



QIY | RELATION WITH X-ROAD, ESTONIA

The Dutch society is rapidly changing into an information and network society. The government needs to stay connected, which it does by means of the Generic Digital Infrastructure (GDI). The GDI consists of products, standards and services, which are divided into 4 clusters

- Identification & authentication: the process and means with which people can identify themselves quickly and easily
- Data: citizens and companies will only have to supply their data to the government once
- Services: personal government information is easily accessible online
- Interconnectivity: to decrease the administrative burden on citizens and companies, a data exchange that is uniform and secure is necessary

X-Road, the Estonian Generic Digital Infrastructure

The Dutch government sees Estonia as an example. There, the government has implemented an advanced version of their GDI named X-road. It functions on the basis of open standards and contains a number of databases, which might contain information on name, address, mother tongue, education and profession. A major difference between the Estonian database and the Dutch is that in Estonia people are able to access and correct their information.

Another part of this infrastructure is an e-Business register, containing information about all profit and non-profit organizations in Estonia. This register also contains financial information of the organizations and which people work there.

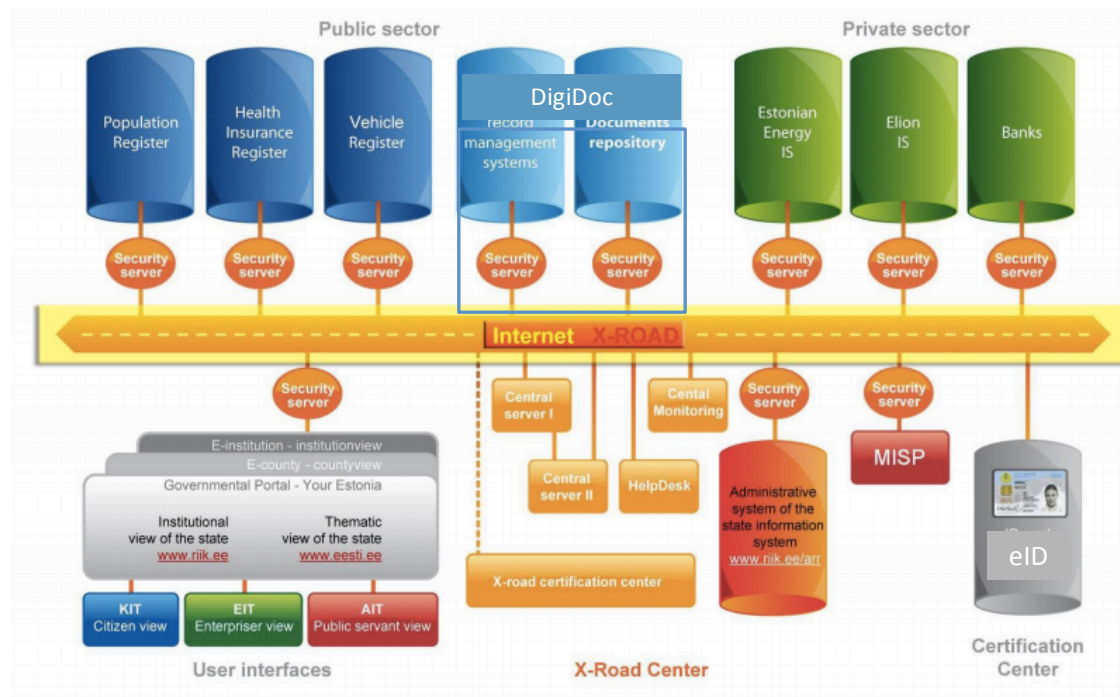
A third important service is 'DigiDoc': a central storage for documents. Citizens can place documents in it which can be used in the communication with both the government and companies.

For the authentication and identification, a card named eID is used. This is a secured card (also in mobile form) which can be linked with a computer through a card-reader. Obtaining an eID is mandatory and is used as identification, for internet banking, and numerous other services.

Additionally, an online health folder is connected to X-road. Citizens have access to their own file and they can see which health professionals have access to the file. The

employer of these health professionals can also see who access files since everyone logs in with their own eID.

Finally, X-road is also used by banks, energy companies and telecom's, particularly because of the fact that a generic authentication service is available: the eID card.



Architectural map X-Road

Public and private parties

In the picture above, X-road is represented by a road and the organizations that connect can be seen as houses along that road, each with its own entrance. This entrance is a security server which encrypts all data, registers all data traffic and only allows entry to the ones who are supposed to enter according to previously made agreements. It has been established which data are necessary for which services and access is only given to these specific data.

Governments and companies build their 'house' according to their own plan. However, there are X-road rules and standards. Subsequently, a government agency determines whether a 'house' is allowed to be connected, for which security is a priority. Private parties develop the lion's share of the infrastructure. Companies and the government attempt to market X-road together, both domestically and abroad.

