

# How Tameside and Manchester have built advanced digital infrastructure

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*with a unique collaborative model that helps transform services and serve the local economy*

## The cooperative neutral host ‘thin layer’ model

Using an innovative approach, Tameside Council has been working with Manchester City Council and other partner organisations in Greater Manchester to build a new, advanced digital infrastructure, serving public sector, businesses and citizens. Now Tameside and Manchester have been joined by other local authorities in other regions using the same model.

The ‘thin layer model’ - pioneered in Greater Manchester - facilitates rapid deployment of new digital infrastructure, avoiding the complications and downsides associated with other public sector interventions in digital infrastructure.

The thin layer model is pragmatic. Tameside, Manchester and their public sector partners have invested in new infrastructure assets where an internal business case can be made, repurposing service expenditure to build new infrastructure with long-term savings.

Using the thin layer model, those assets are sewn together to form a coherent, integrated infrastructure that is shared using a neutral co-operative: Cooperative Network Infrastructure Ltd (CNI)<sup>1</sup>.

CNI brings together public agencies with infrastructure that can be shared: Tameside and Manchester along with NHS trusts (eg Tameside Hospital, and the Pennine Care NHS trust), colleges (Tameside and Ashton Colleges) and Jigsaw, a major social housing provider. These *contributor members* share digital infrastructure assets, while retaining ownership and without needing to invest in complex SPV or JV structures.

The model allows the benefits of collaboration to be shared with the private sector as well. Private sector *user members* of the cooperative can access the shared infrastructure on equal, non-exclusive terms. By sharing key spine infrastructure using a neutral vehicle, investing network operators can concentrate on connecting homes and businesses.

That’s why private sector telecoms operators and ISPs have joined CNI, including innovating investors like ITS Technology, Telcom, euNetworks, Zayo, City Fibre and Virgin Media O2, along with smaller ISPs and digital businesses.

Private sector members like Zayo and euNetworks are also contributing assets, understanding that they can collaborate to mutual benefit.

The co-operative neutral host is built on three key principles:

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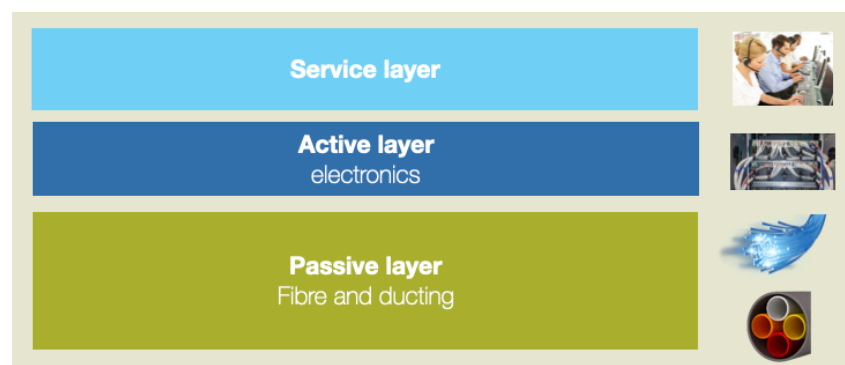
<sup>1</sup> <https://cni.coop/>

- Asset aggregation: members 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 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

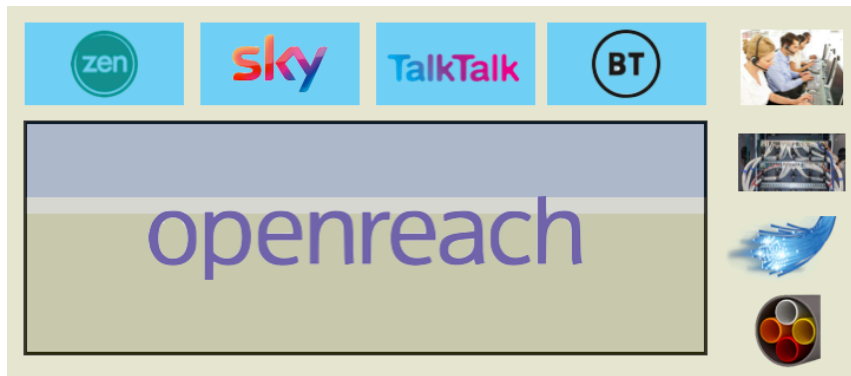
It's useful to think of digital infrastructure as having three layers:

- 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 move data between points on the network.
- A service layer, generally consisting of the services offered to end users such as broadband Internet access, 'cloud' hosting and WiFi.



There are different models for who owns and operates assets and services in each layer. These include:

- Vertical integrated models - where one provider owns and operates all three layers. Virgin works mainly in this way, but also smaller providers like Hyperoptic.
- Wholesale active network operator (eg Openreach) where one operator owns and operates the passive and active layers while competing ISPs, such as Sky or Talk Talk provide end-user services.



