

# Freedom and dispersion

## Introduction

RESISTANCE

### **Centralised systems are expensive**

Estonia is a country that has never had much money, a huge internal market or mineral resources, but we have a lot of enterprising people. According to the World Economic Forum, we are the most enterprising country in Europe. Estonians are the pathfinders in the ICT world today, searching for new solutions to get things done cheaper and faster. We are like a village of inventors in a global world because we realized that our small size is a huge advantage that can help create efficient solutions the world desperately needs.

## Narrative

OVERCOMING OBSTACLES

### **Estonian engineers prefer distributed systems**

We were looking for a reasonably priced, efficient and secure database so that the country would be effective, fast and available to its citizens 24 hours a day. Distributed systems offer more options, and are cheaper to build, manage, and upgrade.

At the beginning of the 2000s, work started on a distributed information system called X-Road, which could be safely interfaced with all national e-services. A suitable comparison for X-Road is an intersection where countless databases built at different times and on different platforms could meet to exchange information.

Traditional national IT systems are like skyscrapers (central repositories). Estonia's approach was to build a number of small houses, or distributed data collections and focus on the street network. This is not only much safer but also a way to get databases created on different technological platforms and at different times to communicate with each other smoothly. Why is that important? Because it creates what appears to be a single convenient e-service for users, which gives them enormous freedom. Public e-services can be accessed anytime, anywhere. The users are not, nor do they need to be familiar with the IT architecture — they just need to enjoy the benefits, like being able to save five working days merely by signing digitally.

Of course, Estonia had one huge advantage — it had not yet built up a legislative structure that would have stood in the way of an e-government and an information society. Estonian laws were in a process of flux, and the laws governing ICT or data protection simply did not exist yet. This does not mean that we had to make compromises on security or the privacy of citizens. Quite the opposite — Estonians can now enjoy the greatest internet freedom in the world, and they can monitor all of the operations conducted by the state that concerns their own data.

## Results

EXAMPLES, FACTS

X-Road has now become the world's first transnational platform for data exchange. This is largely due to its distributed architecture, ensuring the efficiency of the state and securing the freedom of the citizens. Thanks to X-Road, the first version of which was completed in 2001, we will never have to upgrade all the information systems at the same time or limit our developers to specific tech frameworks. Our dispersed solution has been so successful that, in addition to the collaboration with Finland, other countries are looking into cooperation opportunities and implementing their own X-Road.

Distributed systems have also proven successful in private sector projects. In 2003, Scandinavian businessmen came to Estonia, where they found IT developers to build the current market leader in international calls. Skype is also a distributed system, which enables us to communicate internationally for free. So here again Estonians invented an innovative distributed solution that changed the world, offering the freedom to communicate with loved ones or business partners all over the world completely free of charge. Today, about half of all international calls are made using Skype, and the versions we have been using since the Microsoft group acquired Skype are also built in Estonia.

## Conclusion

PUNCH LINE

Present Estonians with a problem and they will create a distributed system. If you want to see how an effective information society functions, come to Estonia!

Estonia is a good breeding ground for new ideas because our citizens trust IT-solutions that make the state more effective and save them time. It was probably the citizen's enthusiasm to use e-solutions that encouraged the state, and today virtually all state-related operations — except marriage, divorce and real estate transactions — can be carried out digitally. In fact, according to the World Economic Forum, Estonia is the most entrepreneurial country in Europe.