



The Kayamandi Fibre Project Playbook

Table of Contents

Introduction	1
Chapter 1: Community Engagement	7
Step 1: Connect	8
Step 2: Appoint a Community Liaison Officer (CLO)	8
Step 3: Observe local politics	9
Chapter 2: Network Design and Build	10
2.1. Network Design	14
2.2. Network Build	16
Chapter 3: Building the Commercial Engine	18
Chapter 4: Create a distribution channel for brands	23
Chapter 5: Digital Content	24
Chapter 6: Partners	27
Final Word	29



Introduction

What is the Kayamandi Fibre Project (KFP)? What are these crazies doing?

Simple. KFP is about how to make telecoms better.

That's what we're trying to do, starting by involving local communities, and ending with a world class product that is affordable.

Before we get to the rest, how did the telecoms industry lose its way?

Telecoms is full of amazing people, dedicated to a great cause: connecting people to one another and the internet.

The trouble is the legacy. The first mobile networks were built on the assumption that there would be 60,000 customers after 5 years, and voice rates were priced accordingly.

It took six months to reach their five year target, twenty times faster than planned. But the retail rates were not adjusted accordingly, which means profits were twenty times higher than planned.

That was great for fuelling ubiquitous mobile network coverage, but ultimately bad for consumers because shareholders simply can't decouple expectations from the heyday.

The other thing was community buy-in. Originally, cellular was a Godsend. Communities that had one landline per 100,000 people suddenly had access to one phone per person, anywhere anytime.

Some operators, like Vodafone India, actually paid a revenue share from base stations to local communities, engendering staunch loyalty.

Over time, inevitably, that changed. Operators became multinationals separated from the local communities that used them and generated their revenues.

That led to a disconnect between locals and the service they used, and more and more theft and vandalism of base stations. Solar panels, batteries, wiring became fair game. Operators were forced to spend more money on security, maintenance and replacement, and they passed these costs onto their users via higher retail rates, which in turn engendered more discontent and more theft.

The opposite of a virtuous cycle.

So we decided to go back to first principles.

Abandon the legacy thinking and systems of telecoms.

Start afresh. Zero cost budgeting. Blockchain ledger systems. And most NB: ask the question: What does the customer want?

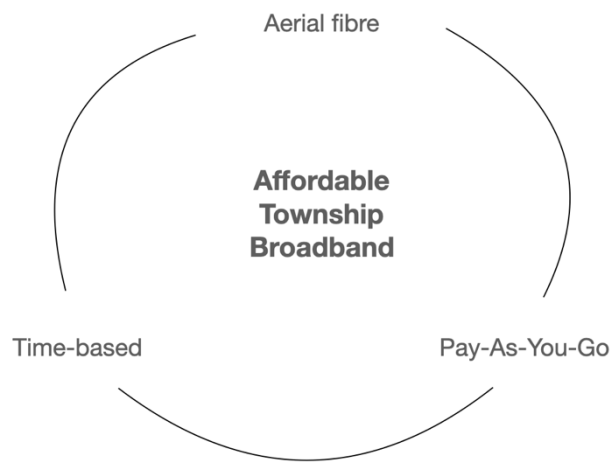
This is perhaps the part where traditional telcos have gone most awry. Over the years the product complexity has amplified to the extent that no one understands what they're getting. That breeds distrust, and telcos have devolved from being amongst the most trusted brands, to the least.

What do customers want?

Simplicity. No bill -shock. Fast affordable internet.

So, we worked backwards from there to come up with the most transparent and understandable pricing coupled with the fastest internet

The Holy Trinity:



Let's start with **affordable**.

Current mobile data rates are not affordable. Which is why no one, not even the wealthy, use mobile data to watch Netflix.

Only fibre can bring the price point of internet low enough for true high speed, uncapped internet. Why are fibre networks the best?

Firstly, because there's no interference.

Second, because they're aerial. No need to dig trenches.