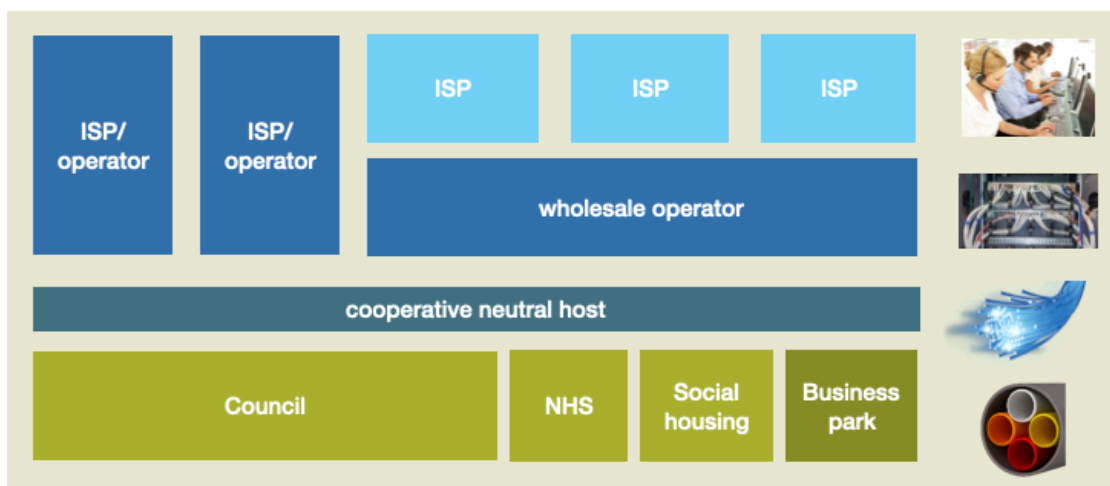
Where public sector bodies have their own physical infrastructure - in places like Nottingham or Bristol - they may use a concession model, appointing a wholesale active network operator to enjoy exclusive access in return for a revenue share.

In other cases like Amsterdam and Liverpool City Region, there is some form of joint venture, again working with an exclusive wholesale active network operator.



The thin layer model opens this up for sharing.

In the thin layer model model, there is no single owner of the passive layer. Rather the cooperative makes a thin layer between the passive and active layers. It can then 'present' the assets from the contributor members as a single infrastructure to the *user members* - operators and service providers.



User members can include competent IT departments in public sector organisations, digital businesses able to run their own active services, alongside ISPs, telecoms operators and systems integrators.

The co-operative acts as a neutral vehicle, 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 user members can use the spine infrastructure to get to the areas where they want to invest - there is no need for a co-ordinated 'roll-out'. The asset owners do not need to be involved in technical network operations or service provision. New assets can be installed when it is cheap to deploy - for example when building a new road or business park - and made available later to competing operators when they become useful.

The co-operative governance model effectively guarantees neutrality, retaining the confidence of public sector agencies with differing priorities as well as competing service providers. Neutral hosting enables smaller and local digital businesses to access infrastructure directly, so they can capture more of the value chain and generate wealth and jobs locally.

## **The components of the infrastructure in Greater Manchester**

### ***Fibre routes***

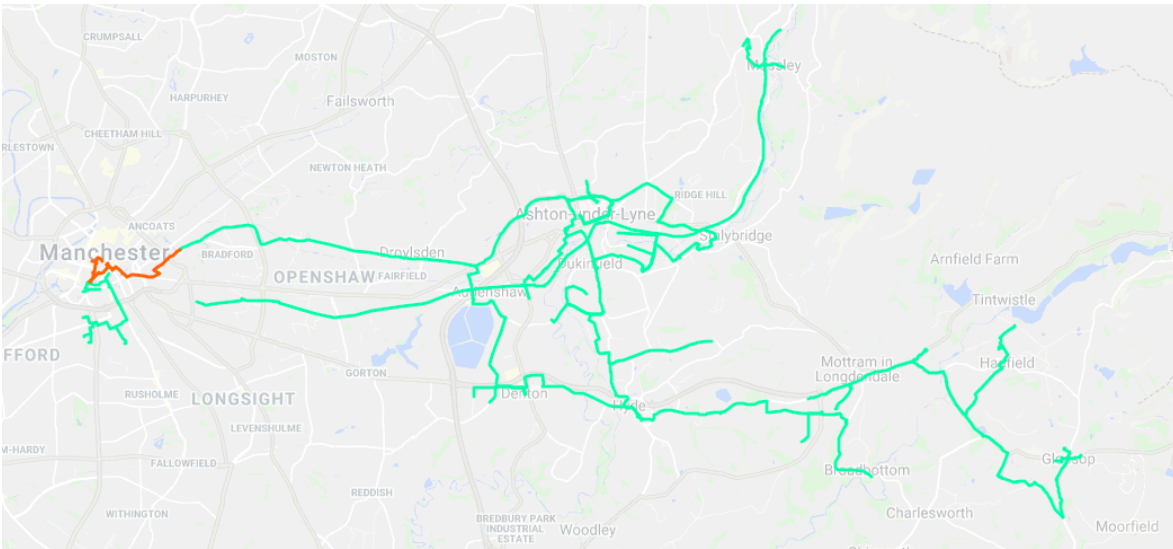
CNI now operates and/or provides access to over 250km of spine fibre, roughly half of which is in Greater Manchester.

