

# TelecomCity Karlskrona: State-of-the-Art Fiber Meets 300-Year-Old Buildings

## An open-access network opens the way for innovative services and economic development in Sweden

A BBP Staff Report

For three centuries the city of Karlskrona, on the south coast of Sweden, was known for its beautiful architecture, naval installations, and shipbuilding industry. But it was marginalized, along with the rest of southeast Sweden, after its Baltic trading partners became part of the Soviet empire. Not until the 1990s did the city begin to attract high-tech business – including the telecom operator Europolitan – and to identify itself as “TelecomCity.”

When the city’s leaders decided that a TelecomCity ought to have a telecommunications infrastructure worthy of the name, the municipal utility Affärsverken began building a fiber network in and around Karlskrona in order to provide network services to businesses. Affärsverken’s building project occupied most of the 1990s, and the utility became a commercial ISP as well as a network operator.

But when other ISPs, including the incumbent telecom provider Telia and several competitive providers, entered the market during the same period, the fiber network failed to take off as the city government had hoped it would. One problem was that the municipal utility did little to exploit the potential bandwidth. Connectivity speeds were limited, as was the range of services, and there was no opportunity for outsiders to add innovative new services to the network. Even the limited services that existed were not marketed effectively.

### A Rapid Turnaround

By 2003, other cities in Sweden had eclipsed Karlskrona and the city realized that fiber would never appeal to customers unless it offered advantages that other broadband services didn’t. A fundamentally new strategy was needed for the broadband enterprise that the city had invested in – a strategy that could not only justify the building of the infrastructure but also help drive Karlskrona’s economic recovery.

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The decision is already turning Karlskrona into a laboratory for innovative broadband services, especially for telemedicine.

The most important decision the city made was to restrict Affärsverken’s role to that of network operator, and open the network to other service providers. While Affärsverken had the technical capability to build and operate a fiber network, it had not succeeded in giving customers a

reason to use that network. If other service providers were given access to the network, the city reasoned, they might introduce services that would exploit its true potential.

In 2004, the city approved the change. Affärsverken was told to stop providing services, thus offering up its existing customers as a prize that other providers might want to compete for. From that point on, all customers – residential, commercial and public – were free to choose any combination of services from any service providers. The service providers, in turn, would share their revenues with Affärsverken, which would accommodate all of them neutrally.

The city government also directed that users should be given as much flexibility as possible. Service providers were forbidden to require long-term contracts or bundling of services. In fact, users would be permitted to configure their own services and make changes in their profiles in close to real time.

The following year, Affärsverken brought in two vendors to help create this new open-access system. Ementor, one of Scandinavia’s leading technology consultants, was designated as Affärsverken’s IT partner, charged with designing the network and installing an automated broadband solution.

The automated solution – the BECS control and provisioning system – was supplied by PacketFront, the Swedish company whose software underlies many



Home page for Nurse Gudrun's Health Care Channel, an innovative telemedicine experiment.



Organizations participating in the Nurse Gudrun's Health Care Channel rollout. Users can get a private dedicated channel to talk to health professionals; the technology has other uses, such as for education, as well.



TelecomCity's Website.

open-access networks worldwide. BECS lets operators build and manage broadband networks with on-demand, self-provisioning functionality. Customers can use it to increase capacity and change services for themselves, instead of waiting for a third party to make the changes.

New service providers flocked to the fiber network, as the city had hoped. Seven vendors are now providing high-speed Internet access, five are providing video services over IPTV and two are providing VoIP telephony. In addition, three film providers, three music providers and local news media sell their services directly to the public. Specialized commercial services are also available. The dynamic provisioning and choice and variety of services attracted many new customers to the system. Today, about 35,000 of Karlskrona's 62,000 inhabitants use the public broadband infrastructure. All of these subscribers have access to a service subscription portal where they can select or change providers and services within seconds.

The speed with which the city turned a failing system into a vibrantly successful one attracted attention all over Sweden, despite open-access systems being the norm there. Affärsverken's network strategist, Peter Larson, was named Sweden's city network entrepreneur of the year, and the network itself was named the city network of the year, first

among more than 200 public networks in Sweden.

### Visionary Applications

Only recently, however, has the city begun to realize its dream that the fiber network would inspire new and valuable applications. One such project, Vårdkanalen – Syster Gudrun (Nurse Gudrun's Health Care Channel), is in its early stages. The Health Care Channel – which was founded by a public health nurse named Gudrun Håkansson – is a venue for public and private organizations using the network cooperatively, and it will ultimately accommodate a number of applications. The first to be launched was an interactive video service that lets patients at home contact a nurse in a local clinic, using the remote control on the television or a Webcam on a PC.

While the service doesn't replace doctors' visits, it does allow elderly and disabled patients to get help for many routine problems without having to leave home. The dynamically allocated TV channel that is set up between patient and health care center when the patient calls for help is secure and private, and the TV remote is a familiar and nonthreatening interface for most patients.

The interactive video platform that was built for the health care channel can also be used for other public purposes, such as

community field service and education.

A future application for the health care channel will allow health care workers to use handheld wireless terminals in the field to register patients and provide visual documentation of examinations. This, like many applications planned for health care and other public services in Karlskrona, depends on having high-speed wireless connectivity throughout the city.

And high-speed wireless connectivity is not far off. Affärsverken is teaming up with mobile operator Telenor and British public wireless LAN operator TheCloud to install citywide wireless broadband. The wireless network will be fully integrated with the fiber network, so that fiber subscribers can have access to all their services while they are on the go. Because the wireless access points will tie directly into the fiber network (not by ADSL, which is common elsewhere), wireless broadband speeds are expected to be very high.

Fiber to the home may be a condition for delivering world-changing applications, but by itself it accomplishes little, if anything. Karlskrona, where municipal leaders had the vision to open their network to creative providers and application developers from the public and private sectors, illustrates a path for moving a fiber network from "future proofing" to the future itself. **BBP**