№57 2/2021

life in ESTONIA



Special! EXPO 2020 Dubai

A nation of tomorrow

Estonia: Digital. Smart. Sustainable

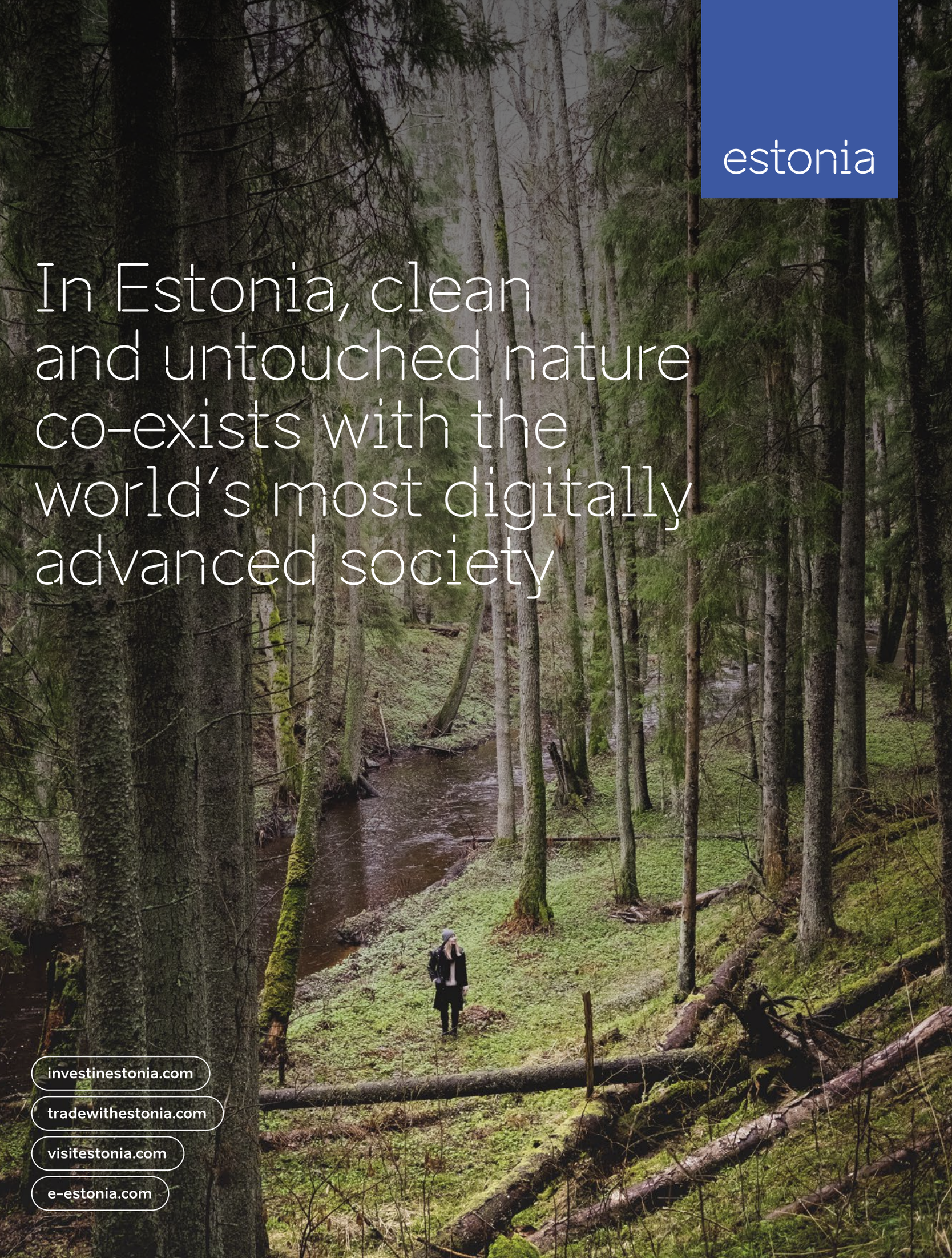
Unicorn factory

The land of five seasons

The nicEST guys of Estonian music

Pamper yourself Estonian style

Technology is our second language


estonia
In Estonia, clean and untouched nature co-exists with the world's most digitally advanced society
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tradewithestonia.com
visitestonia.com
e-estonia.com

Cover photo "Coexistence"
by **Sirli Raitma**

Welcome to the Estonian Pavilion at Expo 2020 Dubai!

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EAS Enterprise Estonia

Estonian Investment Agency supports companies investing and expanding in Estonia. World-class human capital, unique digital capabilities and a competitive business environment make Estonia a smart, agile location for businesses with global ambitions.

investinestonia.com

The production of the magazine has been inspired by green technology

Every five years, the world meets for six months at a global EXPO to share what we have accomplished and how we are shaping the world. In 2021 a landmark EXPO will be hosted for the first time by a Middle Eastern country in Dubai, the United Arab Emirates.

Despite a postponement due to the COVID crisis, EXPO Dubai has more than 190 participant countries and 25 million visitors are expected to visit. Due to the vision of the organisers, the direction of EXPO itself has changed and returned to philosophic roots in which innovation, technology and business connections come first.

I am very happy that Estonia is participating in the world's greatest show with the largest business delegation ever, giving a boost to our companies and prepared to expand into new markets. Estonia's 40+ companies and organisations will offer world's class digital, smart and sustainable solutions in a bid for new partners around the globe.

At the heart of Estonia's bright, flag-blue pavilion just off the main Al Wasl Plaza, we'll display the story of how we've become the most digitally advanced nation in the world. Estonians live in an environmentally friendly digital realm, so smart and sustainable are also keywords in the exhibition. Our pavilion portrays how Estonia's digital society is carefully combined with a love of nature. All our partners advocate a sustainable lifestyle, the importance of the environment to what we wear and eat. We show every visitor the inescapable tomorrow that Estonia occupies today.

EXPO Dubai is a real-world show and will be remembered as one of the grandest gatherings the world has ever seen — the World's Greatest Show. And Estonia is present with its blue pavilion, wearing its tricolour blue-black-and-white uniforms stands ready to participate in both the story telling and the business world championships.



Daniel Schaer,
Commissioner General of the Estonian Pavilion at Expo 2020 Dubai

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Estonia is called the most advanced digital society in the world. The Estonian presence at Expo 2020 Dubai is an extension of the country, reflected by three keywords: digital, smart, and sustainable.

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The story of e-Estonia for all senses

Estonia's pavilion, a bright blue cube, is located near the epicentre of EXPO, a few steps away from Al Wasl Plaza. The award-winning KOKO/MOTOR architecture team has designed the simple Nordic interior that is part of the exhibition, as partner companies will present their products "in action"

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Estonia's digital ecosystem — creating a seamless society

For the public sector, seamlessly connected digital services lead to bigger potential for economic growth and a healthier, better living society. For businesses, smart e-solutions are key to saving money and to building profitable growth. Estonia is championing both. It's now working on becoming the first country to develop a comprehensive legal framework for AI.

24

Meet Tallinn, the Capital of Innovation

Tallinn is a city where the future joins the present. It is here that you can find self-driving cars and delivery robots, solar-panelled pavements, smart crossings, self-service mini shops or other futuristic products and services. *Think global, test in Tallinn*, is the motto.

30

Future City comes from TalTech

Imagine a city that is simultaneously a community centre, a renewable energy producer, always online, fast and interactive, paperless and carbon neutral, clean and quiet — a city that takes everyone into account,. Seems like something out of a science fiction novel? Well, it isn't. Scientists of Tallinn University of Technology are seeking solutions for all the above-mentioned ideas.

34

Smart and green, Tartu attracts talent

Tartu, the second biggest city in Estonia, will celebrate its 1000th anniversary in eight years' time. It is home to one of the oldest universities in northern and eastern Europe, which has played a pivotal role in the development of the city. Before the city transforms into the European Capital of Culture in 2024, Tartu will present its smart solutions at EXPO 2020 this autumn in Dubai.

40

Estonia — a springboard for unicorn companies

Estonia is now home to 7 unicorns which distinguishes the country in terms of unicorns per capita in Europe. Let's get deeper into the major factors behind the success of this business ecosystem and how you can be part of it.

42

How to manage a digitalisation wave in construction sector

In respect to digitalisation, the Estonian construction sector has been a slow starter. To help the situation, the Digital Construction Cluster was formed, which consists of all the stakeholders of a construction lifecycle that offer knowledge-based construction solutions. Within short time there are some notable success stories out there.

44

New trends in our post-pandemic world

We can't ignore the elephant in the room — a pandemic that affected everyone on the planet. ETS NORD and Viljandi Windows and Doors are just two of the many companies that have adjusted their products to the new normal.







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Dynomax: real-road power dynos

Want to add some horsepower to your exotic supercar — such as a Ferrari, Lamborghini or even a Koenigsegg hyper-car? Dynomax manufactures professional 2WD and 4WD chassis dynamometers, developed for imitating the real road conditions.

48

Inspired by the Northern Lights, Adamlights brightens up the place

Adamlights is a company with global reach. In addition to Europe, they have created light designs as far away as New Zealand and the USA. The next goal for Adamlights: to make itself visible in the Gulf region.

50

PORTFOLIO. Remo Savisaar

59

Estonia — where wilderness is never far from your doorstep

Estonia is a meeting place of Baltic, Nordic, Scandi and Soviet cultural relics, white sandy beaches, long-distance hiking trails, and sailing routes between the numerous islands.

63

Clay — an old material leading us to the future

Clay is a material that can be reused over and over. It is a ten-thousand-year-old technology that works perfectly in the present day because it looks beautiful, is easy to maintain, and antibacterial. UKU — Pure Earth is its best advocate in Estonia. Why? To build a cleaner living environment for our future generations.

66

The future of farming: hyperlocally grown food

Eating healthy and freshly grown food has been on the minds of people around the world lately. Click & Grow is manufacturing smart gardens so that everyone can become a gardener and have a supply of healthy produce all year round, no matter what the climate outside may be.

