

HOW THE DUTCH HAD THE COURAGE TO TAKE FIBRE TO THE HOME

INTRODUCTION

Until recently, the main claim to fame of the small Dutch town of Nuenen was that it was the home of the acclaimed painter Vincent van Gogh from 1883-1885. It was a prolific period for him, during which he produced almost 200 pictures including "The Potato Eaters".



The house where Vincent van Gogh lived

Today, however, Nuenen – located near Eindhoven in the south of The Netherlands - is attracting worldwide interest because of a fascinating technological development called Ons Net (Dutch for 'Our Net'). It has wired up all the homes in the town with optical fibre to provide broadband speeds that no residential consumer in Britain could imagine.

On 22-23 January 2008, I attended a well-organised workshop in the town hosted by the company that made this experiment happen. It is called Close The Gap and has a close relationship with the British group the Community Broadband Network.

Since the town was fibred up, there have been six of these workshops, four for UK participants. This time, there were 20 in attendance; four from Close The Gap, no less than eight from Walsall, others from Wolverhampton, Manchester and Ashford, a housing association specialist, a fibre technologist, and two from Intellect (which hosts the Broadband Stakeholder Group).

My interest was twofold: as a member of the Ofcom Consumer Panel which has a special focus on next generation access (NGA) and as a consultant to the telecoms union Connect which has commissioned from me a user-friendly guide to the NGA debate.

The workshop consisted of a series of presentations and discussions. We were addressed on several occasions by the pioneer of the whole project Kees Rovers and we were visited by the mayor of the town Willem Ligtoet. We were then shown the point of presence (POP) for the Eindhoven extension of the Nuenen scheme (the connection point between the local network and the wider Internet), the general layout and housing stock of the town, a housing association for the elderly using the network, and the town centre offices of Ons Net.

THE TOWN

Nuenen is located south of Eindhoven in the southern part of The Netherlands. It is a small town of 8,000 households and 25,000 inhabitants. It has some distinctive features.

About a quarter of the population is aged over 65. These pensioners are relatively well-educated and have relatively good pensions as a result of being former employees of local technology companies.

The town has a strong sense of social cohesion with a great many local associations and a high level of participation in these bodies.

THE MODEL

The driving force behind the Nuenen project is a charismatic individual named Kees Rovers. Now aged 62, he was born near Eindhoven and spent the first 20 years of his professional life in several senior management positions in the Dutch co-operative bank Rabobank. He then created a variety of multi-media enterprises including the introduction of the French Minitel system to The Netherlands.



*The Dutch Close The Gap founder Kees Rovers
with the British Community Broadband Network
CEO Malcolm Corbett*

He teamed up with Henri Smits, the director of a housing corporation in Nuenen called Helpt Elkander (Dutch for 'Help Each Other'), to develop the idea of a high speed network for the town. The whole impetus was not technical but social – they wanted to improve the quality of life for local citizens and especially to enable the elderly and the disabled to remain longer in their own homes.

Kees Rovers read a lot about co-operative models of enterprise and was inspired by the early pioneers of Rochdale in the UK. It was decided that the project would be built on a co-operative business model reflected in an organisation called Close The Gap.

The whole philosophy of the Nuenen model is maximum user and community participation in all stages of the project. From the very beginning in 2002, there was a User Feedback Committee which included representatives of local groups like schools, churches, the elderly, and the police.

Workshops were organised for different sections of the local community such as the elderly to explain what the project would mean for them specifically. Industry representatives were invited to participate in the discussions, especially those around user needs.

As might be expected, the incumbent telephony provider (KPN) and the incumbent cable television provider (UPC) were both hostile to the project. As one workshop participant put it: "The people who owned the canals didn't build the railways".

Ons Net is a co-operative model. All except 5% is owned by the town citizens themselves (for local reasons, the construction company holds 5%) and they recommend anyone wishing to replicated the model to insist on 100% ownership.

There is a special committee of local citizens and annual meetings open to all citizens, but the actual operation of the network is outsourced and carried out professionally.

On Net has now developed well beyond a technical project to a wider project for developing new broadband services. This is called Ons Wezijn which is Dutch for "Our Wellbeing". There are regular discussion groups to consider what new services could be introduced that meet the real needs of local citizens.