Third, because optical fibre networks carry data at the speed of light. There is no faster speed. To put it in perspective, the spectrum range at which light operates is up to 1,000 times higher than for 5G wireless networks.

If you compare the internet to water, think of fibre as tap water, and mobile data as bottled water.

Fibre is the tap water you use to wash your clothes, cook food and bathe in. It's cheap and it's plentiful.

Mobile data is the bottled water you use when you're on the go. It's expensive and convenient.

Fibre is how you make the internet affordable.

Second, it must be **Pay-As-You-Go**.

What is PAYGO?

It's a way of making the internet affordable. Breaking it into bite-size chunks so that people can Pay-As-They-Go, rather than be forced to pay upfront for a month, and then find themselves short on cash for unexpected emergencies.

Selling fibre internet on a daily, hourly and per minute basis is the second pillar.

And lastly, it must be **time-based**.

If you can't measure your consumption, you won't trust your internet. In other words, if you can't tell how much data you're using, then you won't use data for the risk of spending money unknowingly.

That's the problem with traditional mobile data. It is quantity-based, not time-based. You pay per Meg or per Gig. But how can you tell how much data your phone is using?

How can you be sure that Google Maps, or Siri, or Microsoft or any of a million apps are not quietly sucking data in the background, and stealing your airtime?

How do you measure how much data your device is using?

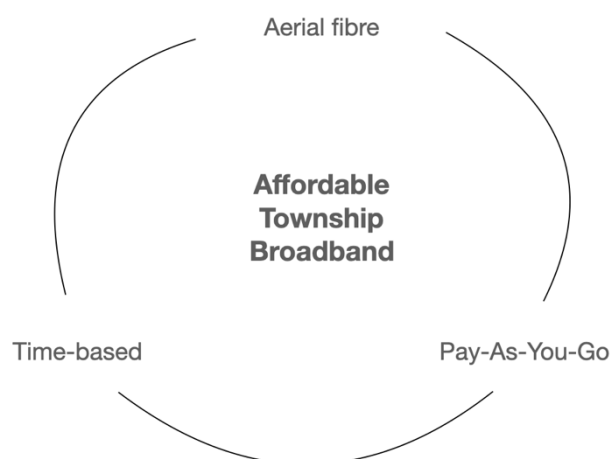
You can't. There is simply no way you can know how much data your device is using at any given time.

That's why the 3rd pillar that unlocks affordability is **time-based** billing.

You don't buy data. You buy time.

And you can measure how much you're using and how much you have left, simply by **timing** it.

Aerial fibre, Pay-As-You-Go and time-based billing: The Holy Trinity



These are the three pillars that unlock affordable township internet.

And that's what we've done in Kayamandi, a township with a population density 25x that of middle-income suburbs.

We're bringing time-based Pay-As-You-Go aerial fibre to over 4,000 homes, connecting over 15,000 people for R5/day uncapped 24hrs.

Profitable uncapped township fibre for every single home.

As this playbook will illustrate, not only will township fibre unlock the informal economy, opening a distribution channel for insurance, stock-broking and other life-changing services, but we'll have brought ubiquitous fast affordable internet to every child trying to home-school, every entrepreneur trying to start a business, every granny wanting to use online banking, and every bored unemployed youth wanting to play computer games.

And that's just the beginning.

There are at least fourteen million homes in townships throughout South Africa.

Millions more in Accra, Nairobi, Lagos, Addis Ababa, Dar Es Salaam and cities in the rest of the world.

We've created this playbook so that everyone, everywhere, can profitably deploy township fibre. There are no more excuses for the digital divide. Everyone can have fast, affordable internet.

This is the Kayamandi Fibre Project.

Chapter 1: Community Engagement

Building a fibre network in a township is no easy task. But getting it right means bringing millions of people online. It means expanding the market of meaningful internet participants and delivering value to society. It means bridging the digital divide.

So how do we get from *here*, a world plagued by connectivity disparity, to *there*, a world where digital equality reigns supreme?