68

Silence: cherished more than gold

Silen is a company that provides workers with one of the most valuable resources: silence. We need it to get stuff done — it's as simple as that. To that end, Silen manufactures quiet working and meeting pods for office spaces and soon, your favourite café as well.

70

The luxurious ways to pamper yourself Estonian style

Estonia has always boasted unique and exclusive handicrafts and now, the best examples of this luxury will be displayed at EXPO. Get acquainted with Amanjeda and Ultima Thule Gallery by fashion designer and interior architect Katrin Kuldma, private aviation by Fort Aero and luxury speedboats by Furus.

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The nicEST guys of Estonian music

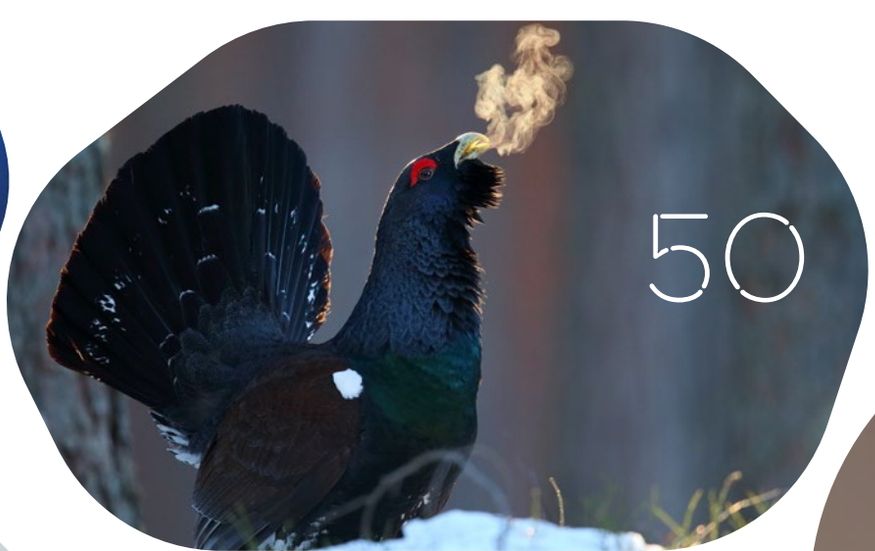
Three young men, representing different music styles and contributing to several musical events at the Estonian Pavilion of Expo 2020 Dubai. NÖEP with his high energy, irresistible charisma and ingenuity is one of the best loved live artists in Estonia. Sander Mölder is a musician, composer, and DJ beyond and above musical genres who moves with ease from ballet to classical rave and back. The singer-songwriter Mick Pedaja has made a special playlist for the Estonian Pavilion that is inspired by people around him, by feelings and sounds of nature. Stay tuned!

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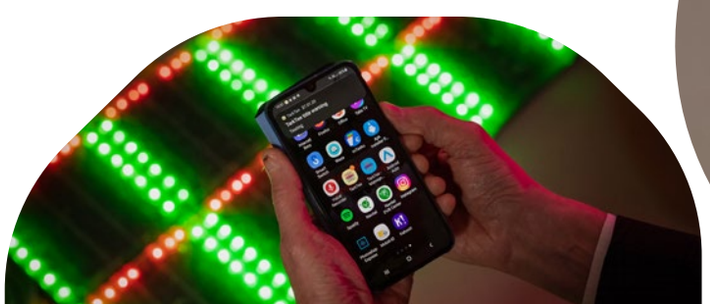
Some fun facts you might not know about Estonia

Here are some of the most surprising strengths and entertaining facts that you might want to know about Estonia.

















Estonia in brief

Official name:
Republic of Estonia.

State order:
Unitary parliamentary republic.

Area:
45,227 sq kilometres (17,462 sq mi).
The territory of Estonia has been inhabited since at least 9000 BC.

Population:
1,330,068 inhabitants (68.4% Estonians, 24.7% Russians and 6.9% others).

Population density:
29.22 per km^2 (75.7/sq mi).
Over 70% reside in urban centres.

Capital:
Tallinn with 437,619 inhabitants (as of 2020). Tallinn is located 80 kilometres (50 mi) south of Helsinki, Finland, 321 kilometres (200 ml) west of St. Petersburg, Russia, 301 kilometres (187 mi) north of Riga, Latvia, and 380 kilometres (240 mi) east of Stockholm, Sweden.

Other notable cities:
Tartu (92,972), Narva (54,409), Pärnu (39,605), Kohtla-Järve (35,395), and Viljandi (17,407).

Islands, lakes and rivers:
Estonia has 2355 islands, about 1500 lakes and 200 rivers. The largest islands are Saaremaa, Hiiumaa and Muhu.

The largest lake Peipsi — is shared with Russia. Lake Peipsi (3555 sq km, out of which 1529 sq km belong to Estonia) is Europe's 5th largest lake.

The longest rivers are the Võhandu River (162 km), the Pärnu River (144 km) and the Põltsamaa River (135 km).

Highest peak:
Suur Munamägi (Great Egg Hill) — 318 m above sea level.

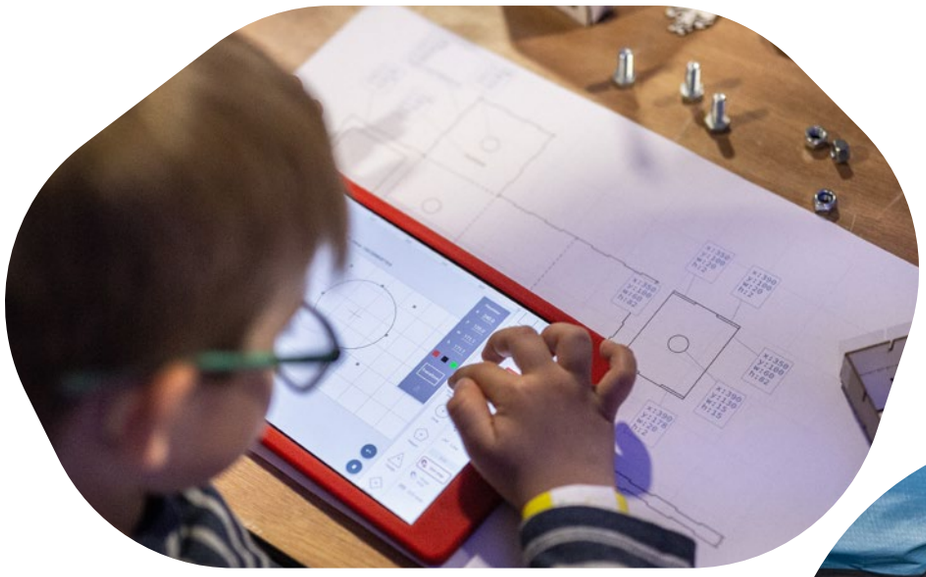
Time zone:
UTC+02:00 (EET),
Summer (DST) UTC+03:00 (EET).

Member of
the European Union (2004), NATO (2004), the Schengen Area (2007), OECD (2010), and Eurozone (2011).

Official language:
Estonian, a member of the Finno-Ugric group, is the second-most-spoken Finnic language and one of the few languages of Europe that is not of an Indo-European origin. Russian is widely spoken. Many Estonians speak English, German and Finnish.

Alphabet:
Latin.











Religion:
Predominantly Orthodox and Lutheran Christians. Estonia's constitution guarantees freedom of religion, separation of church and state, and individual rights to privacy of belief and religion. According to the Dentsu Communication Institute Inc, Estonia is one of the least religious countries in the world, with 75.7% of the population claiming to be irreligious.

Currency:
Euro.

Average monthly salary (2020):
1448 EUR.

Driving:
Right hand side of the road. Speed limits in towns is 50km/h; on highways 90km/h. In summer, the speed limit is 110km/h on some highways.

International driving licence required. 0-tolerance to alcohol.

Weights and measures:
Metric system.

Electricity:
220 volts, 50 Hz.

Calling code:
+372

Internet TLD:
.ee, but also .eu, shared with other member states of the European Union.

Education:
The history of formal education in Estonia dates back to the 13th and 14th centuries when the first monastic and cathedral schools were founded. The first primer in the Estonian language was published in 1575. The oldest university is the University of Tartu, established by the Swedish king Gustav II Adolf in 1632.

The education system is based on four levels: pre-school, basic, secondary, and higher education.

In 2018, the skills of Estonian students rank 1st in Europe according to the OECD's international survey PISA (Programme for International Student Assessment). Estonian students rank first in all three domains of assessment.

National flag:
Blue-black-and-white.

National holiday:
24 February (Independence Day).

National anthem:
Mu isamaa, mu õnn ja rõõm (My fatherland, my joy and happiness).

National flower:
Cornflower (*Centaurea cyanus*).

National bird:
Chimney swallow (*Hirundo rustica*).

Presenting a nation of tomorrow

By Maris Hellrand



Estonia is called the most advanced digital society in the world. The Estonian presence at Expo 2020 Dubai is an extension of the country, reflected by three keywords: digital, smart and sustainable.

Photo by Annika Haas



Estonia has experienced the transformative power of digital development over the last 30 years since restoring its independence in 1991. Estonia has shared the benefits of an e-society and lessons learned with many other countries around the world. Digitalisation has served as an equaliser within the country as well as in international competition as it makes countries more efficient. Expo 2020 Dubai offers a global platform to showcase Estonia's digital story and present the different companies and organisations that have helped build and continue to develop it.

More than 40 enterprises and organisations are present in the Estonian Pavilion, every one of them with an inspiring story to share. Estonia's mission at EXPO Dubai is to show the world how to build a modern information society — a great place to live, work and do business because digital solutions save energy, time, and money.

Digital signatures alone save Estonians 5 working days every year.

By being digital, Estonians save 3% of GDP per year and a stack of paper the height of the Eiffel Tower.

The only things Estonians can't do digitally: get married, get divorced.

Just as the Estonian digital society was born and continues to evolve in a public/private partnership, Estonia's presence at EXPO is driven by a similar approach. **Andres Kask**, General Manager of the Estonian EXPO Foundation, points out that this time Estonia's participation comes at the initiative of the companies while the government is supporting them.

