enter
e-estonia

e-Estonia guide

The most advanced digital society in the world

— Wired

Estonians are pathfinders, who have built an efficient, secure, and transparent ecosystem that saves time and money. e-Estonia invites you to join us on a digital journey.

about Estonia

Situated:	on the Gulf of Finland
Population:	1.3 million
Language:	Estonian
Size:	45,339 sq. km
Capital city:	Tallinn
Currency:	Euro
Government:	Parliamentary democracy
Member of:	EU, NATO, WTO, OECD, DIGITAL 5

Estonia is an innovative nation in Northern Europe known for its digital ambitions. Thanks to smart e-solutions created here, it takes only a few hours to start a company and minutes to declare taxes. The nation is in the top countries in Europe in terms of start-ups per capita and ranks first in the Entrepreneurship Index by the WEF.

However — there's a lot more to discover! We have world-famous choir music and Simple Session — the most international action sporting event in the world. Meanwhile, we hold the fourth place in urban air quality in the world, with forests covering about half of Estonian territory. And still, as a digital society, almost 90% of Estonian households have broadband coverage.

Discover, what our innovative country has to offer!

the journey of a digital pathfinder

Siim Sikkut
Estonian Government
Chief Information Officer

Estonia, as a small country, has never enjoyed abundant natural resources or a huge internal market. Yet, we do have a lot of industrious and entrepreneurial people. In fact, according to the World Economic Forum, we are the most entrepreneurial country in Europe.

Estonia has realised that our size is actually an advantage which helps us create effective solutions that the world needs. That´s probably the reason Estonia is among the top countries in Europe ranked by start-ups per capita. The examples range from the private sector's Skype to the e-Residency program created by government. e-Residency is our governmental startup with great potential to revolutionize location-independent, global business management. (If you haven't joined yet, you should — visit e-resident.gov.ee).

In just the last few decades, Estonia has become a place where new solutions get their start. We are used to being pathfinders in digital society and government. What began slowly, step-by-step, has become our nation's calling card. Estonian tech startups are also disrupting industry verticals one by one. Our credo: We constantly seek and develop new digital solutions that allow things to get done faster, better, and cheaper. Estonian digital solutions, in government and beyond, are geared for practical benefits — not just the cool factor (though they are cool, too).

Our credo: We constantly seek and develop new digital solutions that allow things to get done faster, better, and cheaper

Of course, every coin has two sides. In the complicated IT world, you can expect to sometimes err. For a country which has consciously chosen a pathfinder role, adopted rapid reforms, and been a role model for the creation of new solutions, it is inevitable that things sometimes go wrong. It is important to stick to your principles, learn from your mistakes (quickly!), and to talk about them openly — features common to true experts. This is how a successful digital society was built in Estonia, and it's the way we intend to continue.

We have built a digital government and society from scratch, and so can you. Today, Estonia has shared its e-governance journey with 60 governments that follow our example and employ our competence. If you want to see how a truly successful information society works, come to Estonia — or start by checking out e-estonia.com. Our private companies, experts as well as government officials are happy to share our digital know-how and solutions to make the world a more efficient place.

we have built a digital society — and so can you

e-Estonia is an incredible success story that grew out of a partnership between a forward-thinking government, a pro-active IT sector, and a switched-on, tech-savvy population. Being a pathfinder in public sector e-services meant that nothing was prepared for us — we had to cut our own trail to discover how to provide services in a form that did not yet exist, and which could be available to everyone 24/7.

Here are some indicators that show how IT-solutions have improved everyday life in Estonia.