THE FUNDING

Close The Gap tabled its business plan in February 2003 and Government funding for the project from the Dutch Ministry of Economic Affairs was agreed in December 2003.

The cost of providing the fibre to the home network was 1,470 Euros per household. National government provided a vital subvention by agreeing to fund free provision of the service for the first year. This was equivalent to 800 Euros per household. This encouraged virtually universal take-up – the actual level was 97%.

Membership of the co-operative costs 20 Euros a month and the full package of telephone, television and Internet costs 60 Euros a month. Over 80% of homes are now paying customers of the service.

The local government did not provide – and was not asked for – any funding whatsoever for the project. However, the local council was seen as absolutely critical in acting as an 'ambassador' for the project, promoting it to the financial investors and the local citizens.

Later the network was extended to two other nearby villages, but this was done without Government subvention.

THE NETWORK

Virtually every home in the town is wired up, making it the highest density optical fibre community in the world. All schools, churches, general practitioners, hospitals, sports clubs, home care institutions, and the town hall are all connected..

The laying of the optical fibre - "glasvezel" in Dutch - was done quickly (the five months from July-November 2004) and smoothly (there was little disruption and no evidence now of the process).

The physical construction was done by the civil engineering firm Volker Wessels. The local ground is soft and the roads are new and construction was not difficult. The total length of the trenches was 150 km.

The technical work was done by a contractor called Emtelle using a method called blown fibre in which glass fibre is blown through ducts with compressed air. The total length of the fibre used was 3,000 km. Interestingly for a British audience, the blown fibre system was invented by BT and Emtelle is a Scottish company.

For the technically minded, it is a point to point (P2P) system – in which each customer has dedicated fibres - and not a passive optical network (PON) – in which fibres are shared between multiple customers. Typically around the world, new players are using a P2P topology, whereas incumbents favour a PON topology.

Each premise has two fibres installed: one for ethernet and one for analogue television. The network technology is something called a 'Layer 3' solution from Packetfront.

There is a single point of presence (POP) in the town housing all the connections to the wider Internet. This is located on land owned by the local housing association.



*Fibre links at the point of presence
(this one actually in Eindhoven)*

The standard Internet connection is 10 Mbit/s but the network is capable of delivering speeds of up to 100 Mbit/s. The service is symmetrical which means that the upload speed is the same as the download speed (totally unlike all ADSL services used in current generation broadband).

THE PRINCIPLES

The pioneer of the Nueneen project Kees Rovers always promotes seven principles as key to the success of this or any similar endeavour:

1. The need for a viable business model based on co-operative principles.
2. The creation of an 'us' feeling in which local citizens have a genuine sense of ownership.
3. The provision of the basic triple play services of telephony, television and super-fast Internet access.
4. The generation of additional local, customer-generated services.
5. The promotion of a substantial and user-friendly communications exercise.
6. The provision of excellent locally-based customer care.
7. The operation of a first class, totally reliable network.



The Ons Net office in the heart of the town

THE EXPERIENCE

Usually it is assumed that higher bandwidth and new services are taken up first by early adopters who are young and perhaps a bit techy. The Nuenen model reverses this assumption.

The inspiration for the scheme was to make life better for older people and the whole marketing strategy was to pitch the message on the assumption that a typical customer was a 75 year old woman. Indeed one presentation to us showed a photograph of a 100 year old lady being presented with a webcam for her birthday.

We visited a housing association specialising in accommodating the aged and infirm and called into the flat of an elderly couple with mobility problems. Entrance to the building is through a swipe card system. Visitors can use an intercom system to announce their presence and a camera at the door then shows a video picture of the visitor on the television set of the occupant who can then decide whether to open the main door electronically.

The flat was fitted with fire and burglar alarm systems. The residents wore a device which enabled them to signal the need for emergency assistance. This device worn around the neck automatically switched off the gas, switched on all the lights, and made a call to a special centre.

Many new services are being developed, many by the co-operative bank and many to do with health and lifestyle. For example, there is an on-line weight plan exercise and a virtual fitness coach. Some of the services are focused on very specific sectors of the community. For instance, there is a 'window on Nuenen' scheme with video cameras showing live pictures of key parts of the town for Alzheimer's sufferers who can no longer physically wander around the town.