"It's a team effort," he says. "The companies need government support in making Estonia known abroad. Many companies have had to promote Estonia internationally themselves. Today, the state will promote Estonia as a country at the world exhibition and help to open doors for our companies. Estonia's advantage is that the state and companies are small and able to help each other in an agile way."

For the organisers of Expo 2020 Dubai, it's clear that they have to help the participating companies earn back the money invested, to justify the trust of the participants.





Photo by Aron Urb



Digital

Andres Kask: "Estonians live a digital lifestyle and, for us, using digital services is like brushing one's teeth. In our pavilion you will meet our partners who have built Estonia's digital society and they will show you how to do this in your own country."

Estonian Association of Information Technology and Telecommunications (ITL) is one of the key stakeholders as digital solutions represent the largest segment of Estonia's exhibition.

Andre Krull, Chairman of the Supervisory Board of Expo 2020 Estonian Pavilion, former President of ITL, Managing Director of **Nortal,** describes Estonia as a sandbox and test site for digital services, explaining: "Digital transformation in Estonia happened because government and private sector jointly created a digital identity for all residents. To achieve inclusivity, you have to act politically and create regulations. Tech makes it easier and cheaper to deliver services to people."

In Estonia, tech companies are used to getting things done quickly, implementing digital solutions at home and then exporting the knowledge all over the world. This is on display at EXPO.

On top of the pavilion displays and events, Estonia is adding a digital layer of activities to the EXPO theme weeks on all topics ranging from space to health and water management. There is hardly an aspect of life today that is not touched by digital development.

"Throughout the six months we will create opportunities for Estonia and the participating companies to tell their stories outside the pavilion through the EXPO theme weeks programme," says Kask. As an example, he describes the role of digital in design and construction, where 3D models assist in more effective planning and digital models of complete cycles — from planning over construction to maintenance — help to estimate materials, resources, techniques and costs more accurately.

The "Connectivity" theme week in January 2022 will be the main opportunity to present Estonian digital services and e-governance beyond the walls of the pavilion. Kask acknowledges that there's danger in creating an impression of Estonians as a completely "cyber population," and that demonstrating digital life through real people is a balanced approach.

Photo by Renee Altrov



Smart

As 1st in Europe in the OECD PISA test, same tests have shown that Estonia has been successful in increasing equity in education — here, everyone has the access to high-quality education.

"We are an education nation, and our biggest asset is educated people. In our pavilion you get a glimpse of the future — with a **classroom of the future** and the best of our ed-tech solutions are on display," promises Andres Kask.

The year of the pandemic has accelerated the development of educational tools and concepts even further. The generation of "digital natives" studying today adapt to the new technologies almost intuitively. The classroom of the future couples practical experiences of using smart technologies in education with the latest teachings methods simultaneously with a fun, friendly learning environment to ensure that kids learn best.

"Planning for the EXPO in itself has created a fruitful synergy between companies from different fields," says Kask, pointing to the cooperation between the furniture manufacturer **Standard** and the Estonian Education and Youth Board.

Part of "smart" Estonia are two of the country's leading universities — **TalTech** and the **University of Tartu**. Both are taking the opportunity to present their spinoffs and innovation projects with companies that are still in R&D phase.

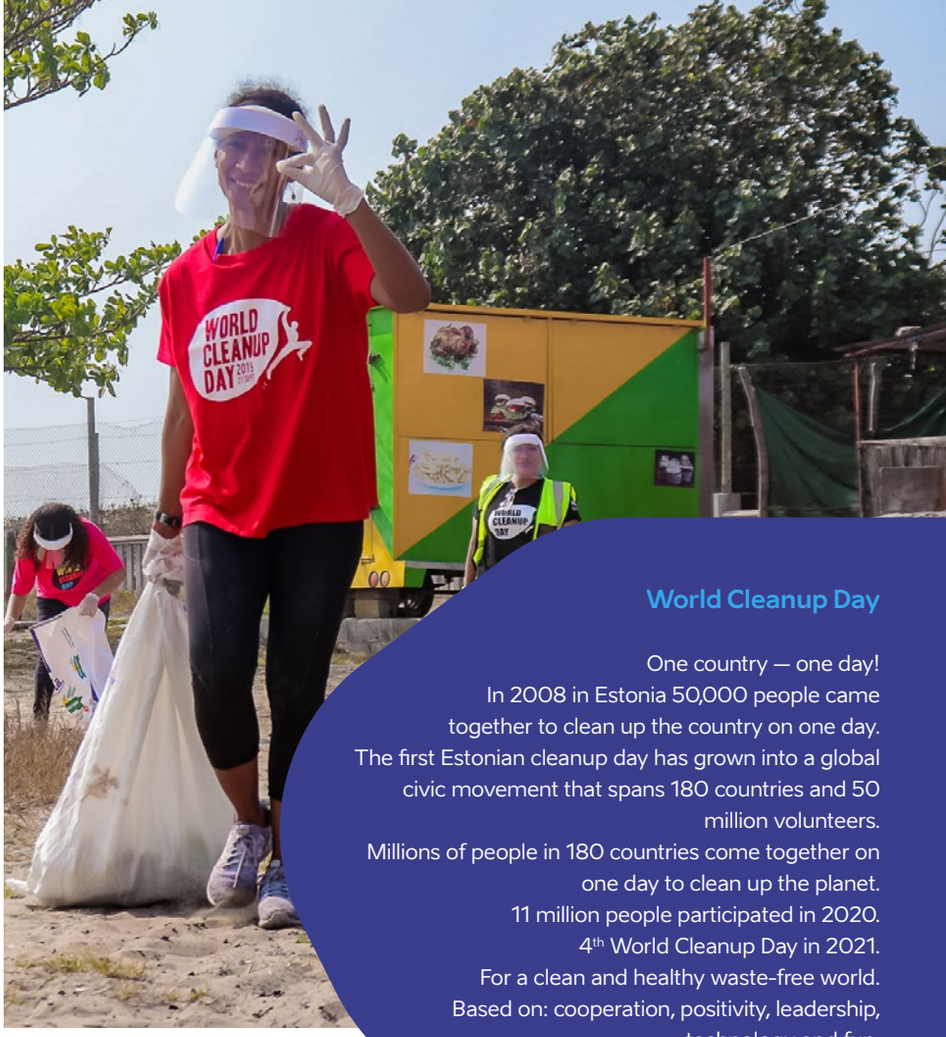
Kask thinks there is no better place to introduce innovation to the world: "Heinz ketchup, the telephone, the TV set — all these things were first introduced to the world at World EXPOs."

Sustainable

Digital services have helped to make Estonia more sustainable by saving time, money, energy and materials. All the digitally signed documents that have not been printed, the car journeys to government offices that have been avoided, have thanks to digital services helped to reduce the environmental footprint of the country. Around 100 Estonian tech companies have signed the Tech Green Pledge, promising to be completely climate neutral by 2030 and to encourage joint action by the ICT sector worldwide to reduce its environmental footprint. Digital technologies have a potential to reduce the CO2 emissions of the world by 20% by 2030. World`s largest civic action **Let`s Do it World**, with roots to Estonia, is also focusing on tackling digital waste and it`s **Digital Cleanup Day** actions will last throughout EXPO.

Kask remembers the experience from the EXPO in Milan: "We saw in Milan how people valued the opportunity to sit down and relax for a while in our Estonian 'nature garden'."
Sustainable solutions, pure nature and clean organic food are presented to the visitors through visual displays, practical experiences, and tastes.

Photo by Let's Do It World



World Cleanup Day

One country — one day!
In 2008 in Estonia 50,000 people came together to clean up the country on one day.
The first Estonian cleanup day has grown into a global civic movement that spans 180 countries and 50 million volunteers.
Millions of people in 180 countries come together on one day to clean up the planet.
11 million people participated in 2020.
4th World Cleanup Day in 2021.
For a clean and healthy waste-free world.
Based on: cooperation, positivity, leadership, technology and fun.

EU-U.S. Relations in a Post-Pandemic World



Photo by Jüri Kartul

Great expectations after a "long drought"

"As the world has been locked down for nearly two years, Dubai EXPO is the first opportunity for the world to get together after a long drought," says Kask. He acknowledges that export will not happen while countries and businesses are in isolation. "Here in Estonia we are used to doing most things online, including business. This is not the case in the rest of the world, especially in Asia and Middle East. You have to get to know people and it takes face-to-face meetings to build a relationship. This is a real need today."

The trade volume between Estonia and the UAE was 70 million Euros when the decision was made to participate at the EXPO. The aim is to double this by 2023. But we must not forget that the world exhibition is an entry point, not just into the UAE, but to the whole world.

Estonia has a great opportunity to share its 30-year experience of digital development with the entire planet. In fact, one can be part of it even without traveling to Dubai as the Estonian pavilion at the EXPO can be visited virtually as well. **Global Virtual Solutions** will broadcast the most important events of the pavilion programme online and provide a platform for interesting discussions.

Andres Kask: "We will not shy away from sharing lessons learned. Accepting mistakes and failures is part of the start-up mindset. We do not yet know what the world will be like tomorrow. But for many countries, we are already living in this tomorrow. We will then show our best in technology, education, innovation and sustainable entrepreneurship."

- 1st in tax competitiveness (OECD Tax Competitiveness Index)
- Estonia is the most entrepreneurial country in the EU (World Economic Forum)
- 1st in unicorns per capita in Europe
- 18 minutes to sign up new business in electronic Business Registry

The story of e-Estonia for all senses

By Maris Hellrand



Estonia's pavilion, a bright blue cube, is located near the epicentre of EXPO, a few steps away from Al Wasl Plaza. Designed by the award-winning KOKO/MOTOR architecture team, the pavilion will make digital Estonia visual and tangible to all visitors. Estonian filmmaker Martti Helde has joined the design team as a creative storyteller.



