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### Finnish RATU PACS Implementation Project: Second Stage Brings New Developments

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In Spring 2006, the first phase of an innovative Finnish RATU project was launched, providing regional RIS/PACS and eConsultation service in Northern Finland. The area covered by the RATU project consists of five hospital districts and 69 healthcare centres with about 700,000 studies per year. Geographically, the RATU area represents roughly half of Finland with a diameter of approximately 600km. The project enables the production, processing and archiving of the northern region's entire image, biosignal and text data of patients, which are stored in a central archive. This article provides an update on the second stage of the project.

#### Second Stage Brings New Developments

An intelligent and efficient radiology solution for such a dispersed community, phase one of the project saw all radiological exams and bookings transferred to the right place at the right time, improving healthcare information and speeding up treatment processes for patients. It allowed the inter-regional delivery and consultation of x-ray images over the internet, where participating hospitals can store, download and view patient information and images irrespective of geographical location.

Within the RATU area they emphasise both the sharing of patient information and creation of a network of experts from different organisations or countries. Changing the working environment so that patient information can be shared, as well as improving the usage of networked expertise delivers significant benefits: improving availability of professionals; making specialist capacity available to improve efficiencies in delivery as well as standardising working practices and enabling increased knowledge-sharing across organisational borders.

#### Second Stage of Implementation

Having completed the implementation of RIS and PACS, RATU is ready to move to the second stage: the construction of eServices to boost the implemented infrastructure. eServices fall into two categories: eServices for professionals including virtual consultations and second opinions and eServices for citizens.

At the same time the RATU archive will be an integral part of the coming national patient data repository of Finland. Through the national registry, RATU data will be viewable in the whole country. The keywords describing stage two in the RATU area are 'patient/ citizen-centric, seamless, shared, secure and trusted, preventive, independent of time and place, networked, cross-organisational, cross-border and interoperable'. The RATU area aims to create a virtual and secure exchange for the provision and consumption of clinical eServices by developing a new working environment for professionals and teams, a shared workspace for virtual consultations and access to individual patient records.

#### eConsultation Portal Boosts Workflow

The networking of expertise has been realised in consultations and second opinions through an eConsultation portal in use in clinical practice today. Decision support by consulting colleagues and other experts for second opinions or by referring patients to other specialists are regular features of healthcare in the RATU area. In addition, networking for the purposes of acting both as ad-hoc and permanent teams of professionals in the management of complex illnesses and disorders is an established way of working. There are, for example, over 1,200 consultations per month performed by the Oulu University Central Hospital who have used the consultation portal for over six months now.

The eConsultation portal has allowed a market to develop where clients can browse through a virtual directory of providers and select the best  
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match for their needs in terms of services offered, specialties covered, level of expertise, availability and price. The eConsultation portal has proven an important tool to increase productivity and improve reporting turnaround time. Reducing delays in diagnostic services makes it possible to reduce delays in treatment that could potentially have an adverse impact on quality of life and the health of the patient.

The RATU area is extending consultations across borders by participating in a European Commission- funded project called R-bay where an eMarketplace is being built to buy and sell remote reporting and second opinion services across borders. The eMarketplace is a broker taking care of communications and data transfer in a secure and trusted way.

#### **Towards a Citizen-Centred Community**

eServices and special middleware are under development for patients/citizens. These include interactive booking/ cancelling of appointments, viewing of individual patient data summaries, chronic disease management and self-care as well as personal health and well-being monitoring. It will also be possible to get information before and after hospital visits so that the patient is more informed and prepared. Interactive patient participation and a deeper understanding of the role of the patient and his immediate family plays a role in solving health problems.

Citizen empowerment and active participation in health and wellness management is being emphasised. This can be realised through a set of patient-centric eServices as well as coordinated resource-sharing and problem solving in dynamic, multi-institutional virtual settings. The first citizen-centred eServices will be built in autumn 2007, partly financed by the Ministry of Social Affairs and Health.

#### **Cross-Border Archiving in the Future?**

Today, the RATU area is moving quickly to an enterprise archiving solution; Carestream's Versatile Intelligent Patient Archive (VIPArchive) supports archiving of medical data, including electronic patient data and biosignals, etc. It also aims to store data in a patient-centric rather than data-centric way. Knowledge, information and data are central elements in diagnosing, treating and monitoring of patients.

The integrated RIS/VIPArchive includes a patient's informed consent layer and provides the professional with permission to view exams and data beyond the current place of care.

#### **Possible International Collaboration**

There have been discussions on a possible model for cooperation between the Northern parts of Sweden and Norway and the RATU area, in order to use the RATU data centre as an off-site long-term archive for imaging exams produced in Sweden and Norway. In this model, on-line archives will still be located locally. Images will be logically separated, but remain physically in the same archive as the Finnish ones. The local sites have their own RIS and viewing capabilities, and only the archiving part of RATU will be utilised.

This model is useful because of the large amount of tourists travelling between the regions as well: with the patient's informed consent it will be possible to view tourist exams in Finland as well. Without consent it will be impossible for Finnish professionals to view any data from Swedish and Norwegian archiving segments.

The following legal questions need to be discussed when building a remote archiving service:

- Should we get the patient's informed consent in order to store images abroad?
- What legislation governs the storage, dissemination and destruction of information and how?
- What are the legal implications if the information management system/process fails in terms of confidentiality, integrity (completeness and correctness) and availability of information?
- Who owns the patient's images and imaging-related information such as requests or reports?
- What is the legally-determined storage time for medical images, requests and reports?

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