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UK Fibre to the Premises Proposal

Executive Summary

This is a proposal to install and operate a Fibre to the Premises network in the UK. This is to replace the existing copper infrastructure at give unlimited bandwidth to all the premises in the UK. This is to be done as a third way venture, so all profits are re-invested back into the services.

This network will carry Telephone, Internet, Television and on demand services. It will offer very high bandwidth Internet access, 3D HD TV on Demand and any other server yet to be imagined.

It is clear that the two biggest future requirements for home networking will be access to Cloud Computing to work from home and on Demand Television and Film of entertainment. Employers are moving their business to the Cloud and their workers out of their offices to their homes. Entertainment is moving from linier scheduled Television to on Demand programming. The current ISPs cannot deliver the bandwidth required to do this using any of the current last mile technologies.

As this is a major infrastructure build and will require a great deal of financing, this will be in the area of £20 Billion over the first 10 years. The plan would be to pay this down over the following 10 years while completing the build to the rest of the UK.

Fibre to the Premise is the 21st Century mechanism of connecting the last mile, Copper is a 19th Century solution, the UK needs to move into the 21st Century as one of the leaders like Great Britain did in the 19th Century.



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1. The Business

To provide and operate an open access single mode fibre network to every premises in the UK as a third sector, not for profit company. This is to enable very high speed broadband and other advanced services to everyone in the UK. This service is to replace the current copper last mile with fibre optical cable.

1.1. Description

The main function of the business will be to operate and manage the fibre optic network. It will hold the billing relationship with the customer but will not provide any of the services beyond the physical connection service. Separate service providers will provide the end user services. These service providers will be the other customers of the network. The service providers will provide the TV, Broadband, Telephone and additional services as requested by the customer. The build of the network would be contracted out to specialist Fibre installation companies. As will all the customer installation and servicing.

1.2. Marketing

The main marketing will be aimed at getting early adopters and people who require very high speed broadband onto the network first. Once new customers are exposed to the services then there should be strong word of mouth. The initial build areas can be defined by online contests to find high concentrations of initial customers. But the main sell will be from the service providers competing for the existing user base and growing the install base. There would be strong sells in areas that get poor Digital TV or poor broadband coverage.

One of the issues in marketing this product is the current use of confusing or misleading marketing terms from the existing service providers. In particular the term Fibre to the Home, this currently means Fibre to the Cabinet. There will need to be an element of public education to enable them to make more informed choices.

1.3. Competition

The competition is the existing access companies:

1. BT for traditional phone and broadband over a pair of copper.
2. Virginmedia for phone, high speed broadband and TV over broadband cable.
3. SKY for TV services over satellite.
4. FreeView for free TV services over Digital Terrestrial.
5. FreeSat for free TV services over Digital Satellite.

All these services can be provided via the FttP network with greater bandwidth than is possible over all the current mediums. To provide channel after channel of 3D HD TV and On Demand services even the bandwidth from Astra 2 will not will not be enough. These existing major service providers are probably the best companies to provide the services on the FttP network. The only restriction for them will be the enforced lack of exclusivity for these service providers.

1.4. Personnel

1.4.1. Chairman and Board of Directors

The Chairman must be a well-known and respected figure within the Telecoms industry, they will be key to providing the credibility to the investors and to attract the right quality of Directors. This will lead on to a good quality of candidates for CEO.

1.4.2. CEO

To lead the management team, provide the culture and ethos of the organisation.

1.4.3. Financial Management

The Financial management will control the investment capital, ensure that this is used most efficiently to provide maximum return within the whole vision of the organisation. To report on the progress of the organisation against projections of growth and highlight any issues.

1.4.4. Property Management

Property management is an area where cost will need to be tightly controlled, but is also an area on revenue. Land or premises will have to be purchased or let to house all of the equipment throughout the country. As well as data centre space and offices, all of these have the potential to generate revenue if it is feasible to sublet any of the space. For some service providers there will be an element of co-location to integrate with the FttP network.

1.4.5. Marketing

Marketing will have many elements to it. There will be public education to sell the differences of this service compared to the Fibre to the Cabinet that the current Tecos are offering. Then there is the sell to the existing service providers to get them to start developing their services to integrate with the FttP network. Then next area is to get new entrants to develop new products to use the potential of the FttP network that will be available.

1.4.6. Build Management

Build management will deal with the planning, build and integration of new parts of the network as and when demand and financial requirements are met. They will find and engage specialist fibre installers to install all the physical elements of the network, to connect the fibre from each premise back to its local distribution centre. Once that is complete then the quality of the work will be confirmed as part of the commissioning process.

1.4.7. Operations Management

Operations management will run the network infrastructure, once it has been commissioned by build management. They will be responsible for monitoring the network to ensure that it is available within the agreed service level agreement between it and the customer and provider management. Any faults will be fixed internally or passed on to 3rd party organisations depending on the type of fault.

1.4.8. Customer Management

Customer management is the public frontend to the organisation they will deal with the end users. This will be for both installation and faults, giving the customer a single point of contact for all issues. Customer management will have to liaise between Operations management, Provider management and 3rd party organisations to complete end to end fault

resolution. They will be first point of contact for all technical, service and billing requests for all the customers.

1.4.9. Provider Management

Provider management will handle the relationships with the service providers. To ensure that are able to full utilise the FttP network. Deal with any issues that come up between the two organisations. For faults they will front onto the Operations Management function for speedy resolution the issue. This will include billing, contractual and technical issues.