Photo by Sirli Raitma

Martti Helde is a film-director, best known for his award-winning feature debut "In the Crosswinds" (2014), that told a heart-breaking story of deportations in the 1940s through the experimental tableau vivant technique. Latest feature: "Scandinavian Silence" (2019)



Inspired by Eha

Martti Helde, the creative storyteller, makes use of his experience as a film director and dramatist. Helde is foremost a passionate storyteller, who is excited to apply that ability through different multi-disciplinary and digital means.

Helde said his main challenge was to create a story around the five topics of the exhibition and dozens of key messages that would capture the visitor's attention: "It's a bit like putting a puzzle together."

He was inspired by the photo exhibition **"Eha"** in which London-based Estonian artist Sirli Raitma started taking photographs of her 70-year-old mother in unusual, staged situations and wearing extravagant outfits as a way to heal her mother's depression. The public success of the series began when two images were selected as part of the Taylor Wessing Prize in 2019. Helde discovered a refreshing approach in Eha — warm humour with a pinch of self-irony.

"I feel that usually we talk about Estonia in a dead serious manner and emphasise the success stories through all sorts of ratings and ranking. It felt right to break this approach and show that we can actually joke about ourselves," Helde says. In contrast, the large portraits of real people create a feeling of intimate humanity and open up the character for the viewer.

"The first portrait really has to capture the attention of a visitor who has perhaps already seen the exhibitions of a dozen or more pavilions. It is different, intimate and calming at the same time," he adds.

Eha is the main actor in the first display — an intro to Estonia — and the message is delivered through 5-6 large portraits that alternate on the screen with thematic pictures. The other four topics — digital, smart, innovation and natural — will be each told by a different character, photographed in a similar manner by **Renee Altrov**. Helde's ambition is to create one storyline with five very different people covering different aspects of Estonian life.

"We hope that the diverse international audience of EXPO will appreciate the warm self-irony of the story," says Helde.



Project manager and founder of KOKO Architects **Andrus Kõresaar** walks us through the pavilion. "The size of the pavilion dictated our approach. We needed to stand out from the colourful patchwork of the EXPO experience. The outside design is a bright blue textile wrap with accents like meteorite flight trajectories, that fly up the sides of the pavilion like unicorns." Luminophore tubes in the shape of e-Estonia's main messages enhance the façade.

Enter e-Estonia

The first floor of the pavilion is open to all visitors — a universe filled with blue light, the focal point being an installation of 400 blue balls hanging from the ceiling at different heights. The balls reflect endlessly on the mirrored walls creating a sensation of infinity, symbolising Estonia's scalable and indefinitely expandable digital services.

Digital services bring the government closer to citizens and help them lead an easier life. Kõresaar hopes, that the first emotion of the visitor is a sensation of endlessness. On the floor there's a path for the visitor to follow and discover Estonia on the screens on the walls. The AI-trained **ExpoBot** by **Alpha Blues** on a digital screen can answer most questions about Estonia. A chat version of the ExpoBot is also available online in any language of the world.

Exhibits in action



Having completed the discovery path, the visitor reaches the **Taste of Estonia Café**. KOKO/MOTOR has designed the simple Nordic interior that is part of the exhibition, as partner companies will present their products "in action".

ETS NORD has created the core of the café — a sophisticated air-cleaning technology will eliminate all smells and grease in the kitchen. The furniture has been created by **Standard**, an experienced company that specialises in hospitality furnishings and is regarded for its high-quality woodwork. The dining space stretches along a natural clay wall by **UKU — Pure Earth** that incorporates the signature patterns of the EXPO design.

The Christmas tree by **Adamlights** that has been exhibited in Canary Wharf and near Tower Bridge in London will serve as a photo point of the pavilion creating the atmosphere of the Nordic winter. An AI-powered robot bartender called **Yanu** will be offering a glimpse into the future of busy venues, a contact-less bar in action and will also be serving refreshing drinks from **Liviko**, one of the largest Baltic companies dealing with quality beverages and also producing Estonia`s signature liqueur Vana Tallinn.

To escape the bustle of EXPO, visitors can relax in **Silen's Mind Spa** that has come to life in cooperation with **Synctuition** — a six-minute-long sound experience in a comfortable recliner that will calm the senses. Silen's modular spaces have become popular in modern open offices as a way to boost creativity and productivity. Here the booth fills a recreational function.

Kõresaar and Roots estimate that the average visitor will spend just 10 minutes in the pavilion although there is enough interesting content to stay for a lot longer, especially if they make their to the business exposition on the second floor.





The pavilion's electronic booking system is partnered by **GoSwift**, a worldwide queue management provider, managing the guest flow of the pavilion. They provide electronic management for virtual queues of vehicles and people at traffic bottlenecks, while also managing border checkpoints, ports, and tourist attractions.

When moving things or people around the world you need to have a trustworthy partner. **Baltic Logistic Solutions** is the biggest logistics player in the Baltics and has made Estonia`s road to EXPO as smooth as possible.

To make the messages loud and clear, Estonia's biggest translation company **Luisa Translation Agency** is helping to reach to every visitor to the bright, flag-blue pavilion.

Providing cutting-edge virtual reality solutions in education, **Mobilab** can bring children unique learning opportunities they've never experienced before.

Rooms for events and meetings

The second floor is dedicated to business activities and can be entered by appointment and for special events. The **Nortal** conference room has space for around 50 people. The business expo hall introduces participating companies on digital displays. Two **Silen** silent work pods can be used for meetings. As a special treat, guests on the business floor can enjoy the supreme sound quality of **Estelon l**oudspeakers that combine excellent engineering and grand design, and a desing wall coverings by **Relief**. The biggest ferry operator on the Baltic Sea, **Tallink** offers a branded lounge for business meetings. The online payment service **Pay RND** is hosting a smaller meeting lounge.

The classroom of the future created by the leading Estonian furniture manufacturer **Standard** will demonstrate how classrooms will look in the future (see p. 17). This will be used as a multifunctional workspace to include the Estonian Pavilion's office as well as a venue for workshops and seminars.

The Estonian Pavilion will have an afterlife beyond the EXPO with retail space on the ground floor and offices on the first floor as ongoing usage of the EXPO buildings has been a core plan of the EXPO Dubai concept.



Estelon supreme sound quality loudspeakers combine excellent engineering and grand design.



Photo by Krõõt Tarkmeel

YANU says: "Cheers!"

A friendly conversation with a chat-bot-barman while an AI-powered robot is mixing your cocktail might seem like a scene from a science fiction movie. In a post-pandemic world this has suddenly become quite a desirable scenario that visitors to the Estonian Pavilion at Dubai 2020 EXPO can experience first-hand.

The eye-catching YANU bar is one of the highlights of the Estonian exhibition — not only visually attractive but offering a practical user experience. YANU is serving soft drinks, juices and four non-alcoholic cocktails created by the award-winning barman **Kristo Tomingas**. The customer can place his order at one of three iPad screens and pay by credit card. The robotic arm gets to work, reaching for a glass, the correct ingredients and mixes and serves the drink within less than a minute. It looks a bit like a robot ballet.

YANU cannot perhaps just yet replace a joke-cracking barman or someone highly skilled making amazing individual cocktail creations, but the AI-powered chatbot is learning fast and is up to giving recommendations for drinks.

The founder of YANU, **Alan Adojaan**, has operated bars, restaurants and night-clubs for 15 years and came up with an automated bar out of experienced necessity: "The main problems in this business are always related to staff — lack of it, unreliability, efficiency. In a bar there are certain peak hours, where the demand is extremely high and you'd need more staff for just some concentrated hours while they would have nothing to do during the rest of the shift. The pandemic has made service jobs even less popular, as people want to avoid close contacts. It might seem that the robot takes away a job from humans but actually it is filling a gap. We want to solve the staff problem for a bar operator, and this is especially relevant due to heightened demand for contact-free service."

For a bar operator, YANU helps to resolve issues like high labour cost, theft, managing shifts, slow service and social distancing. The main field of operation for YANU is in fact large venues and situations where a big number of people need to be served quickly — airports, festivals, sports events, casinos etc. One robotic arm can mix 100 drinks per hour while customers can place their orders and pay via app from their own mobile device and just pick up their drink when it's ready.

However, there is also interest from smaller bars and hotels as the automatic bar is a visual attraction and a bit of an entertainment by itself. The outstanding design by **JanKen** interior design agency was inspired by sci-fi movies.

The robotics superstar, professor **Alvo Aabloo** of the University of Tartu, combines latest academic knowledge with the practical application of technology. The YANU workshop is located in Tartu, where the robotics team assembles the machines.

Founder Adojaan has great expectations for the Dubai Expo: "YANU has received a lot of interest from the Gulf region, so we hope to find new clients and investors. It's also a test case in a high-volume user environment — a chance to find out aspects that need further fine-tuning."

Setting new standards for the classroom of the future

Estonia's leading furniture company Standard is furnishing the Estonian Pavilion with a custom-made café, collaboration area furniture, and creating a new concept for a classroom of the future.

The CEO of Standard, **Priit Tamm**, is looking to expand the business in the Gulf region that has been on the radar of Standard since 2015. They have furnished nine hotels in Oman, Dubai and Saudi Arabia as well as the offices of one of their biggest global clients in Abu Dhabi and Dubai.

"Businesswise we see the EXPO as a showroom in the region for six months," comments Tamm. Standard aims to reach beyond the existing network in the region — the six gulf states and the wider region. "We hope to find new customers for the hospitality furnishings and build up a distribution network for our office and school furniture — to have resellers and representatives in each country of the region."

Standard's international breakthrough as hospitality outfitter started in the Nordic market in 2004, when Estonia became a member of the European Union. The first large direct contract was for furnishing 200 rooms in Scandic hotel in Oulu, Finland. In 2013-14 big tenders of international hotel chains followed as preferred supplier for Scandic Hotels and with a contract for Radisson in the EMEA region.

The year 2014 can be called a global breakthrough. Tamm says: "One good job creates the next job. By now we have furnished more than 250 hotels, more than 40,000 rooms. Each hotel is unique and will always be designed, planned and produced accordingly."

The furniture of the EXPO pavilion is a chance for Standard to showcase its possibilities and flexibility. There are pieces of the office furniture series, the special production for the café and, as a new concept, smart classroom furniture.