Savings and efficiency:

- At least 2% of state GDP is saved due to collective use of digital signatures
- More than 800 years of working time saved annually thanks to data exchange
- Time to establish a business reduced from 5 days to 3 hours

Financial indicators:

- 98% of companies are established online
- 99% of banking transactions are online
- 95% of tax declarations are filed online — it takes only 3 minutes!

e-Government indicators:

- 98% of Estonians have a national ID-card
- Over 30,000 people have applied for e-Residency
- Over 30% of Estonian voters from 116 countries use i-Voting in Estonian elections

In 2007, Estonia set a world record for establishing a company online in 18 minutes

Healthcare:

- 97% of patients have countrywide-accessible digital records
- 99% of prescriptions are digital
- 500,000 queries by doctors and 300,000 queries by patients every year

X-Road data exchange platform:

- 99% of public services online with 24/7 access
- 500 million queries annually via X-Road
- No system downtime since 2001

Public safety:

- Police work has become 50 times more effective thanks to IT solutions
- e-Police system available in police cars unites over 15 databases, including those of Schengen and Interpol
- Estonia was the first country in the EU to legalise testing self-driving vehicles on public roads

Cyber security:

- Locked Shields is the world's largest and most advanced international technical live-fire cyber defence exercise — it takes place annually in Estonia concurrent with the CYCON conference
- Estonian government started live tests with KSI Blockchain technology in 2008. Today, KSI Blockchain service is available globally in more than 180 countries
- Estonia hosts the NATO Cooperative Cyber Defence Centre of Excellence and European IT agency

Education:

- First in Europe in the OECD PISA test
- Two times more students in ICT-related courses on the average than in developed countries
- 85% of schools use e-School where one million grades are entered every day

our success story

When Estonia started building our information society about two decades ago, there was no digital data being collected about our citizens. The general population did not have the internet or even devices with which to use it. It took great courage to invest in IT solutions and take the information technology route. Here are some of our best e-solutions that have led to Estonia becoming one of the world's most developed digital societies.

Principles of Estonian e-governance:

- **Decentralisation** — There's no central database and every stakeholder, whether a government department, ministry, or business, gets to choose its own system.
- **Interconnectivity** — All system elements exchange data securely and work smoothly together.
- **Integrity** — All data exchanges, M2M communications, data at rest, and log files are, thanks to KSI blockchain technology, independent and fully accountable.
- **Open platform** — Any institution may use the infrastructure and it works as an open source.
- **No legacy** — Continuous legal change and organic improvement of the technology and law.
- **Once-only** — Data is collected only once by an institution, eliminating duplicated data and bureaucracy.
- **Transparency** — Citizens have the right to see their personal information and check how it is used by the government via log files.

No. 1 in Freedom of the Net (Freedom House 2016)

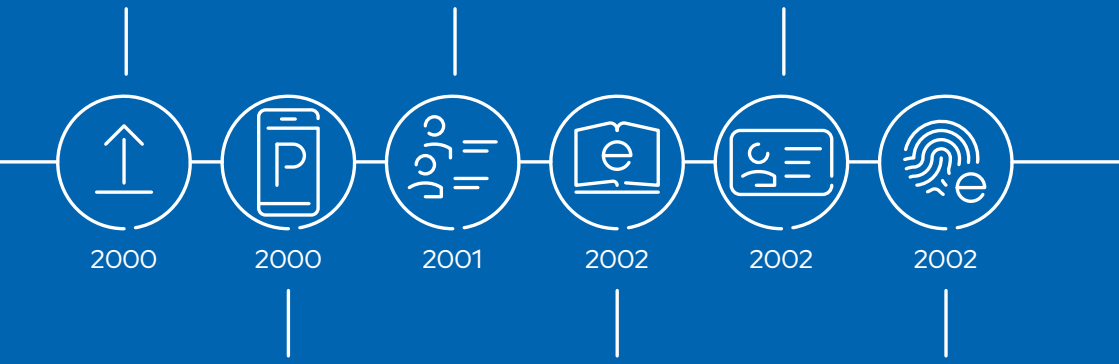
the journey of e-Estonia

e-Tax board
Electronic tax filing system. Each year, around 95% of all tax declarations in Estonia are filed electronically.

Population Register
The state's database for holding basic information about each person living in Estonia.

X-Road
The backbone of e-Estonia. Invisible yet crucial, it allows the nation's public and private sector e-Service databases to link up and function in harmony.