The community television service is a major attraction of the Nuenen project. Local people are trained in the use of film equipment and the symmetric nature of the network makes uploading of video material very easy. Clubs and societies have their own sites where they can upload video clips of meetings and events. The town has a little zoo and there are cameras there to allow children to view the animals at any time.

A local church has purchased equipment to allow the live broadcasting of baptisms or marriages for those who cannot attend either because they are local and too infirm or because they live in other countries. The church then sells this service commercially for a reasonable fee to those requesting the religious ceremonies.

Again some of the projects are aimed at very specific sections of the community. For instance, it has just been agreed to produce a television programme for those with Downs syndrome.

A local estate agent has a site to show video clips of homes for sale. Other commercial videos come from a bank and an insurance company advertising products and services. Local businesses are being encouraged to put promotional material on the network. Since the citizens of Nuenen own their own fibre infrastructure through the Ons Net co-operative, there are no incremental bandwidth costs associated with adding new services

'on-net'. Effectively bandwidth costs - indeed bandwidth itself - have been taken out of the equation which explains the interest of major companies and public services like health in using it as a testbed for innovative new services. It is all about community cohesion and improving the opportunities for citizens - a sense of e-wellbeing.

NOT JUST NUENEN

The success of the Nuenen scheme has inspired a similar project in the nearby city of **Eindhoven**. Again it is a fibre to the home scheme which is community-funded. The first 10,000 homes have been fibred - we visited the point of presence for these connections - and the plan is for all 80,000 homes to be cabled by 2010.



*I inspect the optical fibre connections
at the Eindhoven point of presence*

Almere is a city of 185,000 closely associated with Amsterdam since so many - some 60,000 - commute daily to Amsterdam for work. Partly in an effort to reduce travelling and create locally-based employment, the city has decided to introduce fibre to the home. The project - provided by Unet - started in 2003 with 2,200 connections for residential homes and small & medium enterprises. By 2005, the city had a 120 km optical fibre backbone providing access to 165 locations including schools and hospitals. It is hoped to fibre up the whole city by 2010.

Amsterdam is now working on its own fibre to the home network called Citynet. The licence to run the network has been awarded to Telecom Italia which will sell wholesale capacity to a variety of competing service providers. The project started in October 2006, the first 40,000 homes are on the way to being connected, and the aim is to connect all 450,000 households by 2013.

The Dutch telecommunications incumbent KPN now has one of the most ambitious fibre plans in Europe. It plans to introduce fibre to the curb (FTTC) on a national basis by 2009. Part of the funding will come from the resultant sale of all KPN's exchange buildings.

OBSERVATIONS ON NUENEN

At the end of a visit like this, one is bound to consider two major questions.

First, one has to wonder how transferable is the experience of Nuenen. There are many special features of the project that are unlikely to be easily replicated. But unquestionably, in particular situations, a similar experience can be reproduced and there are a few general lessons that one can learn.

Walsall is determined to replicate the Nuenen experience and the attendance at the workshop was clear evidence of that. Walsall is working closely with the Community Broadband Network (CBN). The project will initially be a fibre to the business scheme, but fibre will then be taken to some 4,000 homes in one of the poorest parts of the town.

A major lesson – for Walsall and any other community considering a fibre network – is the benefit of involving local citizens and local associations in all the planning processes and especially in the development of services that meet the real needs of local users. Second, one has to wonder whether the ultra-fast speed provided by optical fibre is necessary for the services currently on offer.

Many of the services now being provided at Nuenen do not require anything like the bandwidth provided by fibre and could be delivered by ADSL technologies. However, the owners of Ons Net have confidence that, having provided such enormous and symmetric bandwidth and working so closely with the local community, new services will be developed and provided at low cost that increasingly benefit from the higher speeds that fibre provides.

The community television project illustrates how local users can generate their own material and upload it quickly and easily without bandwidth being a consideration. Fibre has a lifetime of at least 25 years and the citizens of Nuenen are banking on this being a worthwhile long-term investment that is more about improving the local quality of life than making money.