Design to encourage creativity and individual learning paths

The idea for a classroom of the future was born with the EXPO team and created as a team effort to share Estonia's education success story. The design bureau **Kuubis** has great experience in designing schools in Finland and combined their knowledge with the production skills of Standard. It's a combination of digital learning and flexible interior.

Tamm comments: "The design and architecture of a modern school needs mobility and flexibility, so that it would be possible to rearrange the classroom setting effortlessly during a lesson. A classic 'old-school' classroom can be transformed into teamwork setup, communication and presentation set-up within minutes. Each student has his own workplace that can be relocated and set up easily for different functions. The set-up can be changed to task-based, learning-pace-based or level-based."

There are mobile podiums to train performing and presentation skills, mobile walls and separators can be rearranged quickly to resize the room. Tamm believes that design can encourage interaction, mobility and confidence as well as nurture initiative and creativity instead of putting kids in ready-made boxes with standardised learning paths.

"The furniture is mobile and dynamic and as such empowers social skills. But the school furniture also has to be sturdy and durable. It's playful and colourful according to the age group. The single desk and chair are light enough so that kids can manage to rearrange the set-up by themselves," he explains.

Some of the elements will have access to communication networks, sockets and loading stations. So, perhaps this new innovative line of school furniture together with smart digital learning tools, will come to benefit kids in the Gulf region and beyond.

Photos by Terje Ugandi





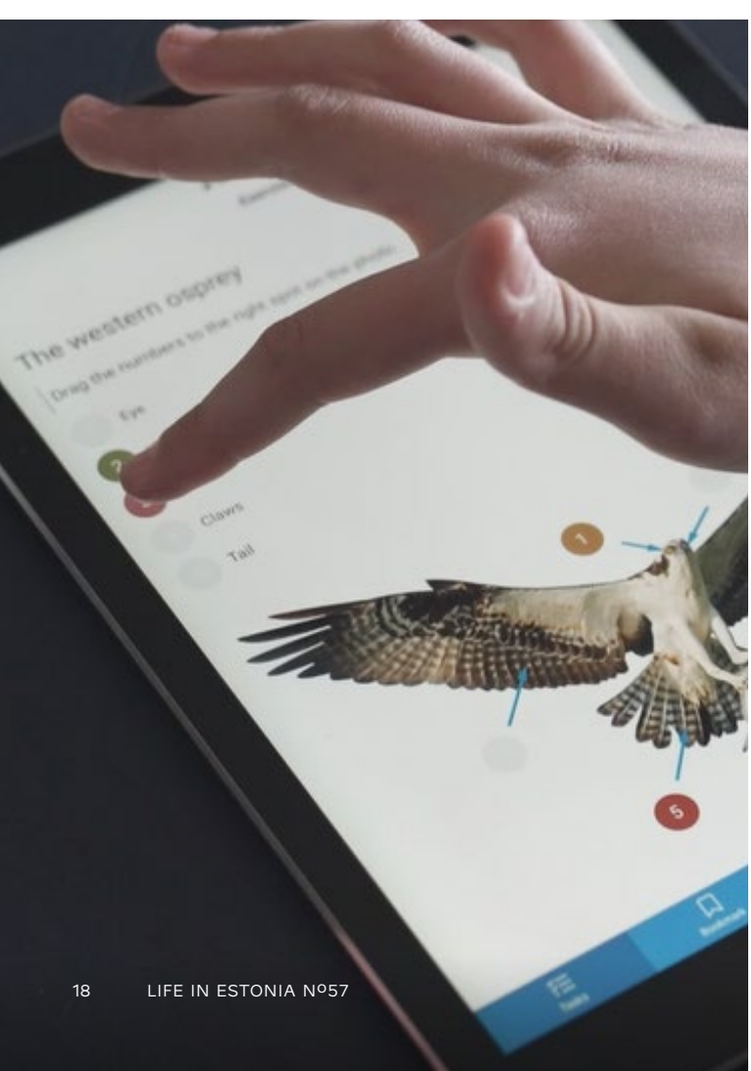
Opiq – the classroom of the future is already here

Estonia is presenting its success as an education nation at Expo 2020 Dubai with the most popular EdTech software Opiq – an interactive digital learning platform that you can find in every school.

Imagine an elementary school science lesson as it gets underway. The teacher taps on the interactive whiteboard and opens a chapter of a digital textbook titled "Birds". Students sitting at their desks are busy with a smartphone or a tablet. Teacher looks at them and smiles because she can see that they are using **Opiq** just like she is. She zooms in on a photo of a stork — a common bird in Estonia — and starts explaining the different body parts of the bird while students open the same photo on their own devices and turn attention to the whiteboard.

Education innovation has been part of the overall digital mindset of Estonia for quite some time. As a PISA leader, Estonian education ranks 1st in Europe and its most popular EdTech platform, Opiq, is introducing the best e-education practices at Expo 2020 Dubai as part of the classroom of the future.

Opiq collaborates with leading educational publishers and public sector institutions to provide a comprehensive fully digital curriculum service for the schools, teachers, and pupils. The schools have been using Opiq since 2016 and by 2019 the usage of digital textbooks in Estonia had grown more than ten times.



As the science class continues the teacher invites a student to the front of the class to solve an interactive task. On the touch screen, the student marks common characteristics of the birds and taps the button "check answer". Several red boxes pop up to indicate incorrect answers. But no worries — the "try again" button is there so the student is free to take another turn or continue learning at home at his own pace. Every chapter in Opiq has interactive exercises that students can solve through personalised accounts. That way Opiq offers a private and safe interactive study space and students can make as many mistakes as they need to.

The Coronavirus pandemic has created a demand for a different kind of teaching and learning and made clear how important it is to have access to quality education through digital platforms. During the distance learning period Opiq functions as an immensely helpful tool to learn and connect, quickly becoming the most popular e-learning platform in Estonia.

"Our excellent teachers are the ones who deserve the most respect because they made the distance learning period possible," says **Antti Rammo**, the CEO of **Star Cloud**, developer of Opiq software: "But additionally digital platforms like Opiq are the key in delivering quality digital study materials to the teachers and students, regardless of the location."

Hypothetically an Estonian pupil could be sitting in the classroom of the Estonian Expo Pavilion and solving a task together with his classmates back home via Opiq. As the test tasks are processed immediately, it saves a great deal of teachers' time — no need for manual marking. As expected, this is the most popular feature among educators.

Opiq offers multiple interconnected software solutions that cover all essential parts of the field of education — starting with an authoring tool for digitising study materials, the learning management system and digital library for schools to all the way to educational data analytics. Specialised application Opiq Stat is the newest addition and, by collecting the actual patterns of digital learning, it helps publishers to develop better materials and gives educational policy makers better tools for decision making.

"We believe that a comprehensive approach is at the centre of the progress of digital education," says Rammo.

While all of Estonia's 500+ schools use Opiq, the international outreach has led to pilot projects in Finland, Kazakhstan, and Kenya. The Expo 2020 Dubai is an opportunity for Opiq to connect with new partners, foremost educational content providers who wish to distribute high-quality digital learning materials, and the public sector stakeholders who are looking to implement a data-based approach to educational strategies.

The **"Knowledge and Learning" theme week** on 12-18 December 2021 will draw the attention of Expo on education technology and the Estonian Pavilion is highlighting education innovation on 15 December with several special events.

Photo by Jelena Rudi

Estonia's digital ecosystem – creating a seamless society

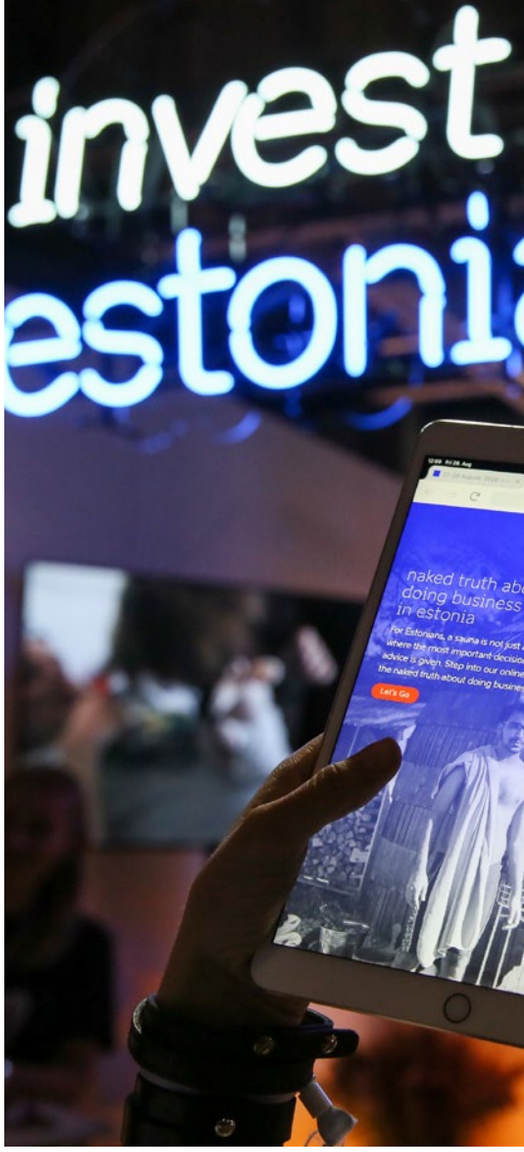
By LinE



For the public sector, seamlessly connected digital services lead to bigger potential for economic growth and a healthier, better living society. For businesses, smart e-solutions are key to save money and to build profitable growth. Estonia is championing both. Estonia is the first country to implement smart parking, to legalise ride sharing and delivery bots, or to offer e-Residency. It's now working on becoming the first country to develop a comprehensive legal framework for Artificial Intelligence.



Photo by Marek Metslaid



Estonia combines elements of both the old and new economy; while the success of the technology sector created a blossoming startup scene, the country is also moving up in the value chain in sectors such as forestry and green energy.