ID-card
Estonia has by far the most highly-developed national ID card system in the world. Much more than a legal photo ID, the mandatory national card also provides digital access to all of Estonia's secure e-services.



m-Parking
Mobile Parking is a convenient system that can be used in privately-owned and public parking facilities in Estonia, allowing drivers to pay for parking using their mobile phones.

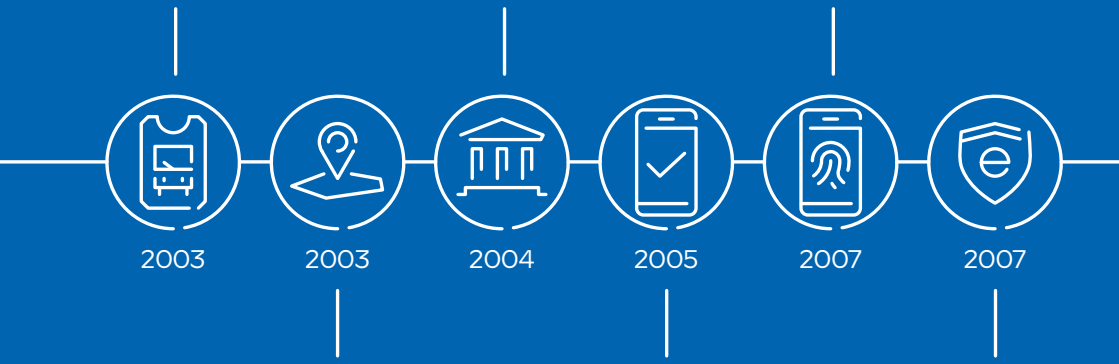
e-School
One of the most widely used web applications for schools in Estonia, it provides an easy way for parents, teachers, and children to collaborate and organise all needed information for teaching and learning.

Digital signature
Since 2002, every Estonian resident has been able to provide a digital signature. Today, this is done via ID-card, Mobile-ID, or Smart-ID, for safe identification and use of e-services.

ID bus ticket
On buses and trams, a passenger may dial a telephone number to buy a ticket or a monthly pass. Because the ticket is tied to the passenger's state-issued ID code, any ticket controller who checks the passenger's ID Card will instantly see that a ticket has been purchased.

Estonian Education Information System
A state database that brings together all information related to education in Estonia.

Mobile-ID
Allows people to use a mobile phone as a form of secure digital ID. Like the ID-card, it can be used to access secure e-services and digitally sign documents but has the added advantage of not requiring a card reader.



e-Land Registry
A one-of-a-kind web application that contains information on all property ownership and rights for properties and land parcels.

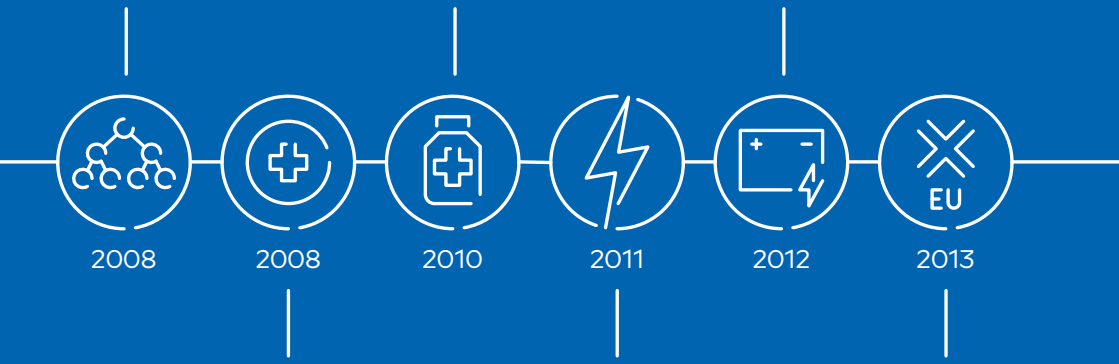
i-Voting
A unique solution that simply and conveniently helps engage people in the governance process. In 2005, Estonia became the first country in the world to hold nationwide elections using this method.

e-Police system
Involves two main tools: a mobile workstation installed in each patrol car, and a positioning system that shows headquarters every officer's location and status.

