



In Estonia, public organisations have their own information systems to process information relevant to the state and its citizens to provide public services. These often run on different systems that suit the function of the organisation. X-Road is a distributed information exchange platform that makes it possible for these different systems to communicate all across the governmental sector; for example, the police can access data from the health system, tax board or business registry and vice versa.

But to do this X-Road must satisfy three criteria. First the platform must be interoperable and technically easy for each member of the system to access the data they need. Second, the data cannot be corrupted in transit by the system or an external third party. And third, the data must be protected from prying eyes so that unauthorised individuals cannot view the content of the data en route.

X-Road has satisfied all three criteria since 2001, performing all the required functions for the state and the people of Estonia. It has enabled to increase the depth of cooperation between public organisations and reduced paper work exponentially so that public employees can concentrate on tasks that require human interaction.

The backbone of e-Estonia

To run a country where public services are accessible online for 24/7 you need interoperable information systems. To cope such a challenge Estonia developed X-Road platform which was initially used for making queries to different national databases but now is being used also as platform for amending data in multiple databases, transmission of large data sets and executing searches across several databases. Working as organizational model X-Road has become backbone of e-Estonia that allows the nation's various databases, both in the public and private sector, to link up and operate in harmony.

Today, if a state or private sector organization wants to offer automated e-services, it just has to connect its databases to X-Road which is the basis for the automation of public services in Estonia.

Cross-border cooperation

Estonia and Finland will be the first countries in the world with national data exchange platforms natively ready for cross-border data exchange services.

Cooperation was nothing brought up from curiosity but from a real need to collaborate as two closely tied neighboring economies demanded for fast national data exchange to grow more effective. Data exchange across national country borders of Estonia and Finland was made possible in June 2017.

For reinforcing long-term collaboration Nordic Institute for Interoperability Solutions was established to ensure the effectiveness of operative collaboration and strategic development of data exchange platform X-Road in the future.

Questions & answers

How securely does data move on X-Road?

The existence and structure of X-Road ensures that it is always clear when one or the other party has access to certain information, as the parties are connected directly and data exchange is conducted interactively. After receiving access rights, one member can temporarily use the digitally signed and time stamped information of another member through their encrypted channel. A data exchange process of this kind is secure, as availability, integrity and confidentiality are ensured.

How does X-Road differ from other information managing systems?

The difference comes from two aspects. The X-Road platform rests on the concept of distributed architecture which is, if you want to simplify, technically similar to known P2P file sharing platforms where participants are connected

directly (something like Torrent). Second aspect is that X-Road is an organizational model — while traditional data exchange tools are rather just technical tools. **Solution** — it is a governed platform while usually other information management systems are just technical tools.

To sum up — technology used to build X-Road platform is not new, the uniqueness is the way it was used to run data centered modern information society in Estonia.

Facts and figures

- 2679 services can be used via X-Road
- Complies with the European Framework of Interoperability
- Complies with the eIDAS requirements for trust services
- Over 1000 years of working time saved by X-Road last year