With its low red tape, high economic freedom and transparency, the most competitive tax system in OECD and a highly skilled workforce, doing business in Estonia is easy. One of the most important advantages is 0% corporation income tax on retained and reinvested profits. Estonia is ranked first in tax competitiveness in OECD countries for the seventh year in a row! A first-rate tax code is also one that keeps marginal tax rates low.

Just as importantly, taxes can be filed online and 98% of all tax declarations in Estonia are filed electronically, including forms for income tax, social tax, unemployment insurance and contributions to the mandatory pension fund, requests excise duty returns and customs declarations. A company can also be established fully online in just a few hours and from almost anywhere in the world.

Economic freedom and transparency have made **e-Estonia** one of the most advanced e-societies in the world. Through continuous experimentation, learning and iteration, Estonia considers the natural next step in the evolution of the e-state will involve moving basic services into a fully digital mode. This means that citizens and companies can be served in efficient, rapid and automated ways, with many basic functions occurring seamlessly in the background.

But nothing happens without people who make the decisions and always want to move forward. Estonia has highly skilled workforce, and 86% of adults speaking at least one foreign language! Building a company here is made easy with simple and straightforward labour legislation, easy hiring processes and low unionisation. IT skills are taught extensively in primary school and our students rank in the top 10 globally in science, mathematics and reading at the secondary school level.

Estonia's solution for maintaining a modern state is **X-Road** (X-tee), which saves Estonians 844 years of working time every year. The backbone of e-Estonia, X-Road is a software-based programme allowing the nation's various public and private sector e-service information systems to link up and function in harmony. As it is designed with growth in mind, it can be scaled up as new e-services and new platforms come online. It can also be exported and today is used in Finland, Kyrgyzstan, Faroe Islands, Iceland, Japan and other countries.

Doing business and living our daily lives both in the physical and virtual world is normal in Estonia. But it is the result of years of work. Information and communications technology (ICT) has taken centre stage in reshaping the global socio-economic order during the past couple of decades. But the spread of ICT technologies in Estonia has been rapid.

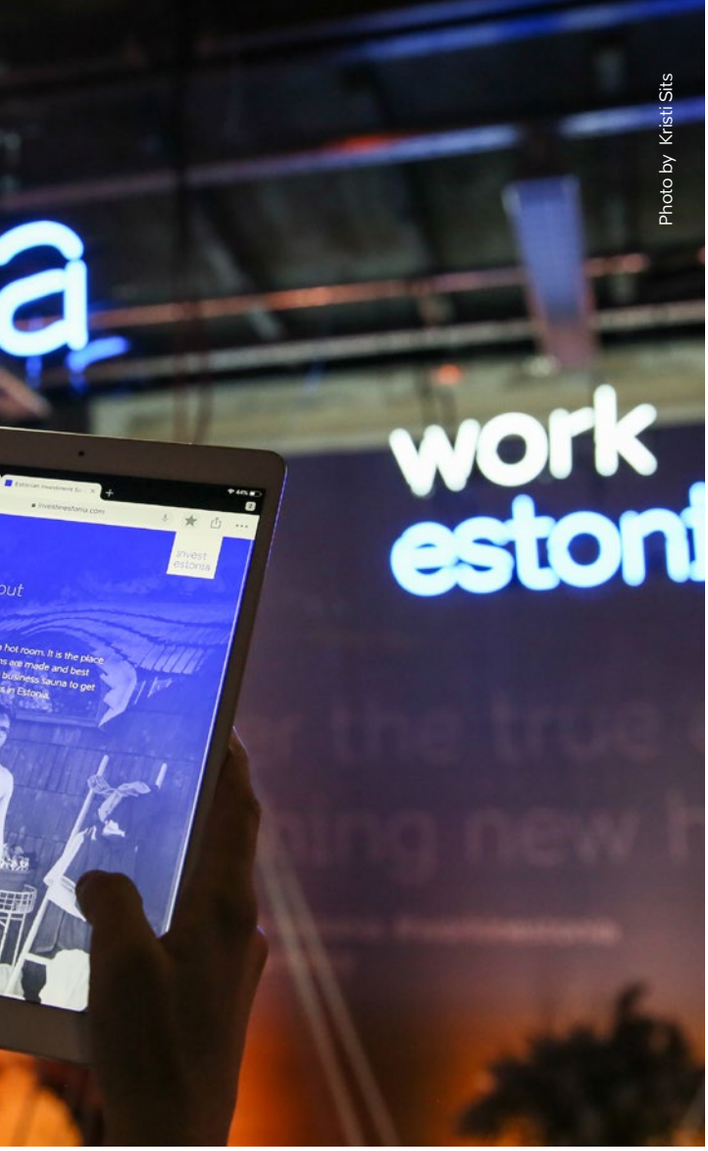


Photo by Kristi Sits

Interested in doing business in Estonia? Invest Estonia is here to help

The Estonian Investment Agency is here to help you with all your investment needs. We will assist you with opening a new business in Estonia or moving your existing one here. Our services include providing necessary information, drawing up tailor-made investment proposals, organising on-site visits or virtual visits, facilitating contacts and offering aftercare services.

The Estonian Investment Agency has more than 20 years of experience and 40 dedicated team members in more than 10 locations around the world. Our agency has been awarded the Top Investment Agency title by Site Selection Magazine for three consecutive years (2018-2020). Additionally, in 2020 the United Nations Investment Promotion Awards recognised the Estonian Investment Agency for excellence in response to the COVID-19 pandemic.

So, how to get going? The best way to contact us is to use our unique personalised e-consulting service that will help you get answers to any questions you might have about doing business in Estonia. Just fill out the web form at **investinestonia.com/start** and we will assign you a personal advisor who will get in touch (in most cases within just a few business hours). We offer you comprehensive consulting services that are always tailored to meet potential and existing investors' precise needs. Let's get started!

A glimpse of history — Estonia had the "late-comer advantage" in the 1990's, which meant that Estonians could employ the latest systems and solutions necessary for addressing the challenges facing Estonian society without having to replace legacy systems. In the years since, the public sector has been outstanding in the role of initiator and promoter for a variety of e-services initiatives. Estonia's central government is positioned to continue in this role.

The Estonian Association of Information Technology and Telecommunications (ITL) has been representing the people in the ICT sector to make it easier for ICT companies to operate. "We are a cooperation network in the field of ICT which speaks for the innovation of digital society — our vision is a smart Estonia. We are improving cooperation between the private and public sectors," says **Doris Põld**, the ICT Cluster Manager. "The Estonian ICT sector is quite significant for Estonia — we have more than 4800 ICT companies, those companies are generating more than 4 billion euros in annual revenue. Estonian companies' solutions can be found in more than 140 countries all over the world. And Estonian ICT cluster partners are key players behind most of the Estonian e-governance solutions. Estonian IT companies operate on a one-stop shop logic, offering strategy consulting, change management, and IT development for creating working e-solutions. Seamlessly working digital services increase the potential for economic growth and a higher quality of life."

Põld promises that all the "big players" are represented at EXPO, because Estonia's main storyline in the World Exhibition is the story of digital society.

Pandemic called for digital skills

The past year clearly demonstrated the significance of the digital skills of businesses and organisations. Fortunately, Estonian government was ready to provide its services in a digital way with only some adaptation needed. "Our experience and our learning points from our digital path are worth sharing because we all see that ICT helps to cope in the crisis." Doris Põld is especially proud of the fact that during the crisis, public-private partnership remained strong. Many new solutions were created as a response to the crisis almost overnight as a result of several hackathons which were held in cooperation of the Estonian private and public sector players or just by enthusiastic IT companies.

"Estonia gained a lot from this, as did several other countries: new solutions, such as registering your sick leave online, were created within 48 hours. Also, at the same time when a lot of major events around the world were cancelled in 2020, it was possible to hold the **WRC Rally Estonia** thanks to the creation of a data warehouse solution, which shared critical data between different parties during the event and included also checking the participants' virus tests."



Photo by Karli Saul

Estonia in world rankings:

#1	OECD Tax Competitiveness Index 2020
#1	Entrepreneurial Activity, World Economic Forum 2017
#1	Digital Economy and Society Index, European Commission 2020
#2	Freedom on the Net, Freedom House 2020
#10	Index of Economic Freedom, The Heritage Foundation 2020
#18	Ease of Doing Business, The World Bank 2020

Big names in creating e-Estonia

But let's also take a closer look at the track records of some of the big IT-companies. One of the most important names in the field of creating public e-solutions is **Nortal**. Approximately 30-40% of the Estonian e-state has been built with their participation.

"In the last fifteen years, we have exported the accumulated experience of the Estonian e-state and e-health services to Germany, Oman, the United Arab Emirates, Finland and many other countries. Today over 80% of Nortal's turnover is foreign markets and over 150 million end users regularly use solutions created by Nortal," says **Marek Helm**, Head to Nortal's operations in the Middle East. He hastens to add that the development of e-services in Estonia is ongoing.

Just recently, Nortal launched a proactive service for the customers of the Social Insurance Board — a unique innovation not only in Estonia but worldwide. This means that parents of a newborn no longer need to apply for benefits, but receive a proactive proposal from the government for the benefits they are entitled to, which they simply have to confirm.

During Covid lockdowns, Nortal swiftly helped to rearrange the daily work of large hospitals via their IT systems, with the aim to direct all possible resources to dealing with the pandemic. In 2021, the company has helped to develop Estonia's first **vaccine passport** as well as a **digital Estonian certificate** which complies with European standards and can be used all over Europe starting from 1 July.

"As an example of Estonian e-state export, we helped to create a VAT administration solution in Oman, which brought a new tax and reshaped the country's existing fiscal policy. Hundreds of thousands of entrepreneurs in Oman use the Invest Easy entrepreneur portal created by us." Marek Helm says that in exporting e-state digital solutions it is important to take into account that every country is different with its challenges, existing infrastructure, background and customs. It is not possible to transfer a solution one-to-one, but the digitalisation journey in each country involves similar steps and it is possible to take advantage of existing experiences and know-how in order to create a specific solution for each country.