Keyless Signature Infrastructure
A blockchain technology designed in Estonia and used since 2012 to make sure networks, systems, and data, such as national health, judicial, legislative, security, and commercial code systems, are free of compromise, all while retaining 100% data privacy.

e-Prescription
A centralised paperless system for issuing and handling medical prescriptions. At the pharmacy, all a patient needs to do is present an ID-card. The pharmacist then retrieves the patient's prescription from the system and issues the medicine if it has been prescribed to the patient.

EV quick-charging network
The charging infrastructure project created an Estonian network of quick chargers. Quick chargers for electric cars blanket Estonia today and ensure freedom of movement for drivers of electric cars.



e-Health system
A nationwide system integrating data from Estonia's healthcare providers to create a common record every patient can access online.

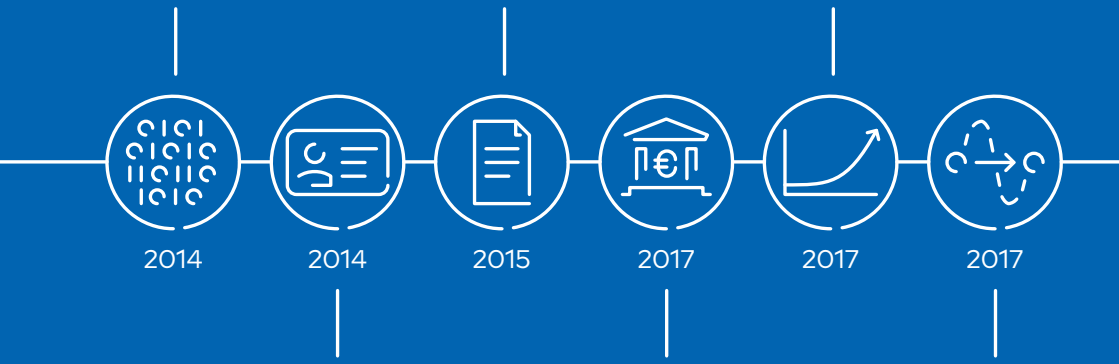
Smart Grid
A digitally enabled electrical grid that gathers, distributes, and acts upon information regarding the behaviour of all participants (suppliers and consumers) in order to improve the efficiency, importance, reliability, economics, and sustainability of electricity services.

X-Road Europe
Estonia was the first in the world to interconnect decentralized components of state- and public sector databases at the national level.

Data Embassy
Currently in its testing period, the Data Embassy is an extension of the Estonian government in the cloud, meaning the state owns server resources outside its territorial boundaries. Estonia's first Data Embassy in Luxembourg will be operational by the end of 2017.

e-Receipt
A portal that enables end users to manage their receipts, as well as documents related to those, such as letters of guarantee and product manuals, in a single, convenient web environment.

Reporting 3.0
The goal of the Reporting 3.0 project is to reduce the burden on entrepreneurs concerning obligatory submission of data to state institutions by the automatisation of data flow.



e-Residency
A transnational digital identity for which anyone in the world may apply allows the user to run a trusted location-independent EU business online with all the tools needed to conduct business globally.

Opening a bank account online
Estonian law was amended to allow e-residents to open business bank accounts entirely online.

Testing intelligent transportation
Estonia took an important step when the government made it legal to test self-driving vehicles on all national and local roads.

building blocks of e-Estonia

e-Estonia's success relies on an open-minded citizenry, who are eager to use e-solutions, and a strong infrastructure that has made it possible to build a safe and user-friendly e-services ecosystem.

e-Governance

Thanks to a safe, convenient, and flexible digital ecosystem, Estonia has reached an unprecedented level of transparency in governance and built broad trust in its digital society. For example, our government uses e-Cabinet to pass laws, while citizens use i-Voting to have their say. As a result of digital signatures, Estonia annually saves 2% of GDP and has become a hassle-free environment for business and entrepreneurship. Estonia is probably the only country in the world where 99% of public services are available online 24/7.

e-Identity

Thanks to a digital identity issued to every Estonian and e-Resident of Estonia, the country is years ahead of countries still trying to work out how to authenticate people without physical contact. In Estonia, every person can provide digital signatures using their ID-card, Mobile-ID, or Smart-ID, so they can safely identify themselves and use e-services. Digital signatures have been used in Estonia since 2002, and over 370 million signatures have been provided since then — this is more than in the entire European Union.