It starts with community. Each network build is as much a community engagement project as it is an engineering project.

Kayamandi is first and foremost a community. One big tangible, in-your-face community. Humanity at its core. It's beautiful. It's complex. It's dynamic. It's alive. And it's thriving.

How does one become part of this thriving system?



Step 1: Connect

It all starts with people.

Get to know the community you would like to work with. Connect at a human level. Learn about their needs and dreams.

Wherever you have an in, start there. Then make sure you chat with the churches, the taxi officials, the business community, the schools, the councillors, the policemen. Chat to everybody you can possibly chat to.

Then ask for permission to work with them. Explain what you will be doing. Bear no secrets. Ask for advice. Hear them out. You're moving into their territory. And they know best how to operate in the complexity of township life. Begin with respect and end with a sustainable network changing the lives of millions.

Step 2: Appoint a Community Liaison Officer (CLO)

Appoint a community liaison officer to run relations on the ground. Do this as a matter of importance.

Your CLO is your defence against cultural complexity.

The beauty about township life is that it is a melting pot of people and cultures. This vibrance also brings with it a lot of noise. Noise which hampers smooth operations. Without your CLO operations come to a standstill.

What are the makings of a CLO?

A person of stature with community influence. They're known and they're respected. They're business savvy. They're a hustler. But most importantly they care about doing the right thing. They want to make a difference.

Step 3: Observe local politics

To the untrained eye township life seems chaotic. And to some extent it is. But it also works.

Identify the structures which uphold society and work with and through them.

Run town halls with groups of reference in the community. Successful town halls mean you have support to bring a network into the community. 100% backing.

In Kayamandi this meant working with ward and municipal councillors to ensure everybody's needs were considered and where possible met.

Chapter 2: Network Design and Build

Assuming you have community buy-in, it's time to build a network.

Before breaking ground understand the forces driving project success.

Satisfy all of these before proceeding:

1. Commercial Viability
2. Capital Structures
3. Community Engagement

1. Commercial Viability

Understand your revenue potential.

Heed the iron law of the market: size and quality matter. No matter how good your product is, a bad market will fail you. Ensure the market can support healthy and sustained cash flows.

What are the makings of a good market?

a. Population Size

Revenue is generated per device. There is a direct relationship between number of devices and people. The more people, the more devices, the more revenue.

b. Income Per Household

The more disposable income, the more online browsing. Take note of employment rates and supporting economies.

c. Available Alternatives

Go where the competition isn't.

Next: manage your costs.

Large projects are notorious for budget overruns. Budget overruns kill the dream of affordable internet. Pursue collaborative or fixed cost build contracts to avoid unplanned capital expenditures.

2. Capital Structures

Choose the right partners.

Building a network is capital intensive with returns measured over a 20 year horizon. Find capital partners who can and want to support this. Alignment with capital partners frees up capacity to focus on execution.

Choose your technology wisely.

Your choice of technology partners is a political statement with financial implications. Technology is either produced in the West or the East and unlocks respective financing. Technology partners determine financial partners.



3. Community Engagement

The path to sustainable long term growth lies in creating shared value.

Build a network for the community, by the community.

Consumers value an object more if they have direct input in bringing it to life, popularly known as the IKEA effect.

Do this by:

a. Facilitating Community Participation

This is an exercise in brand awareness and reputation management. See chapter 1.

b. Creating Employment

Where possible, employ locally. Kayamandi and townships across the rest of the country are teeming with employable labour.

Use employment as an opportunity to elevate financial integrity in the community.

The following jobs were created in Kayamandi:

1. Painters transformed spaza shops into billboards
2. Field teams facilitated permission collection from local residents to build the network on their property. A combination of sales and compliance.
3. Local residents constructed the network i.e. planted poles and strung fibre
4. Local security companies were used to ensure safety on the ground
5. Resellers continue to distribute product

6. Ongoing customer service

c. Establish Profit Share Structures

Make the community shareholders in the network. Set up a community trust and make it a shareholder of the infrastructure company. The more the community uses the network, the more they benefit.