"There are some common denominators, similar to what we have seen in Estonia — you need to have the political will, the champions that are able to make decisions, the legal setup, the infrastructure, the IT literacy and incentives for people to move forward. There are many building blocks that are the same in each major digital transformation case, but the Lego that is built — the end result — looks different every time."

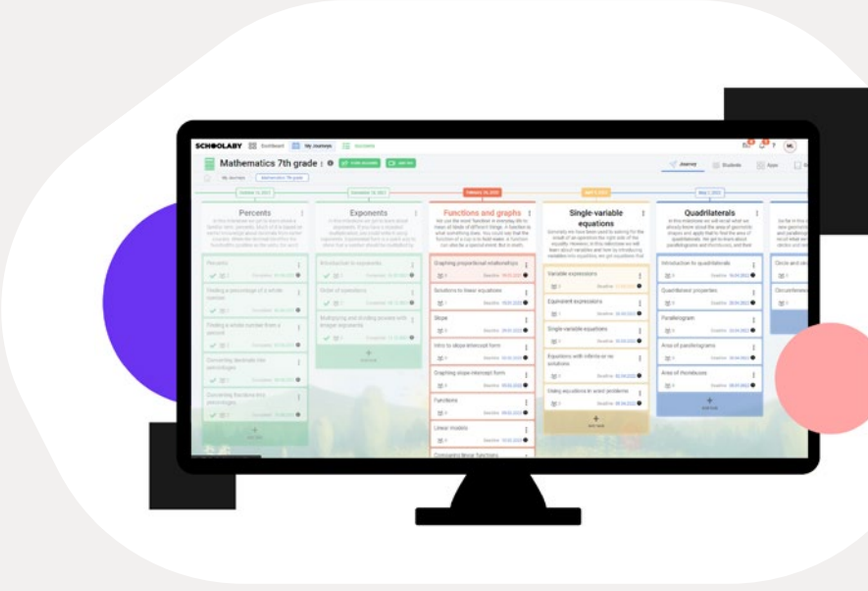
Another IT-company, **Net Group,** has been a key player in empowering the Estonian digital transformation. Active since 1999, the company develops back-office solutions for investment banks and works on e-governance technologies in order to take public services closer to citizens via machine learning and artificial intelligence [the so-called government-in-your-pocket solution]. For example, just recently Net Group developed the cornerstone for the Estonian governmental chat-bot network.

For **Tallinn City government** they created an automated system called **Teele** [based on Effocracy — a digital tool for drafting legislation]. Legislation moves faster in the system, and the whole process is more transparent. In the beginning of the COVID-19 pandemic, they also integrated the voting system to Teele. Now the system is even more convenient and user-friendly and, if necessary, city council meetings can be held remotely in the future as well.

As mentioned above, the possibility for holding a big sporting event like Rally Estonia (which reached over 100 million TV viewers!) during the pandemic, became a reality thanks to the cooperation between **Synlab** and Net Group and their innovative data warehouse platform which helped to move critical data in real time between separate units and enabled fast notification of the stakeholders.

Priit Kongo, CEO of Net Group, says that their value proposition — now also at EXPO — always includes two components. "There is the consultation and sharing of experience. In other words, we explain how to digitalise services and, secondly, there are the solutions themselves — the databases, registers and applications. It is our unique strength that we offer the so-called 'key in hand' solution — the consultation together with the technical solution and implementation."

Schoolaby – hybrid e-education solution



After more than a year of (partial) home-schooling, no one should question why we need comfortable e-solutions in education. The linking of a variety of e-learning environments and IT systems for use in the classroom no longer worked. A range of digital learning materials were distributed in a variety of digital learning environments — around 40 different types in Estonia. Now, the learning management system **Schoolaby**, developed by **Net Group**, has streamlined the patched-together network, bring teaching materials to one convenient place for teachers, headmasters and students, creating a portal for effortless access.

Schoolaby's platform is built around study journeys for digital and hybrid learning. It is easy to use, localisable and benefits school principals, teachers as well as students. For teachers, it gives more freedom in compiling the courses with the most interesting and up-to-date external study materials and apps. Students can engage through 24/7 access over PC and mobile devices, while parents easily monitor their child's study progress and results.

During the pandemic, **Priit Kongo** CEO of NetGroup and founder of Schoolaby, discovered firsthand how his own three kids were struggling to address the overnight challenges of distance learning. It quickly became clear that digital and distance learning is far more than a simulation of traditional classroom-based methods accessed through a smartphone.

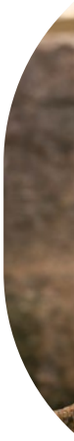
"Digital learning requires a full range of supportive tools, automating teachers' and students' routine tasks," Kongo says. He further explains, "We do not create any study materials on our own, we are not linked to any parties, but it is the so-called central system for education, where each party has the opportunity to collaborate when they log in with their ID. It also enables (students) to move around in the study process — not in a static way — and shows that studying can be fun, flexible and fit the curriculum."

Nº1 in developing GreenTech

"In the transition to a green economy, we have two choices — whether to buy and use technologies that are developed by others, or to be front-runners who develop and introduce innovative technologies and services to other countries. Our government has chosen the second option." This is how strongly Estonian government led by Prime Minister **Kaja Kallas** feels about greentech and, yet again, sets an example to the rest of the world by being one the first to set a goal to achieve a green economy. Green Tiger (*Rohetiiger* in Estonian) is a collaboration platform that is designed to boost environmental awareness and create a basis for a green economy in Estonia.



Photo by Jannus Jaska



The technology that's shaping finance



At its very core, the name Fintech stands for innovations in the financial and technology crossover space, typically referring to the companies or services that use technology to provide financial assistance to businesses or consumers. Two Estonian companies tell their stories.

Estonian Fintech company **Admirals** started its journey 20 years ago as a Forex and CFD company. Today, their operations are based in 20 countries and serve clients in 145 countries. "As the world around has changed significantly since then, we have today become one of the fastest growing trading platforms in the world. Quality is what describes our actions and developments, bringing the financial community together into one marketplace," explains CEO **Sergei Bogatenkov**.



Most recently, they are expanding and opening a subsidiary in Jordan, reflecting the company's long-term strategy to continue expanding in the Middle East and North Africa (MENA) region. They are opening a local office in Amman, Jordan with 10 employees. This is the first Estonian company establishing a long-term presence in the country and the first financial company of European origin to begin operation.

Using modern equipment, environmentally friendly ingredients and producing a wide range of dairy products, **Solbritt** produces convenient infant formula such as adapted milk powder. Much of their product development is done in cooperation with TalTech who specialise in the production of dry dairy products for babies and hold an EU halal-certificate.



Photo by Kristi Sits

"The Middle East and North Africa region is home to 600 million people, which means a great potential for us to grow our customer base and gain a larger market share, while looking to provide the opportunity for people in the region to experience the joys of alternative financial products which we have seen take off so successfully in Europe over the last years," says Bogatenkov, adding: "Our expansion plans are supported by the rapid development of the IT sector there."

Another Fintech company present at the Estonian pavilion **Pay RND** creates financial instruments that make every kind of business as efficient, innovative, and powerful as possible. They offer different financial instruments for businesses that vary from custom software development to machine learning and blockchain-based digital banking and microfinance platforms. According to CEO **Ihor Hrabovych** their team believes in the digital future of humanity and Estonia — as one of the most progressive digital societies — is a great inspiration.



New Nordic Silicon Valley

Estonia — #1 in Europe with unicorns per capita

Estonia is the country with the highest number of unicorns per capita in Europe and one of the leaders in the world. In the last 10 years, the vibrant startup community in Estonia has raised a total of more than € 1.6 billion and 7 unicorns have been founded by Estonians and/or in Estonia (**Skype, Playtech, Wise, Bolt, Pipedrive, Zego**, and **ID.me**). A further dozen home-grown startups are valued at over € 100M each.

According to Index Venture, startups are less prone to fail here, and Estonia has been perceived as an extremely attractive place for business thanks to its reasonable business policy and a busy, supportive, and open startup ecosystem eager to support ambitious individuals and startups.

And the Estonian startup community is as vivid as ever. During 2020, a total of 440.9M EUR was invested into Estonian startups. There were 76 new investment deals, out of which 32 deals were valued at more than 1M EUR. By far the largest investments of 2020 were raised by Bolt, who secured 25 million euros. That is followed by **Monese**'s 55.4 million euros, 41.3 million euros for the now matured **Skeleton Technologies**, **Veriff** with 14 million, and **RangeForce**, whose round amounted to 13.6M euros. The year 2020 also saw a record amount of exits from the startup ecosystem. Among Estonia's shooting stars, Pipedrive shone the brightest by reaching unicorn status. Pipedrive was one of just eighteen new one-billion-plus USD tech companies born in Europe last year.

An Estonian-founded unicorn is a company:

- whose goal is to develop and launch an innovative and repeatable business model with great global growth potential;
- that has a valuation of at least a billion euros confirmed by a major international news outlet.

And meets at least one of the following conditions:

- at least one of whose founders at the time of founding the startup was an Estonian citizen;
- the company is or has been headquartered in Estonia;
- the company's R&D operations reside or have resided substantially in Estonia.