Estonia is the first in the world to offer 99% of all public services online 24/7

Interoperability services

The 21st-century keywords, citizen-centred state, and service-oriented information system, require information systems to function as an integrated whole to support citizens and organisations. To do that, organisations and information systems, such as the Population Register or State e-Services Portal, must be interoperable and able to work together so that data is requested from the citizen once. Estonia's solution for maintaining a modern state is the data exchange layer X-Road, which saves Estonians 800 years of working time every year.

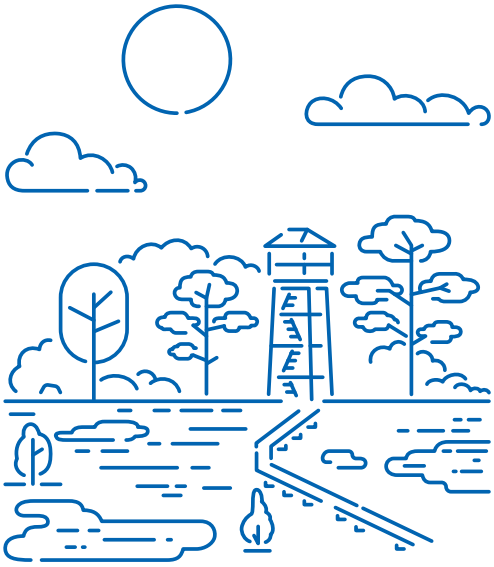
Security and safety

Being a digital society means exposure to cyber threats. With solid investments in cybersecurity infrastructure, Estonia has developed extensive expertise in this area, becoming one of the most recognised and valued international cybersecurity experts. After our experience with cyberattacks in 2007, scalable KSI Blockchain technology was developed in Estonia. Besides securing its own e-services with blockchain, such as e-Law and e-Court, Estonia also became host to the NATO Cooperative Cyber Defence Centre of Excellence and the European IT agency. Also in regular use, e-Police, Alarm Centre, and e-Ambulance Fast Reaction keep Estonian streets safe.

Healthcare

Estonia's healthcare system has been revolutionised by innovative e-solutions. Patients and doctors, not to mention hospitals and the government, benefit from convenient access and savings that e-services deliver. Each person in Estonia has an online e-Health Record and can use e-Prescription to get medicine without paper prescriptions. The electronic ID-card system and blockchain technology are used to ensure health data integrity and mitigate internal threats to data.

Estonia was the first in the world in 2005 to vote using an internet-based solution



Location-based services
Thanks to the location-based aspect of many of our public services, Estonia has been able to increase the well-being and safety of its citizens. In 2000, Estonia made headlines by pioneering a system that can instantly pinpoint the location of any GSM mobile phone used to make an emergency call. Today, Estonia continues its commitment to innovation and new technologies by offering the opportunity to use Estonia as a test bed for self-driving technologies and intelligent transportation systems.

No. 1 in mobile network coverage (Global IT Report 2016)

No. 6 in mobile broadband penetration (Global IT Report 2016)

No. 1 most entrepreneurial country in Europe (World Economic Forum 2017)

Business and finance

Modern e-solutions make setting up and running a business in Estonia quick and easy. Estonian solutions like digital signatures, electronic tax filing, the e-Business Register, and the availability of public records online have pared down bureaucracy to a bare minimum and facilitated an environment where business is easy, yet also secured with blockchain technology. It's a simple fact: Where business is easy, business will grow. That's why Estonia is among the countries hosting the highest concentration of start-ups per capita.