Now, it's time to build a network.



2.1. Network Design

Three factors influence consumer purchasing decisions: quality of experience, price, and customer service. In that order.

Build a network which delivers superior quality, at affordable prices, at scale.

To do this, get design right.

What complicates design is township planning (or the lack thereof). How do you get a fibre line to every household if there is no easy way of knowing how many homes there are? Unfortunately, there's no easy answer. Find a way to get a count of all households in the community.

Then identify backhaul options and potential POP locations. You can now start designing the network.

A good network design enables:

1. Best in class customer experience
2. Efficient capex spend
3. Fixed or collaborative build contracts

Then design for **risk mitigation**.

Consider all township risks i.e. fire, vandalism and civil unrest.

Fire risk in townships is almost entirely limited to informal settlements. Where there is a mix of formal and informal housing design so that fire should become a reality, network outage is limited to the informal area.

The same applies to vandalism and civil unrest. Limit vandalism risk by maximising use of private property.

In short, your network is your key productive asset. If it is down, you have no business. Prevent downtime at all costs.

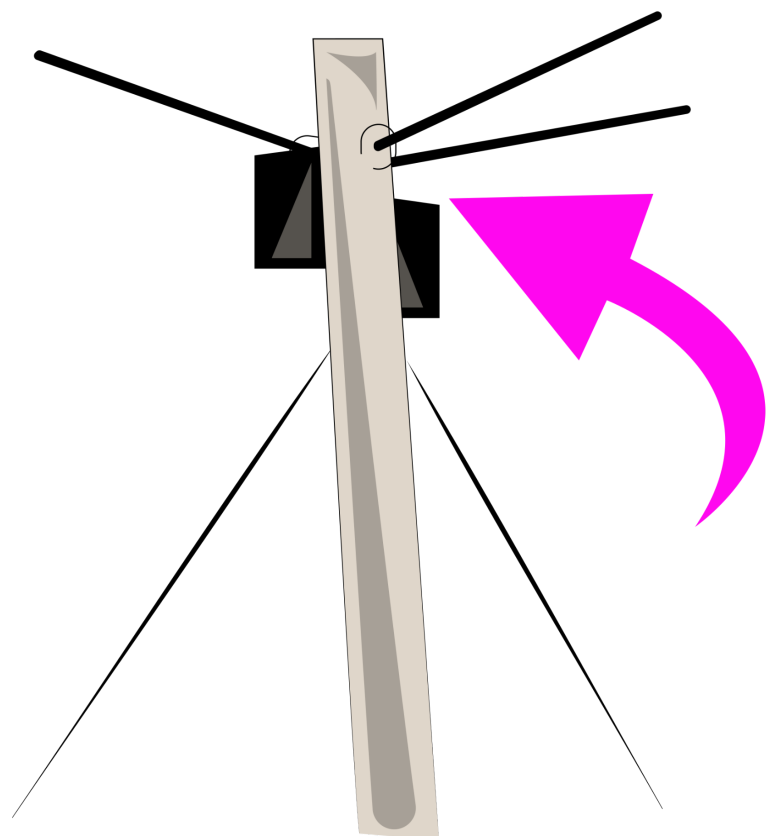
Deployment methods:

There are two deployment methods to create a ubiquitous network: fibre-to-the-home drops and fibre towers.

Fibre towers are best suited to connect informal housing establishments whilst fibre drops are best suited for brick-and-mortar coverage.

A successful outcome of the design process is:

1. Network build plan with testing protocols defined
2. Fixed cost or collaborative build contracts are in place with civils and fibre contractors
3. A wayleave in hand granting permission to build



2.2. Network Build

Execution is everything.

If you're outsourcing the build, take time to get the right build partners on board. Make sure you're fully aligned on the task at hand, the contractual relationship and the philosophical approach to the project (we have experienced this to be different to traditional construction projects). Where possible work towards collaborative contracting.