This includes:

- The network built by Tameside Council and its public sector partners linking the major towns in Tameside (Ashton, Denton, Droylsden, Dukinfield, Hyde and Stalybridge).
- New spurs and networks added with grant funding from DCMS (including in Mossley, Hattersley, Mottram, Broadbottom and Glossop).
- Fibre installed alongside the tramway from Manchester to Droylsden and Ashton.
- Fibre installed alongside the railway from Ardwick in Manchester to Guidebridge, Stalybridge and Mossley in Tameside.
- The Manchester Corridor network in the city centre.
- Fibre routes contributed by members including Zayo and euNetworks.

And soon:

- The Manchester Heating network in Manchester City Centre linked to the corridor network and tramway.

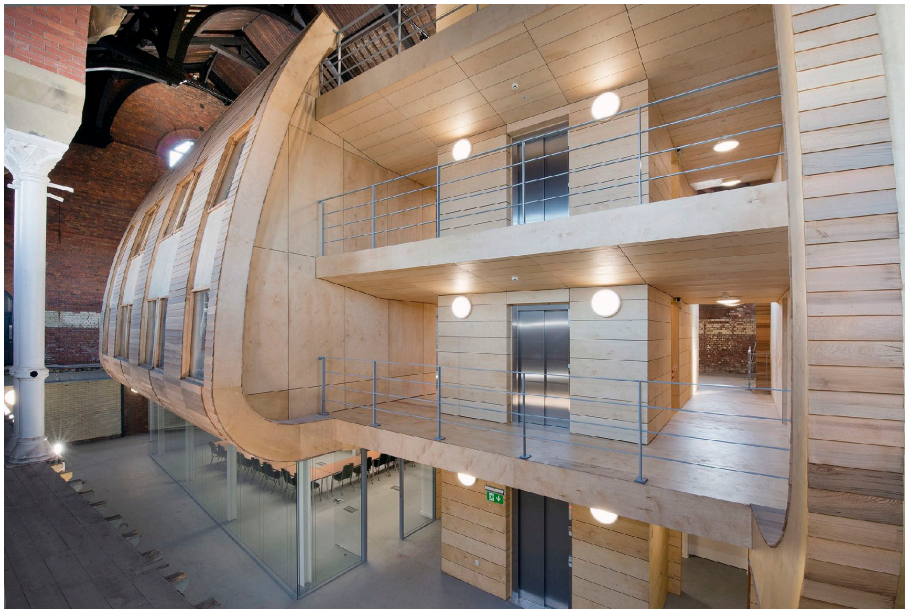


## ***Nodes and hubs***

Digital infrastructure requires aggregation and exchange points as well as connecting links.

The Corridor Network in Manchester is connected to two of the principal data centres in Manchester where LINX Manchester operates - the north's main Internet hub.

The Corridor is connected by two routes to Ashton-under-Lyne where, working with the General Hospital, Tameside has built a state-of-the-art data centre. Built in Ashton Old Baths - a fabulous new digital hub for SMEs and start-ups - this is now operating as a 'digital exchange'<sup>2</sup> designed to serve as a neutral hub and hosting facility for digital businesses, operators and service providers.



***Ashton Old Baths digital hub***

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<sup>2</sup> Based on the model pioneered in Brighton: <http://bdx.coop>

The digital exchange is linked to multiple 'digital exchange pops' spaced around the network where user members can deploy electronics to make the most efficient use of the fibre.

## **Conclusion**

Using an innovative collaborative model Tameside and Manchester have enabled rapid deployment of new digital infrastructure serving multiple sectors in the region.

The 'thin layer model' provides a neutral, cooperative framework to support both public sector and private sector collaboration and asset sharing.

The cooperative maximises leverage of publicly held assets and public sector demand, avoiding exclusive concessions and complex joint ventures - eliminating the need for complex clawback and subsidy control provisions.

The focus on collaboration and neutrality helps smaller businesses to access infrastructure that would otherwise be unavailable to them, and so promotes competition and innovation.