No. 1 in public services in the DESI index (EU Commission 2017)

No. 3 in start-ups per capita (2016)

Education

The goal of the educational digital revolution in Estonia is to implement modern digital technology, such as e-School or the Estonian Educational Information System, more efficiently and effectively in learning and teaching, and to improve the digital skills of the entire nation. For example, our goal includes ensuring that every student receives the knowledge and skills to access the modern digital infrastructure for future use. Estonia's success in the digital revolution is reflected in the fact that twice as many students pursue IT-careers in Estonia versus the average in other OECD countries.

No. 1 in the Digital Development Index (Barclays 2016)

an ambitious future

Successful countries must be ready to experiment. Building e-Estonia, one of the most advanced e-societies in the world, has involved continuous experimentation and learning from mistakes. Estonia sees the natural next step in the evolution of the e-state as moving basic services into a fully digital mode: Things can be done for citizens automatically and, in a sense, invisibly.

In order to remain an innovative, effective, and successful Northern European country that leads by example, we need to continue executing our vision of becoming a safe e-state with automatic e-services available 24/7.

A new digital nation
e-Residency is building a new digital nation for citizens of the world where no-one is held back from their entrepreneurial potential because of where they choose to work or reside. This has enormous potential for unlocking global growth by democratising access to entrepreneurship and e-commerce.

We believe that countries will one day compete for e-residents based on the quality of their public e-services and their business environment.

Data Embassy
The Data Embassy is an extension in the cloud of the Estonian government, which means the state owns server resources outside its territorial boundaries. This is an innovative concept for handling state information, since states usually store their information within their physical boundaries. Data Embassy resources are under Estonian state control, secured against cyberattacks

Estonia is the first country to offer e-Residency — a government-issued digital identity available to anyone in the world interested in running a global EU company fully online

or crisis situations with KSI blockchain technology and are capable not only of providing data backups, but also of operating the most critical services.

Blockchain
Although blockchain has only become a hot technology in the private sector in recent years, Estonia has been testing the technology since 2008 and is leading the blockchain revolution. In order to provide an unchangeable historical data record, the technology has been in active use since 2012 in Estonia's registries, such as national health, judicial, legislative, security, and commercial code systems. There are plans to extend its use to other spheres, such as personal medicine, cybersecurity, and data embassies.

Cross-border data exchange
As businesses and citizens become more mobile, the need for truly international e-services becomes all the more pressing to remove the red tape involved in the cross-border movement of people and companies. Estonia has begun this work with a public sector data exchange facility, established between Finland and Estonia in 2017. Estonia hopes that cross-border data exchange will soon become possible between all European countries.

Intelligent transportation
Estonia is already an innovation leader in IT with electronic identity cards, i-Voting, and e-Residency. In 2017, we took another important step when the government made it legal to test self-driving vehicles on all national and local roads. We believe that self-driving technology helps improve road safety and road use efficiency.

Estonia was first in the world to test and use blockchain technology for government

With self-driving cars, Estonia will continue its commitment to providing a state-of-the-art platform for innovation and new technologies as it already has all the prerequisites in place.

Reporting 3.0

The goal of Reporting 3.0 is to reduce entrepreneurs' burden of obligatory data submission to state institutions. A new e-Tax and Customs Board portal will be completed in 2020, where the information exchange between companies and the tax authority will be automatic and require only the granting of access to data. This will save time and money, allowing companies to focus on growth and productivity.

Healthcare 4.0

Healthcare 4.0 is Estonia's solution for the future. First, thanks to personalised medicine and genome-based analysis, people will become more aware of the factors influencing their health, and individuals will take more responsibility for managing their own health. Second, patients will be able to access information wherever they happen to be at a time of their choosing, enabled by point-of-care devices — equipment provided by the state that patients may use themselves. Finally, Estonia will provide global health accounts and introduce the benefits of medical procedures based on artificial intelligence.