Next, appoint a project manager to oversee project schedules and smooth stakeholder relations. At all costs avoid delays and promote aerial deployment. Delays invariably drive up project cost, as does trenching. Make quality, documentation, and local employment their key deliverables.

- Identify local employment opportunities. The network build provides ample opportunity to employ local labour. Rule of thumb: if it doesn't require a professional degree or specialised skill, it can be done locally.
- Build segmentally. Test for quality as you go.
- Documentation reduces complexity in the long run. Minimise process overhead by systemising information capture.

Turn a construction project into a **brand awareness campaign**. Translate brand awareness into sales once the network goes live.

The nature of a mid-block aerial fibre deployment is one of community engagement. Practically speaking, poles need to be planted in yards and fibre needs to be strung.

In brick-and-mortar suburbs there are 5 key touch points with landlords:

1. When permission is requested to plant the pole on their property
2. Planting the pole
3. Stringing the fibre
4. Requesting permission to install a router in their home
5. Installing the router

Use each touchpoint as an opportunity to build brand awareness. Train your teams on the message to be delivered: fast, affordable, pay-as-you-go internet.

Double down on customer relationships by operating with precision and respect. This means:

1. Treat every household like royalty
2. Involve the household in deciding where the installation takes place in their home
3. Leave homes cleaner than when you arrived

The basics speak volumes.

Informal settlements make use of a different deployment method: fibre towers. This means no home visits on installation. No messenger delivering the good news of connectivity. But the message still needs to be delivered. Resellers are a great way to achieve awareness and ultimately drive user uptake in informal settlements. More on resellers in chapter 3.

It's time to get selling.

Chapter 3: Building the Commercial Engine

The three commercial commandments of building a telco in a township are:

1. Build the right product
2. Establish a reseller network
3. Create awareness

Rinse. Repeat.

Let's dive into some detail.

Step 1: Build the right product

a. Ubiquitous network

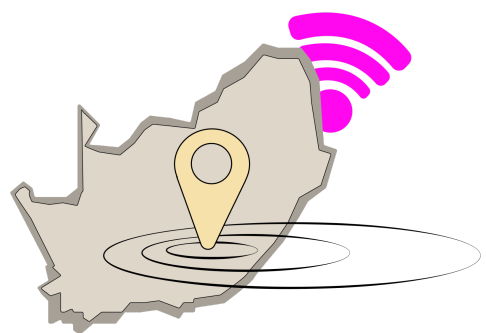
You need a ubiquitous network. What does that mean? Users can access the network regardless of where they move within it. Whether you're in your lounge, at the spaza shop, or having a braai in your neighbour's backyard, you're connected. No unique SSIDs. No unique passwords. Connection made easy.

Patchy networks don't work. If the customer struggles to find signal, they won't use your product.

b. Single SSID

To get this right, simplicity is key.

No product differentiation on speed. It's the same superfast internet everywhere, on the same SSID. Seamless roaming.



c. Time-based

The product must be defined on **time**, not quantity. Why time?

It's easy, it's measurable and it's a universally accepted truth. Generations of people have learnt to calculate the cost of a phone call by measuring time.



Using time as the metric of measurement makes the product easy to understand. It removes bill-shock.

Time-based billing results in trust, and trust results in loyalty. Loyalty is an annuity revenue stream.

Time-based can take on many flavours. Create daily, weekly, and monthly products. Better yet, allow for a customisable time period. Let the user choose how much time they can afford. Don't have R5 for a full 24-hour bundle? No problem. Tell us how much money you have, and we'll let you know how much time that buys you.

d. Digital wallet

By using VulaCoin, a digital wallet, to sell vouchers, you enable customers to swap real-world currency into time-based coins, which can then be moved around with no friction costs.

