Case study

How Tameside is building an advanced digital infrastructure

to transform services and serve the local economy using a co-operative model

The Tameside ‘Thin Layer Model’

Using an innovative approach, Tameside MBC is working with partner organisations to build a new, advanced digital infrastructure to serve public sector, businesses and citizens.

The ‘thin layer model’ pioneered in Tameside facilitates rapid deployment of new, ‘full fibre’ infrastructure, while avoiding some of the complications and downsides associated with other public sector demand aggregation, leveraged and co-investment models.

The thin layer model is pragmatic and ‘agile’. Tameside and its public sector partners invest in new infrastructure assets where a business case can be made to meet needs. Then those assets are sewn together to form a coherent, integrated infrastructure that can be shared using a co-operative. In general the business case for each investment stands alone. By linking assets together into a shared network, the business case is multiplied.

Tameside MBC has been working with public sector partners including Tameside Hospital, the Pennine Care NHS trust, Tameside College and New Charter - the principal RSL. Following consultations, including a successful soft market test and detailed state aid advice, Tameside is extending the model to include private sector partners. The Tameside Digital Infrastructure Cooperative is being formally established with founder members from both sectors. As with the public sector, private sector partners can contribute assets and use the integrated infrastructure to provide services.

DCMS and BDUK have nominated Tameside to be one of six pilot ‘Wave 1’ projects in its £200m Local Full Fibre Network Programme, and is encouraging other authorities to learn from and use the model.

The model is built on three key principles:

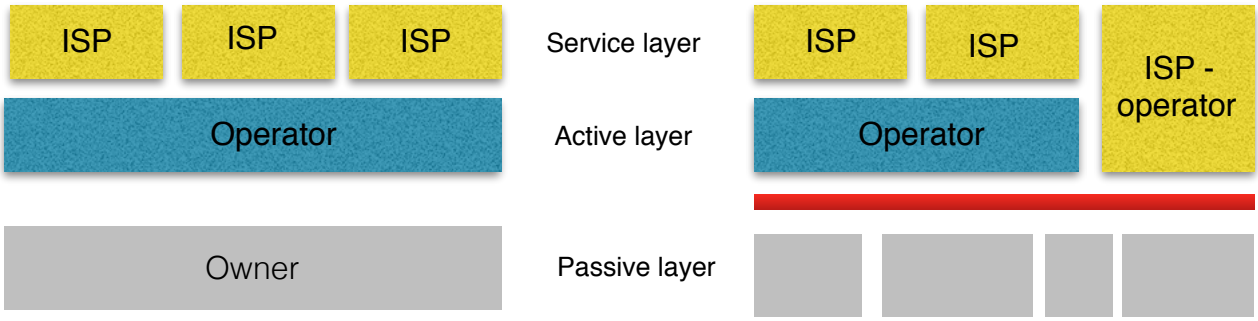
- Asset aggregation: participants contribute passive assets - for example ducting - that they own or have built. They retain ownership and charge a market rate to the co-operative to make use of these assets.
- Pragmatic opportunism: the alliance takes advantage of opportunities to construct infrastructure at low cost, for example installing duct in developments and new road schemes (‘dig once’), sharing capacity with urban traffic control, and installing fibre in spare ducting along side the new tramway.
- Neutrality lock: the co-operative model guarantees the neutrality of the shared infrastructure, promoting competition and encouraging smaller and local firms to capture more of the digital value chain.

How this creates a usable, integrated infrastructure

It's useful to think of digital infrastructure as having three layers:

- A physical, passive layer, generally consisting of ducts and fibres (but also including server rooms and wireless masts).
- An active layer, generally consisting of the electronic equipment that is used to light the fibre and the point-to-point ('layer 2') services that this equipment supports (but also including servers and wireless transceivers).
- A service layer, generally consisting of the services offered to end users such as broadband Internet access (but also including cloud hosting and WiFi).

There are many different models for who owns and operates assets and services in each layer. These include: vertical integrated models (eg Virgin media) where one provider owns and operates all three layers; wholesale active network operator (eg Openreach) where one operator owns and operates passive and active layers while competing ISPs ('communications providers') provide end-user services; and concession models (eg Nottingham, Bristol) where the passive layer owner procures an operator to make wholesale active services available to competing ISPs (see diagram).



