsidies**

Similar to public transport which is subsidized by taxation, governments are now beginning to offer subsidies and/or tax incentives to network operators to help citizens get affordable Internet access. One prominent example is the Baltic Rural Broadband project ([www.balticbroadband.net](http://www.balticbroadband.net)) part-funded by the European Union. Other examples are also appearing in the developing countries and this will help the business case for the network operators along even further. Governments have also shown a willingness to allow network operators access to public assets on which to install their equipment. Obviously there is no such thing as a free lunch, so the *quid pro quo* is that the network operator is usually required to provide free access to government websites. An excellent example is the Indian government, which provides farmers in parts of rural India with information about dosage and usage of certain fertilizers and pesticides.

**Technically speaking**

We envisage a simple low-cost outdoor WiFi router (OR), connected to a DSL, WiMAX, Flash OFDM, WiFi or UMTS backhaul network. One OR can act as a wireless repeater for another OR, thereby increasing coverage and reducing capital costs even further. A backend system installed at the network operation centre takes care of voucher management and user authentication. This system assigns and enforces quotas for each subscriber (e.g. 100 Mbyte per month) in order to guarantee sufficient bandwidth for each subscriber.



**Conclusion**

The combination of connection-sharing and low-cost computers, helped along by government subsidies, eliminates significant barriers to growing the number of broadband Internet subscribers worldwide. This represents a huge business opportunity for mobile and fixed network operators alike, due to the sheer numbers of hitherto unreached potential subscribers.

**About Garderos**

Garderos is a technology vendor of carrier-grade WiFi access control systems for Internet Service Providers. Garderos consults with ISPs to understand their business goals and provides products and professional services to implement the right technology platform for them.

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