VulaCoin enables customers to buy, sell and send VulaCoin. VulaCoin can then be used to buy PayGoZo internet bundles.

e. Pay-as-you-go (PAYGO)

Make your products **PAYGO**. Bite-size chunks of internet access. For users it means no contracts and no long-term obligation. It



means an almost instant sign-up process. It means access only when you need it and can afford it.

Step 2: Establish a reseller network

Distribution is key.

The more distribution, the more opportunity for sales.

a. Establish a reseller network to drive growth

What and who is a reseller?

A reseller is anybody with a VulaCoin wallet who would like to sell PayGoZo products. Resellers get access to wholesale prices and can sell to customers at retail rates.

Use resellers as a leverage point into the township market. Enable them to be de facto brand ambassadors and make it worth their while to sell your product. In time they will become a great platform through which to launch new products and promotions. And an invaluable source of feedback from users.

b. Actively build a reseller network

Remove all barriers to purchasing your product. Actively recruit resellers.

Work with your CLO to recruit entrepreneurially spirited individuals in the community. In Kayamandi this meant working with ward councillors to identify suitable candidates.

Educate your recruited resellers on how to make money by selling your product. Give them the tools needed to be good salesmen and women.

Build a reseller network that distributes market power through the community to avoid price collusion.

Step 3: Create Awareness

The sooner you get people buying data on your network, the sooner you'll be making a profit.

Launching a new connectivity offering is tricky, no matter how appealing the product.

Take no chances, raise awareness from day one.

The good news: you're starting from a clean slate. Take the time to build a memorable brand.

Start with trust. Trust is transparency.

a. Educate

Help people understand who you are and what you have to offer.

Here education is your greatest asset. Educate people on how the product works. Educate them on how to buy it. Educate them on what's possible when they use it. Educate them on how it benefits their community. This is a mammoth undertaking. Use your reseller network to help you.

For starters, it's time-based, not data-based. Drive this message home. Again and again and again. Help people understand the difference between a time-based vs a data-based product.

b. Activate

The best way to educate is to let people experience your product. One way to do this is through activations.

Bring your brand onto the streets.

As your network goes live, host activations. Be bold, be bright. Make yourself known.

Activations are a great opportunity to meet your customers. Engage with them. Gather feedback on their likes and dislikes. What's confusing? What do they love?

With that in mind, there is only one metric for successful awareness campaigns: Network usage.

If no one is buying and redeeming vouchers on your network, you're failing to make people aware that you have a network.

Place resellers at the centre of your activations. Give them the opportunity to make sales. They make money and educate your customers at the same time. Empower your resellers, make the hustle worth their while and they'll take care of your customers.

Activate often.

Consistency beats intensity. Set up a team of local all-stars capable of running activations. Run weekly weekend activations coupled with monthly online competitions. Build brand awareness. Build momentum. Activate often. Remain top of mind.



Chapter 4: Create a distribution channel for brands

What does every good business do?

Listen to its customers.

Today, in the informal market, this is easier said than done. Surveys beg for in field teams. Digital marketing is, well, limited. A lot of friction. A lot of expense. A lot of shooting in the dark. In the world of tomorrow this is changing.

The confluence of PAYGO internet and VulaCoin technology make proactive customer engagement possible, at the click of a button. Fast, frictionless engagement.

Unlock network access through bringing brands closer to their customers.

Brands get access to the informal economy, users get access to the network, the network gets funded.

How exactly?

VulaCoin. Through VulaCoin users are able to choose their checkout method: self-funded or sponsored purchase.



Sponsored means browsing time dedicated to watching an advertisement or engaging with a survey linked to the corporate sponsor. A small price to pay for a full 24 hours of internet access.

Chapter 5: Digital Content

While telecoms is traditionally about building networks and, well, connecting people it is also about building societies and making the world a better place.

As part of the Kayamandi Fibre Project it is our mission to help elevate parts of society which are integral to creating long term value. We believe that starts with education, entertainment and sport.

