

When the President of Estonia, Toomas Hendrik Ilves, addressed the European Parliament at the February plenary, he was suffering from a slight cold. In a speech generally devoted to foreign and security policy and digital development, this gave him the opportunity to mention one of Estonia's strengths and a subject close to his heart, the e-health projects.

Ilves said that, in Estonia, he could use digital prescriptions to get the necessary medicine from any pharmacy. However, the e-prescription cannot be used in pharmacies in other EU countries. It is not a problem of technology, but rather of legislation.

At the end of the speech, the President proposed to add a Fifth Freedom to the existing Four Fundamental Freedoms of the EU, the Free Movement of Data. As a result, all Member States could have common access to digital services, including e-health solutions. The MEPs gave President Ilves a standing ovation.

E-solutions Could Save Billions in European Medical Sector

And with good reason – during the past decade, Estonia's medical sector has also undergone rapid digital development and has started providing e-solutions, something which we have begun to expect as routine in other walks of life. This was probably one of the reasons why, in 2012, the then President of the European Commission Barroso asked Toomas Hendrik Ilves to take the lead in an EU e-health task force.

"In a situation where the expenditures of the European Union Member States are increasing solely for demographic reasons, the more extensive and systemic implementation of e-health solutions will allow us to make the system more flexible, improve the health of people by exercising more efficient preventive measures, increase the awareness of patients and also save billions of euros," Ilves said back then.

The first example of how cross-border solutions could really work is already here – this May the Estonian and Finnish Prime Ministers signed the Joint Declaration on an Initial Roadmap for

Cross-border Data Exchange and Digital Services between the Republic of Estonia and the Republic of Finland. "We wish to see, by the end of 2016, specific action plans on how and when automatic data exchange will commence between commercial registers, population registers, on social insurance benefits and digital prescriptions," said the Estonian Prime Minister Taavi Rõivas. "Subsequent agreements concerning tax data, educational qualifications, digital health records and a number of other fields have to be there by end of 2017," added Rõivas.

New Possibilities in the Estonian Patient Portal

In addition to international activities, Estonia is busy launching new services for domestic end-users. For example, starting from this spring Estonian residents can see, in the Patient Portal, information about their treatment invoices that the health care institutions have submitted to the Estonian Health Insurance Fund during the last three years. Such information can be eye-opening, for even if we are generally aware that modern medicine is not cheap, we may not realize how costly one or another procedure could be. Treatment invoices get paid from the health insurance part of social tax (constituting 13% of social tax). The anonymity of the real costs was increased by the fact that the Estonian health insurance system is based on the principle of solidarity, i.e. the reimbursement of health care costs by the Health Insurance Fund does not depend on how much social tax has been paid on behalf of a particular patient.

In an aging population, health expenditures will increase inevitably. In order to develop the whole e-health programme, in 2005 the Ministry of Social Affairs, hospitals and physicians established the Estonian eHealth Foundation. The IT-solution was built and starting from 1 January 2009, all health care providers had to start sending the patients' health data to the National Health Information System.

Never before have the doctors, and actually the patients as well, had so easy and rapid access to medical records. There is practically no other country in the world with a health information system that connects all medical institutions and that allows medical records to be exchanged between hospitals in a matter of minutes.

Health Data of the Whole Population in One Database

Today, more than 10,000 health care professionals are using the system, which contains the health records of 1.3 million people. Every month, more than 500,000 queries are made in the system by the health care professionals and more than 300,000 by the patients.

On the one hand, these are solutions that help save lives in critical situations or provide better treatment; on the other, they aim to make everyday life easier for the people. For instance, in 2015 more than 80,000 drivers in Estonia were scheduled to renew their licenses. For the first time they did not have to appear personally at the Road Administration to hand in the requisite medical certificate, but it was forwarded electronically by the family physician. It was not a big deal, but it did help save so much time for both the drivers and the staff of the Road Administration. New developments include a cancer screening register and e-passport of immunisation. Once the latter is launched, there will be no further need for paper passports and new vaccinations can be scheduled and reminders sent electronically, thereby simplifying the whole process.

Although new e-applications have been springing up like mushrooms after rain, there is still more work to be done in order to make the services more user friendly and to integrate the various services and systems. According to Deputy Secretary General on E-services Development and Innovation at the Ministry of Social Affairs, Ain Aaviksoo, a lot is at stake: the Government requires proper results and is ready to provide the funding. Over the next five years up to 20 million euros per year will be invested in e-health programmes. "Spending this much money is only justified if it produces at least a fivefold return," Aaviksoo said.

E-health Saves Time for Both Patients and Doctors

E-services should aim to save time for both patients and doctors. To achieve this, one of the five pillars of the E-health Strategy is the provision of various services using telemedicine. For example, patients at home can be equipped with sensors sending real-time information to their doctor. The developers of the e-health projects have set themselves the aim of launching a new e-service or further developing an existing service every three months.

According to Peeter Ross, Head of the eMedicine Laboratory at Tallinn University of Technology, a more widespread use of telemedicine would help improve access to primary health care and telemedicine could become Estonia's biggest export article.

Estonia's leading research institutions and enterprises from the medical sector, as well as the IT sector, have joined their forces at the TeleHealth Technology Development Centre (TeleHealth TAK) in order to develop e-health technologies and applications and sell the results in international markets.

"Estonia is an excellent place for developing and implementing new e-health technologies because of its people, who are open to innovation and because of the existence of top medical and IT specialists and research institutions in Estonia," Ross said.

Ross is of the opinion that technologies created at TeleHealth TAK could alleviate many a problem in health care, e.g. using telemedicine to optimise and make more efficient the work of professionals in primary health care. E-health, including telemedicine, is considered a field whose potential for growth is among the highest in the world, with a global market worth approximately 160 billion dollars.

More about the Patient Portal

The National Patient Portal (www.digilugu.ee) is an environment providing e-services and information to all persons who are registered in the Estonian Population Register. The aim is to increase the users' awareness of the state of their health and to create the conditions and possibilities for the patients to be active and knowledgeable partners to health care providers in the treatment process.

For example, the patients have access to various medical documents, such as epicrisis, information notes, responses to referrals, e-certificates, ambulance cards, prescriptions, data concerning health insurance, time-critical data and information about the family physician. The portal can also be used to make a declaration of intention concerning blood transfusions, organ donation or donation of one's body after death, to fill out a declaration of health, to enter and amend personal data, to appoint a contact person or representative. Other functions include the

possibility of granting or refusing access to documents to a physician or representative, gaining access to the health data of a person being represented and checking who and when has viewed one's health data.

The following features will be available in the future: booking and cancelling visits to doctors, asking reminders to be sent about visits to doctors already booked and notifying simultaneously all medical institutions about changes in the user's contact data.

The Health Information System is the central depository of the patients' health data, which contains already more than 15 million medical documents, forwarded by more than 800 medical institutions, about 1.3 million people.

One of the most important tasks of the Estonian eHealth Foundation is to ensure the privacy of the users and security of their personal data. This is achieved by using the following security measures:

Data exchange with external parties is carried out via the X-road secure data exchange layer; Only two-level means of secure authentication (ID card, Mobile-ID) can be used to log in to portals;

All queries are registered by name and all activities are saved in a log;

All medical documents integrity is ensured by a Blockchain technology – Keyless Signature Infrastructure;

All web applications are checked by third party security testers;

A three-level baseline security method is used and the compliance of the systems with the method is verified by external information security auditors.

Original article on the [e-Estonia.com webpage](#) .