1.4.10. Billing Management

Billing management will operate the billing system, this will cover both providers and customers. They will ensure that the customers are accurately billed and are up to date with their payment. They will then mediate the billing between their billing system and the services providers billing.

1.4.11. Research and Development

Research and development will work to develop applications and tools for running the business and automate as many processes at possible. They will work on standards for the APIs for the set boxes, customer portals and service provider portals.

2. The Technology

The network work will be based on running single mode fibre optic cable to each customer premises in the UK back to a distribution centre. At the distribution centre the fibre will be connected to network equipment to provide network service. As each premise is connected on a dedicated fibre to the distribution centre any manner of service could be delivered down that cable. This will provide enough bandwidth to carry Telephone calls, very high speed broadband, high definition broadcast television and on demand television services.

2.1. Initial Offering

Initially this will be based on running gigabit Ethernet etherchannel down the fibre to the customers equipment, this would allow segregation of services to the customer. The network core will be Carrier supporting Carrier Multiprotocol Label Switching so the service providers can operate services independently of each other using a shared FttP network.

2.2. Customer Premises Equipment

All customers will have the fibre to their premises connected to standard customer premises equipment (CPE). This device will have a published application programming interface (API). The end to end service will be monitored by the operations centre and who will control access to the fibre network. The full function CPE will have a single mode fibre interface, telephone socket, hard disk drive, TV output, audio output, wireless, optical disk, infra-red remote and an Ethernet switch. This will allow multiple services to be delivered straight to the customer replacing the function of the existing telephone and broadcast television systems.

2.3. Customer Offering

Customers would initially get the fibre connection to their premises and a standard CPE. They would then subscribe to services from separate service providers, with the infrastructure company barred from providing any services itself. These services would start with broadband, TV and telephone. As the platform matures then more services will become available. It will be possible to get multiple services from different providers though the providers will be free to bundle packages together with savings for the customers. In the same way it will be possible for the customer to get each service from a different provider or multiply providers like TV from two pay TV systems. Another possibility would be data from two providers, one say for Internet access and a second for a corporate VPN.

2.4. Service Provider Offering

The offering for the service providers will be varied, they will be able to do full local loop unbundling (LLU) or provide services to the standard CPE.

2.4.1. Local Loop Unbundling

For LLU the provider will rent the fibre from the distribution centre to their customer's premises and rent space in the distribution centre to house their equipment. They can then provide whatever services they wish down that fibre to their customer. They will bill their customer themselves and will be billed for the rental of the fibre and the hosting space separately. This mirrors the BT Openreach model for the existing copper Local Loop.

2.4.2. Services to Standard CPE

With the services to a standard CPE, the service providers have access to the entire user base. They will be able to build their services using the published APIs and provided the services via a connection to the FttP network. This will be either on network hosting or hosted externally, the provider will be billed accordingly. The customers will then order the service via the CPE or other ordering mechanism, similar to existing application stores. This allows new entrants easy, low cost access to the customer base or large organisations able to use their existing infrastructure.

2.5. Platform Development

The Standard CPE, other network access and billing will be developed in consultation with the network stakeholders. These will be the FttP Company, the service providers and the user community. This will allow innovative services to continue to be developed without giving any single group overall control of the direction of development. Good Governance of this process is crucial to try to stop the bigger players in the services market getting a dominant position on the technology to squeeze out smaller players.

2.6. Future Services

In the future, there is no limit to the services that could be provided. Bandwidth limits would be removed by the use of single mode fibre to the premises. If the initial gigabit was no longer sufficient then the optics at either end of the fibre can be replaced to increase the bandwidth, the fibre last mile will no longer be the limitation to increasing bandwidth requirements.

3. Financial Data

This is a major infrastructure project and will need a great deal of finance to initiate the building program. The build will be phased and as each phase is completed then customers will be connected and revenue will be generated. This revenue will be used to service the dept. or finance further build.

3.1. Cash Flow Model

The simple model of the potential cash flow, generated from some reasonable assumptions. The result of this model is that it works as a business. The level of borrowing is dependent on the speed that the network is built out at. The program will become self-financing by about year 10 and can afford to self-finance the more expensive rural customers shortly after.

3.2. Borrowing Requirements

The best model has the requirement to borrow £2 Billion per year for the first 10 years to give a peak borrowing requirement of £20 Billion. For this you will connect 80% of the urban high density premises and 50% of the other premises to the FttP network. At this point enough revenue will be generated to start to pay back the financing, this will take a further 10 years to do so. At this point 99% of premises in the UK will be connected by FttP and will have the ability to receive all of the fibre based services. The fibre network will be generating a surplus over operating and finance costs of approximately £7 Billion per year.

3.3. Income Streams

The main income will be from the last mile rental from the service providers, but there will be a number of additional revenue streams. These will include operating the billing for the

providers, leasing space in the distribution centres, additional bandwidth services and consultancy. There will be additional soft streams of income for example services referrals, where the providers pay to promote their services to new customers.

- Fibre to the Premises
- Local Loop Unbundling
- Billing Management
- Lease of Distribution Centre space
- Consultancy
- Service referrals

3.4. When the Build is Complete

As this is a 3rd way venture with no shareholders, then once the borrowing is paid down then the only thing to do with the profits is to re-invest in the network. Initial this is the way to build the FttP out to unprofitable locations. The next stage will be to minimise the access charges to give the users the best deal. There will still be a reasonable surplus this would be used for more socially aware activities like sponsoring national teams for example the British Olympic team, Rowing, Cycling or support more grass roots activities.