We're actively building a pay-as-you-go digital content platform to deliver life-changing services such as insurance, education and entertainment. Next, we'll turn our attention to sports.

Why pay-as-you-go?

Because the internet has a pricing problem. Right now it's structured to service the high end of the market at the expense of everyone else. The best content tends to live behind paywalls. Whether you want to watch Netflix or read News24, you're going to need two things:

1. A credit card
2. A monthly subscription

Subscription models are great. There is no better way to guarantee an annuity income. Plus you're not relying on your customer to choose your product every time. But subscription models also exclude a whole segment of the market.

This brings us back to pricing.

Size determines price. This is the power of scale in the market. The more people that consume your product, the cheaper you can price it. The cheaper you price it, the more people are able to afford it. The more people who are able to afford it, the more people consume it. And so it goes. Assuming you have content the market wants, this is a sure way to establish market dominance.

But this is not the way the internet is structured today. Today, subscription is king. The problem with this is that the portion of users who can afford subscription products without so much as a glance at their bank account is miniscule compared to the market who opt for pay-as-you-go. This does not mean that 90% of the market doesn't want Netflix. No, it's just that they don't want Netflix and other digital products in the way they're currently being sold.

So, we're giving the customer what they want. No long term commitments, no credit cards. Access to digital products and services, as and when they need them.

Pay-as-you-go.

Bite size chunks of access to suit the cash flows of township communities.

And with that we're bringing a whole new market of users into the digital economy.

More people on the internet means more people with access to information, with the opportunity to self educate, to entertain, to communicate, to trade. It means more people with the opportunity to build a better life.

How is this possible?

It comes down to business models. The business model of digital media is really no different to that of building a fibre network, or any other kind of infrastructure project for that matter. The majority of costs in these models are sunk costs. In other words, it costs the same to deliver one movie, or one online lecture or one funeral policy to one person as it does to 1 million people. Once you know how many people you're targeting you can set the retail rate accordingly.

Today's retail rates have been skewed by the fact that 90% of the population is excluded from subscription models. With the target market limited to 10% of the population, prices have been driven up, further excluding the majority.

We're changing that, with FIBERTIME™ : A platform which delivers bite-size chunks of digital content to township communities.

Need insurance? FIBERTIME™

Education? FIBERTIME™

Entertainment? FIBERTIME™

Gaming? FIBERTIME™

E-Health? FIBERTIME™

Appropriate savings product? FIBERTIME™

Township E-Commerce? FIBERTIME™

Chapter 6: Partners

Building the Kayamandi Fibre Project was and is a team sport. As the African proverb goes: If you want to go fast, go alone. If you want to go far, go together.

So who is this bunch of crazies changing the face of telecoms?



1. PayGozo

PayGoZo is the world's first true pay-as-you-go internet service provider.

They're on a mission to democratise internet access by providing affordable, high-speed internet to under-connected communities.

PayGoZo is setting out to prove that bridging the digital divide is indeed good economics.



2. VulaCoin

VulaCoin makes micro payments possible. Without digital micro payments, consider the township digital economy a non-starter.

Traditionally transaction costs make small denominations sub economical. VulaCoin solves for this by zero rating inter-wallet transaction costs bringing the total transaction rate down.

VulaCoin is uniquely positioned to service ISP's with a lightweight OSS/BSS system, payment gateway and digital wallet.



3. Liquid

Liquid provides us with world class backhaul, ensuring we can deliver on our promise of super fast internet at affordable rates.



4. Hexatronic

Hexatronic's power-over-fibre solution is powering up our network and keeping our communities online when Eskom cannot. This means users can continue using the network, despite power outages.

Final Word

Does this model work everywhere?

As much as we'd like to say yes, in truth the answer is no. But there's a sweet spot where it thrives. It starts with population density.

Population density + economic opportunity + community stability = a winning recipe

Kayamandi is where it thrives today. But Kayamandi is not where it ends. There are many more communities out there, just like Kayamandi, waiting to be connected.