Qiy Scheme

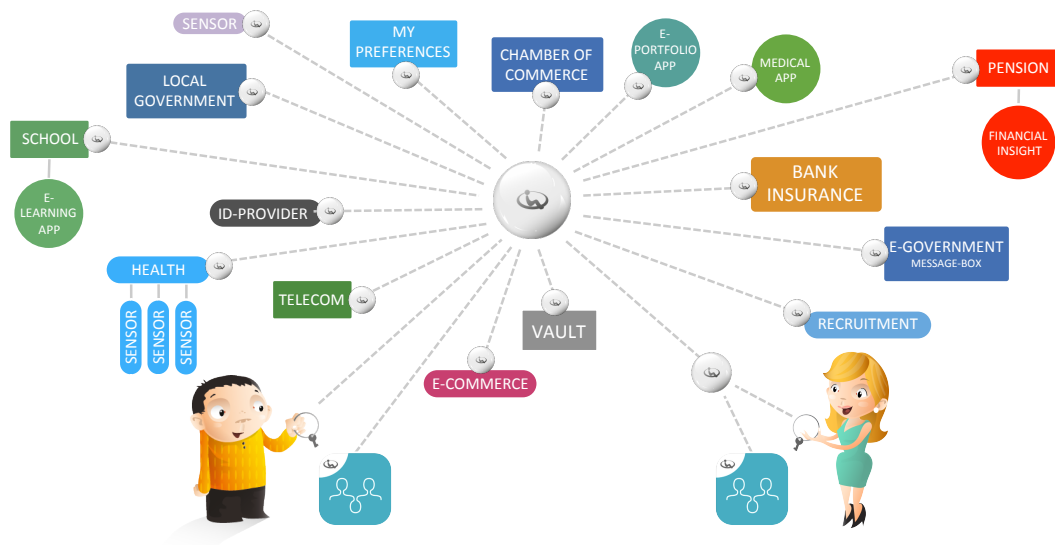
The development of the Qiy Scheme has led to a system of agreements and protocols for which the independent and non-profit Qiy Foundation is responsible as Scheme Authority. The core of this scheme is that the privacy of its users is safeguarded, data is optimally secured and people have access to their own data and they determine what happens with it.

On the basis of the Qiy Scheme, a scalable and secure infrastructure has been developed which is called the 'Trust Framework'. This infrastructure technically adds a layer to the internet: a trust layer. The Qiy Scheme and Trust Framework make sure that connected parties adhere to the organizational, legal and technical rules for handling personal data.

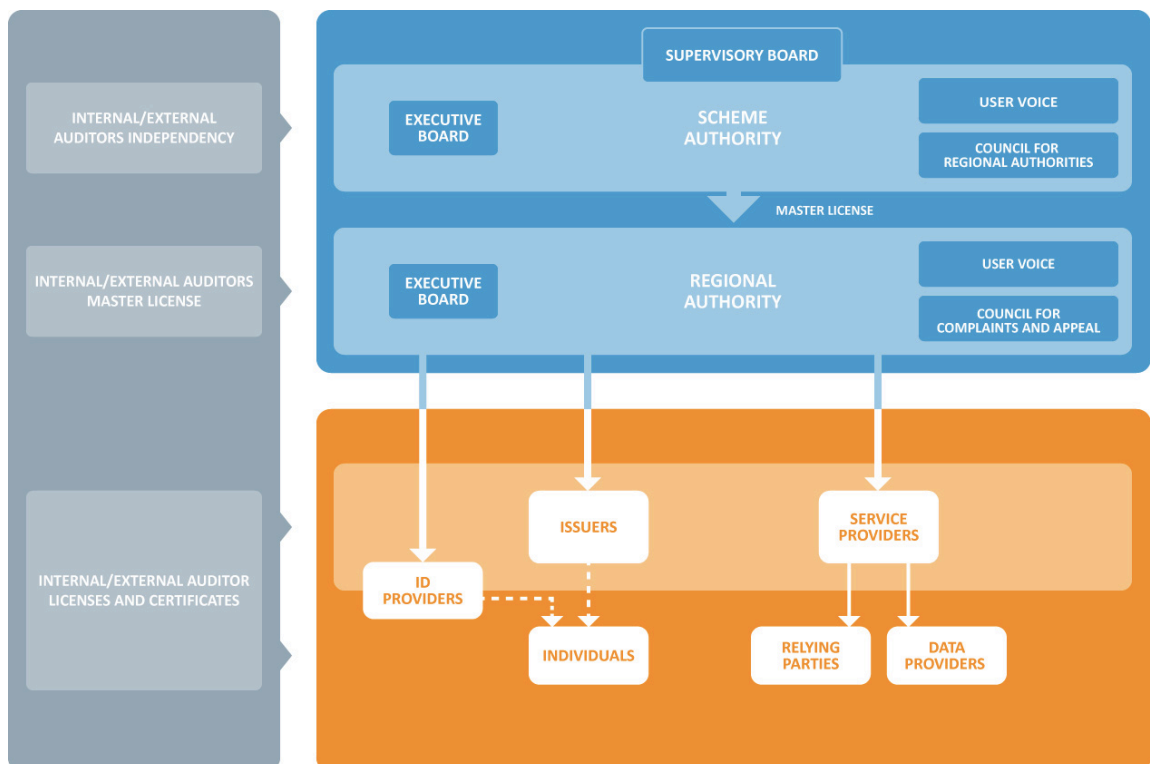
Within the trust layer, every individual gets access to a so called 'Qiy Node'. This is not a complicated process. A Qiy Node can be created because an application or a website uses the infrastructure and automatically activates a Qiy Node if the person does not have one yet.

