

## ***User Report***

# ***Large Distances – Travelled by Data, not Patients PACS and Telemedicine Come to Northern Finland Lapland Hospital District***

The Lapland Hospital District in the northernmost region of the country caters for between a quarter and a third of Finland's territory. This vast area is populated by only 2.5% of the country's inhabitants - not even 119,000 people live here; every year, however, Lapland – "Lappi" in Finnish - is visited by some 1,800,000 tourists. To provide basic, or even specialized, health services to this disparate population presents a major challenge to local authorities. PACS from VISUS has now turned into a key support tool for health workers in the region.

Care in northern Finland is provided by 15 municipal health centers and one central hospital in Rovaniemi. Traveling distances to this hospital are 450 km from the town of Utsjoki, and 425 km from Kilpisjärvi. How can access to medical imaging services which meet today's patient requirements be safeguarded under such circumstances?

In order to cope with issues like these, national strategies for e-health had emerged in Finland already in the mid 1990's. The development of a nationwide healthcare infrastructure and information network solutions, comprehensive digitization of patient information, and semantic as well as technical compatibility of electronic patient records have been part of the efforts towards achieving access to patient information anytime, anywhere all across the country.

## ***The TEL LAPPI Project***

In the Lappi Hospital District, a number of development projects of varying durations are aimed at utilizing modern information and communication technology to facilitate provision of care, and to reduce cost. The project of the longest duration, and perhaps the



***Lappi Central Hospital***

most successful among them, is TEL LAPPI. With pilots dating back to 1997, this project with financial backing from the EU was designed to enable the development of services based on telemedicine. The project included teleradiology, video teleconsultation and teletraining, first aid, ophthalmology, transfer of ultrasound as well as ECG data, an electronic referral-feedback system, and, in emergencies, the transmission of vital data such as blood pressure measurements from ambulance trucks. Among the needs, the project aimed to help healthcare workers meet, were imaging, in particular X-ray, services. A lack of - costly - radiologists on-site at the municipal health centers, and the enormous geographic distances were key drivers for the project. The goal was to enable physicians at local health centers to provide radiology reports by transmitting imaging data to radiologists and specialists at the central hospital.

### ***JiveX – a Convincing Solution***

OneMed Oy is the distribution partner for VISUS in the country. The largest healthcare product distributor in Northern Europe building on strong local know-how and thorough professional expertise was able to demonstrate, in 2005, that the JiveX system works better in the customer's environment compared to products from the fierce competition. OneMed set up test installations, and soon it became apparent that JiveX was the solution best suited to the given needs. – One of the challenges turned out to be that there is only one telecommunication operator in this area providing network services; pricing was therefore relatively high. Network connection speed between health centers and the central hospital was only 2-4 MB.

### ***Phase I***

The project started with the installation of the JiveX central server and the RAID in the system room of the Lappi Central Hospital. The next step consisted in installing twelve Fuji CR readers and local JiveX servers at every health center with an X-ray department. Each week, one installation and training for all users took place. The local JiveX servers encompass a radiology workstation with dual 2 MP displays, fit for diagnostic purposes. The functionality



***Petri Alatalo testing JiveX System***

of the local JiveX servers includes receiving exam data from CR; storing this data into the local database, in a compressed format; and sending it to the central PACS server after office hours. Web distribution, too, is handled by these local servers. Local Ethernet speed is 100 MBit.

## ***Phase II, and Scope***

After this successful installation in the health centers, the customer decided to replace the existing PACS by JiveX also at the Lappi Central Hospital. All data from the existing Kodak system was converted to JiveX, which took about ten months. The resulting homogeneous solution from VISUS created a network integrating the health centers and the central hospital, plus a link to the national Finnish PACS. The modality landscape of this multi-site project includes equipment from Agfa, Aloka, GE, Philips, Siemens, and Toshiba. In 2007, 110,000 exams were carried out within the system; registered users numbered 900, with 60 users working with the solution concurrently.

## ***Conclusion***

As Lappi Hospital District IT-specialist Petri Alatalo underlined, the TEL LAPPI project, of which the JiveX PACS formed a significant part, “was the most successful IT project ever in our district.” The PACS is “easy to use. Image transfer and processing are quick and functional”, summarizes the official report of TEL LAPPI III, published by the Hospital District. “The availability of images and, in the view of some physicians, the quality of images as well has improved. In the view of the actors, [digitization] has already achieved cost savings. There have also been some positive health impacts with digital imaging – for instance, as a reduction in overlapping examinations.” The report goes on to outline that the utilization of a server for regional radiological images in, e.g., surgery-related image consultations has “clearly reduced the barriers” to the basic and specialized healthcare systems, and has assured the functionality of the treatment chain. The digital imaging system is already being used across borders, as was illustrated by the example of the Swedish Karesuvanto dental clinic. According to OneMed sales

manager Timo Aarnio, the distributor won this large, challenging, and innovative project thanks to the flexible functionality of local JiveX Servers and the central archive. "Good service and short response time also played a key role in this landmark success".

▶ **Sirpa Liimatta**  
Project Manager

*Lapin sairaanhoitopiiri*  
*Lapland Hospital District*

P. O. Box 8041  
FI-96101 Rovaniemi  
Finland

fon +358 16 328-1  
fax +358 16 328-2029

etunimi.sukunimi@lshp.fi  
<http://www.lshp.fi>