Concession model **Thin layer model**

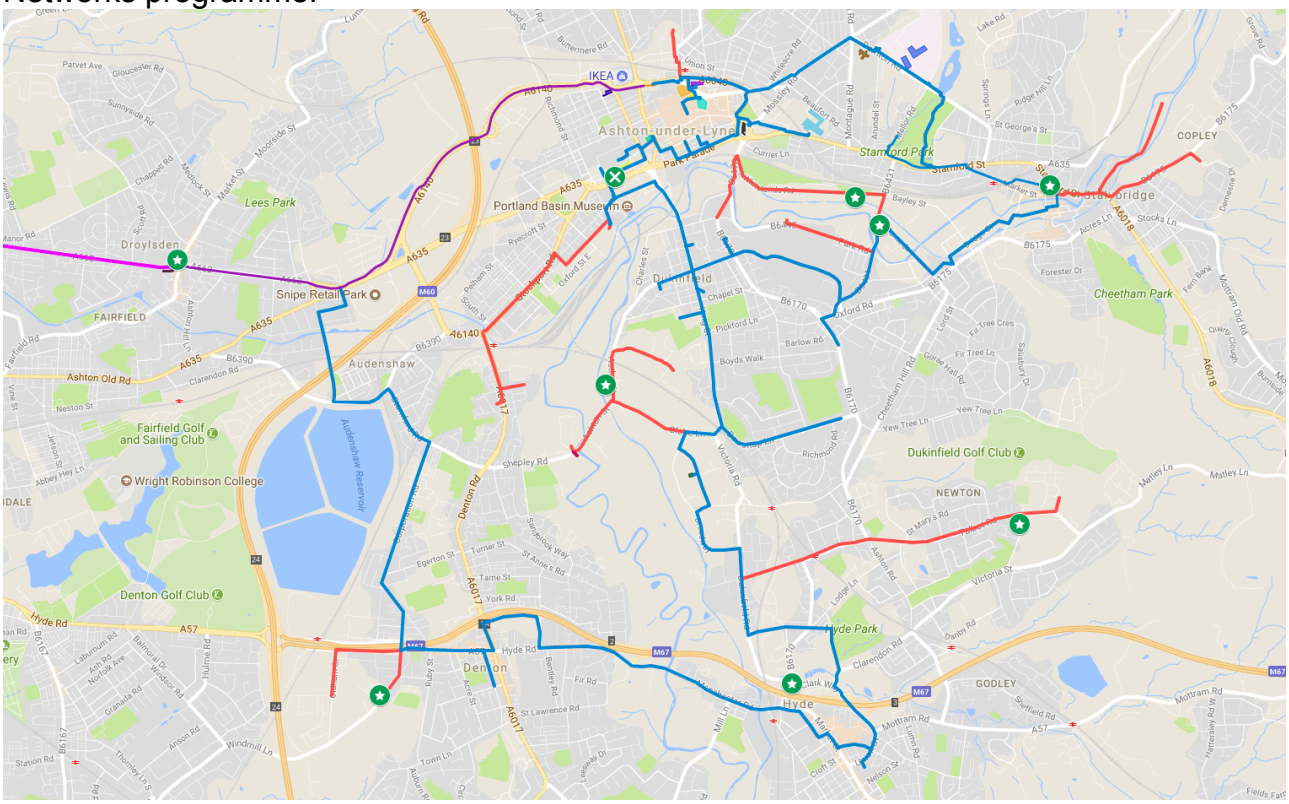
In the Tameside model, there is no single owner of the passive layer. Rather a 'thin layer' co-operative 'presents' the disparate assets as a single infrastructure to multiple operator-service providers. The operator-service providers, can include competent IT departments in public sector organisations and digital businesses happy to run their own active services, alongside ISPs, carriers and specialist VPN suppliers and systems integrators. The co-operative acts as a neutral vehicle effectively for the exchange of access to passive assets, a sort of 'passive asset peering' - much as mutual models are used in the world's largest Internet exchanges such as LINX.

This model offers many advantages. Deployment can be accelerated because participants deploy infrastructure to meet needs, there is no need for a co-ordinated 'roll-out'. The asset owners simply arrange for the physical maintenance of the assets they provide (generally ducting), they are not involved in technical network operations or service provision. New assets can be installed when it is cheap to deploy and commissioned later as they become useful as a component of the whole. And the co-operative thin layer retains the confidence of public sector agencies with differing priorities as well as competing service providers because of its neutrality. The guaranteed neutrality underpinning shared access to the infrastructure enables smaller and local digital

businesses to access infrastructure directly, so allowing them to capture more of the value chain, a stimulant for competition and innovation.

The components of the Tameside infrastructure

By March 2018 some 50km of ducting will have been installed and populated with fibre. Well over half of this is already complete. The network includes: routes commissioned by Tameside MBC to connect centres; routes similarly commissioned by Tameside Hospital, Pennine Care, Tameside College and New Charter, to connect centres including data centres and DR centres; a route between Ashton-under-Lyne and Manchester city centre, jointly commissioned by Tameside MBC and Manchester City Council using ducts running alongside the tramway; a figure-8 loop connecting centres across Tameside commissioned by TMBC; and new spur connections funded under the government's Local Full Fibre Networks programme.



However, digital infrastructure requires aggregation and exchange points as well as connecting links. Tameside MBC is funding the construction of a new Tier III data centre facilities jointly with the hospital. This will include a 'Digital Exchange'[1] designed to serve as a neutral hub and hosting facility for digital businesses, carriers and service providers. Following the Digital Exchange model, the facility will be located close to a cluster of digital businesses in the new innovation centre in Ashton Old Baths.

Conclusion

Using an innovative model and a pragmatic approach, Tameside MBC has enabled rapid deployment of a new digital infrastructure serving multiple sectors in the borough. The

[1] Based on the model pioneered in Brighton: http://bdx.coop

Tameside model provides a framework to support both public sector collaboration and engagement with private sector business, including local and SME businesses. The model uses a ‘thin’ co-operative layer between the passive and active layers to maximise leverage of publicly held assets and public sector demand, without offering a concession and without the need for complex clawback provisions. The focus on collaboration, guaranteed neutrality and shared ownership helps smaller businesses to access infrastructure that would otherwise be unavailable to them, and so promotes competition and innovation; it similarly helps public sector agencies innovate with service delivery while controlling costs.

v2 updated Shaun Fensom 2017-12-01