When an individual truly becomes the center of his own digital world, he can:

- Manage his data from 1 place (without the data actually being stored there);
- See where his data is stored (at which parties). This enhances transparency which in turn leads to trust);
- Share data with other individuals, but also with organizations such as governments, healthcare facilities and companies, which can subscribe to the data of the individual (this offers convenience and control)



The Qiy Foundation is the party, which is responsible for the continuation of the development and the management of the scheme. Public and private parties take the underlying infrastructure to the market and aid organizations to connect to the infrastructure. Independent audit parties make sure that connected parties and applications uphold the Qiy Principles.



Characterization Qiy and X-Road

	Qiy	X-Road
	Independent international scheme regarding the sharing of data under the control of the individual	Digital infrastructure of the government in Estonia enabling citizens to access their data at organizations
Generic digital infrastructure?	Currently, the Dutch government is researching whether the Qiy Trust Framework can be utilized as a part of the Generic Digital Infrastructure	X-Road is the implementation of the Estonian Generic Digital Infrastructure
Manager	Independent foundation	Government institution
Scope	International	Estonia (possibly other countries)

Identification en authentication	Qiy basically does not determine identification and authentication. Through a Qiy Node, the individual can connect sources (with identifying data) with parties that need data. Depending on the source and the way the source has identified the individual, a certain reliability-level is applicable. (Stork 1 to 4)	eID is the mandatory way of authentication to use X-road. eID demands that the individual is identified on a sufficiently high level (Stork 3)
Data	Data remain stored at the authentic or original source. Individuals can access their data and share it with parties of their choice through the Qiy Trust Framework.	Data remain stored at the authentic or original source. Citizen can access their data and share it with parties of their choice through X-road.
Sharing of data	Parties can subscribe to data of the individual, if permitted by that individual; the individual will be the 'node' of his own data. This concerns all data.	Citizens can access their data and use services. X-road is not specifically intended to enable sharing of data between sources, citizens and receiving parties. It mainly concerns data from the government, energy companies and telecom's.
Privacy	Peer-to-peer connections over multiple infrastructures with multiple service providers prevents the platform-effect through which one party can know everything.	There is one infrastructure which is monitored by the Estonian government: protection through legislation.
Consent	Qiy uses the 'distributed ledger' principal (Blockchain) to make permission for the use of data transparent, explicit and reliable.	For consent, X-road refers to the national and European legislation and uses 'certification and time stamp service' principles to manage consent concretely.

Services	Data is available from authentic and original sources. The individual selects applications that give him insights and an overview.	Personal government information is easily accessible.
Costs	<ul style="list-style-type: none"> – The use of the infrastructure (Qiy Trust Framework) is free for individuals. – Data providers and Relying parties pay for the connection and trust services: <ul style="list-style-type: none"> – time-stamp service; – certification service; – validity confirmation service – Suppliers of applications and data can ask compensation for their services 	<ul style="list-style-type: none"> – Purchase of eID amounts to 100 Euro. – Use of the infrastructure (X-road) is free for citizens – Data providers and Relying parties pay for the connection and trust services: <ul style="list-style-type: none"> – time-stamp service; – certification service; – validity confirmation service – Suppliers of applications and data can ask compensation for their services

Conclusion

The Netherlands is an information and network society in which the citizen should have a central place. This is not possible without the active participation of the government, because the government is the source of multiple pieces of personal data which the citizen should have access to: 'digital self-determination for everyone!'.

The Estonian model offers a solid base for a digital infrastructure. Qiy can add value on top of it. The enrichment of the X-road infrastructure through a personal Qiy Node and the Blockchain-based consent model are only a few possible examples.

The success of Estonia is for a large part derived from the promptness with which the Estonian government embraced X-road. In other countries, such as Finland and the UK, the government is also a major driver of interesting developments in this field: Mydata and Midata respectively.

The non-profit Qiy Foundation is both nationally and internationally considered to be a leading developer of an independent scheme for personal data management under the control of the individual.

A growing number of members underlines the belief in the vision and the mission of the Qiy Foundation and actively contributes to the continuation of the development of the Qiy Scheme.

Qiy Foundation and her members ask the Dutch government to participate actively in the Qiy Foundation for the interest of the people. The shared view of the Qiy Foundation and many of its member is that The Netherlands should be positioned as a country in which citizens have control of their data and determine with whom the data is shared, both in the private and public domain. This includes the availability of services to maximize the protection of privacy when necessary.

All of this stems from the goal to empower Dutch society, to safeguard public values and boost the economy.

Members Qiy Foundation

as of November 2016



Member worden?

Kijk op www.qiyfoundation.org/membership