Digital transformation in education

We in Estonia believe that raising smarter kids is the smartest investment a country can make. But we also understand the importance of lifelong learning. Estonia's educational digital revolution implements modern digital technology more efficiently and effectively in learning and teaching, improving the digital skills of the entire nation. One example: by 2020 all study materials in Estonia will be digitized and available through an e-schoolbag.

Estonia was first in the world to interconnect decentralised components of state and public sector databases at a national level

Industry 4.0

Introduction of Industry 4.0-type solutions could impact everything from how quality is monitored to how much effort goes into supply chain management. Several players in Estonia's ICT sector focus on Industry 4.0 solutions development. At the centre of their strategy is a concept called Real-Time Factory which, as the name suggests, allows managers to track key performance indicators in real time, showing where improvements can be made and allowing the entire factory to operate as one integrated system. Tallinn-based SimFactory, for example, specializes in helping electronics manufacturers adopt the Real-Time Factory approach, giving them the kind of data-driven production that can streamline every aspect of their operations.

Real-Time Economy

The-Real Time Economy (RTE) is an environment where financial and administrative transactions connecting citizens, business and public-sector entities are in structured standardized digital form. These transactions are increasingly generated automatically and completed in real time without store and forward processes. Digital services should be designed so that they are easy to use and secure for the EU citizen (also for the handicapped and those who do not use the internet). Incentives should be provided for the migration from paper, e-mail, and manual versions, and data connected from all relevant sources. For example, solutions like real-time payments, e-ID services, real-time e-Invoicing, and e-Receipts, automated and real-time accounting and VAT-reporting, automated credit and investment risk evaluation and processing, can hugely benefit the digital single market through direct cost savings.

IT sector

IT plays a central role in Estonian life because people trust IT solutions. Essential e-solutions in Estonia that enable the digital society to function smoothly were all built by local Estonian companies. Our IT sector has over 20 years of expertise and experience in automating public and private sector services. Today, virtually all state-related operations can be done online 24/7 — prescriptions are issued digitally and only a tiny fraction of individual tax declarations are filed on paper. To date, Estonia has shared its e-governance journey with 60 governments and exported its solutions to over 130 countries around the world. The Estonian IT sector and ambitious start-up community (known affectionately as the Estonian Mafia) dare to create innovative e-services that change the world — from Skype to e-Residency.

the Estonian ICT cluster

The Estonian ICT cluster is the main force behind cooperation and development in the Estonian IT sector. It forms a collaborative platform for enterprises which combines competences and provides access to a dynamic network of companies. For example, most public and private e-solutions in Estonia have been made using ICT cluster partners. Through the ICT cluster, Estonian IT companies can cooperate in order to find partners and develop new solutions, create new products, and improve their competitive ability on international markets.

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the e-state of mind

The e-Estonia Showroom is an executive briefing centre and innovation hub, offering a full overview of Estonia's e-solutions. Our goal is to inspire global policymakers, political leaders, corporate executives, investors, and the international media with Estonia's success story and build links to leading IT service providers.

45,000 visitors and 2,700 delegations hosted from 130 countries

The e-Estonia Showroom operates in a 360 square-metre space and includes hands-on exhibits. We have hosted 45,000 visitors and 2,700 delegations from 130 countries. Working closely with our public and private sector partners, we astound delegations by tailoring the content of every briefing to suit guests and their needs, focusing on presenting the e-Estonia concept and coordinating G2G, B2G, and B2B relations.

360 m^2 with hands-on exhibits

During the visit, guests receive an inspirational introduction about the underlying mechanisms involved in digitising a society, an overview of the main challenges and policies, an understanding of the infrastructure, e-solutions, and services as well as contact with the IT industry. Apart from hosting delegations and arranging B2B meetings, we can also create custom-tailored visit programmes and deliver professional presentations at international conferences and events.

Get in touch and book a visit online: e-estonia.com

find us

The showroom is conveniently located just a two-minute drive from the airport and seven minutes from the city centre: 2a Lõõtsa, 11415 Tallinn, Estonia

get in touch and book a visit online: e-estonia.com