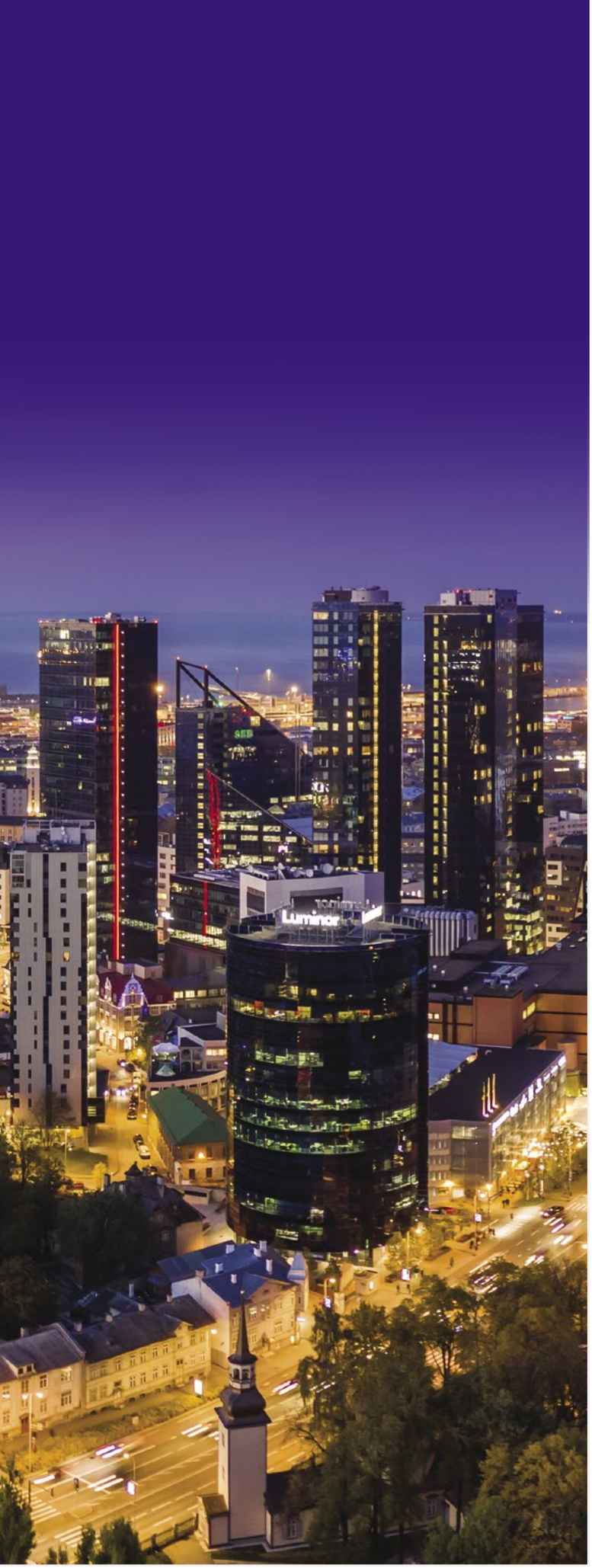
Estonian unicorns:

Skype.com — founded in 2003, unicorn in 2005
Playtech.com — founded in 1999, unicorn in 2007
Wise.com — founded in 2010, unicorn in 2015
Bolt — founded in 2013, unicorn in 2018
Pipedrive.com — founded in 2010, unicorn in 2020
Zego.com — founded in 2016, unicorn in 2021
ID.me — founded in 2010, unicorn in 2021

Meet Tallinn, the Capital of Innovation

Tallinn, a city that never stops innovating, has the beginning of the word hard-coded even at the end of its name: Tallinn — and ovation naturally follows. But besides that, what actually makes Tallinn the capital of innovation?







Photos by Kaupo Kalda

A city where the future joins the present

You may have heard about the success story of Estonia as an 'e-country.' Tallinn, a renowned Baltic capital, is a meeting place of creativity and innovation, dreaming big and making the dreams come true. It has understood the importance of providing startups with an environment that is safe and supportive for innovation, in particular, a location for testing ideas and new products or services. The opportunity of developing products in a real-life environment is a catalyst to ensure that new services reach the clients as soon as possible.

Think global, test in Tallinn, is the motto.

Tallinn is not only open to new ideas, but also encourages everyone to think big and is constantly looking for solutions to make the urban environment smarter, increasingly sustainable, and more comfortable. A number of competitions directed towards innovation have been initiated with that purpose in mind.

All this has taken the 'innovative concentration' in Tallinn to another level in comparison with most other cities. It is here that you can find self-driving cars and delivery robots, solar-panelled pavements, smart crossings, self-service mini shops or other futuristic products and services. There are good reasons why Tallinn has been globally listed among the '21 Places of the Future'.

Watch more:
Tallinn as a testbed opportunity
Tallinn as the local government – the story of its digital services

Estonia is a testbed for innovation, launching and smart city solutions. Estonia with its innovation-minded people, permissive legal environment, digitally interoperable infrastructure, and stable economy is a playground for new and bold ideas and presents a perfect place to experiment with a relatively small capital cost. The compact size of the country makes it fast to secure decisions and bring products to market.



Photo by Liina Notta

Launching a new business idea or product in big European countries can come with big risks. But now, you can minimise those financial risks and maximise your confidence with TESTinEST. It's an innovative new service that lets you test-launch a new digital or physical product/service in the small but digitally savvy market of Estonia, study customer feedback and fully optimise your product in the most cost-efficient way before you enter bigger markets. Smart, isn't it?

"Estonia is undoubtedly the best market to test the viability of a new product. We're the most digitally advanced nation in the world, our people are early adopters, eager to provide feedback and all business processes are super-fast and digitally driven! Our big advantage is our small size. We're so tiny, that whatever happens during the test-launch phase like feedback, product versions, marketing campaigns, it all stays in Estonia without reaching customers in other markets!" explains **Rait Minumets**, co-founder of TESTinEST.

TESTinEST was launched by **Optimist Group**, Estonia's most award-winning collective of business strategists, marketing experts and operations specialists who will support you at every stage of your test launch — right from setting up to marketing campaigns to getting customer feedback to legal and financial aid.

Unicorn capital

Unicorns were originally mythical single-horned creatures sighted by only a few, but the name has become an industry term for privately held startup companies worth over $1 billion. Estonia is a good place to sight one of those rarities, as the incidence of unicorns per capita in this country is Europe's highest. Most of them are based in Tallinn or have their origins here.

Even though Tallinn is not among the 50 biggest cities in Europe, it is one of the biggest startup hubs that is worth keeping an eye on and its developments are being actively followed. Since 2005, a unicorn has been born in Estonia once every two years, which testifies to the rapid development of the startup sector in the country and support from the national and local governments in creating a favourable business environment. Openness, cooperation and consultation with economic operators offer good potential for speeding up amendments to the legislation and receiving any permits needed for testing.

Watch more:
Tallinn dashboard — the future tool for continuous data management





Photo by Martin Dremljuga



Photo by Krõõt Tarkmeel



Green tiger that never sleeps

Due to its relatively small size, Tallinn cannot compete with major metropolitan cities in quantitative terms. However, it can offer serious competition in the category of green capitals. Just as the 'Tiger Leap' project was launched in the beginning of the millennium to put Estonia on the world map in the technology sector (successfully, as can be seen today), the Green Tiger is now making its first vigorous jumps. Striving for sustainable development, Tallinn is searching for opportunities to promote green technologies and green thinking in the Estonian society and economy. A vivid example of this will be the **'Insect Passage',** a 13-kilometre-long park planned for Tallinn to provide a favourable habitat for pollinators — bumblebees, other wild bees, butterflies, moths, hoverflies or other insects — and as a corridor for their migration between city districts. It is believed that Estonia will soon show impressive results in its leap toward a green transition. It has done so already with **World Cleanup Day**, a global event that started from a local initiative in Estonia. This year, it will be held for the fourth time, with millions of participants from all over the world.

Tallinn has the ambition of being a green capital, investing in and facilitating the development of technologies that will contribute to a more sustainable and CO2-neutral city environment. As an example of a recent novel initiative, the city began to support the **Bikeep,** a smart locker solution for bikes, which has now extended to other markets as well. These private, weatherproof and theftproof bicycle lockers are aimed at encouraging people to prefer travelling by bicycle and public transport in order to decrease the number of cars on the streets. The city government also has extensively developed the network of safer cycle lanes and routes in the city centre.

Circular economy is another important focus. The creative sector of Tallinn is engaged daily in finding new smart ways of manufacturing with minimum waste or making waste useful. This has already resulted in a number of interesting initiatives, such as **Reverse Resources,** aimed at decreasing textile waste, or the **Upmade®** software, created by fashion designer **Reet Aus** to decrease production waste in garment industry.

Sky is not the limit

Six years ago, when Estonia joined the European Space Agency (ESA), we hoped that one day technologies developed in Estonia will reach the Moon and other celestial bodies. Today, space is closer to us than ever before. That is largely because of our expertise in the IT sector, in particular remote monitoring, big data, the internet of things and cybersecurity.

In cooperation with ESA, the sky is not the limit. That is evidenced, for example, by the success stories of **Skeleton Technologies**, a Global Cleantech 100 producer of ultracapacitors, or the first alumni of the Tallinn-based ESA Business Incubation Centre, such as **Hepta Airborne**, a startup engaged in technologies relating to artificial intelligence.

The functionality of cities increasingly depends on the ability to implement technologies — including deep technologies — and Tallinn supports the development of breakthrough innovations, be it snow-cleaning robots or air taxis.

A fairytale capital

In comparison with large urban centres or metropolitan regions, Tallinn has the advantage of being a human-scaled cosy seaside city, 25% of which is covered by green areas. The territory of Tallinn, which ranks among the least-polluted cities in the world, includes nearly 12 square kilometres of nature parks, one of them on Aegna island, which is part of the city centre district.

The city centre also boasts a **UNESCO World Heritage site** — the wonderfully preserved medieval Old Town — while the popular Kalamaja district with its distinctive wooden architecture and industrial heritage is just a short walk from there. No wonder Tallinn makes you feel like Alice in Wonderland, as all these colourful neighbourhoods are actually just up to 15 minutes away, except for the island of Aegna, which is about an hour by boat.

All this makes Tallinn a pleasant, safe and balanced urban environment for living and working. You are welcome to come and experience it yourself.

Together with Finland's capital Helsinki, which is just a couple of hours away by ferry, Tallinn is part of an urban area of 2 million people, fresh ideas and friendly business climate — one of Europe's most attractive regions for investors.







Photos by Kaupo Kalda

FACTS ABOUT TALLINN
financial, business and tourism capital of Estonia

- Listed among Europe's biggest startup hubs in 2020
- Named Intelligent Community of the Year in 2020
- Listed by Cognizant among '21 Places of the Future' in 2020
- Named Best City for Remote Workers in 2021
- Ranked 12th among the 50 smartest cities in the world in 2021



Photo by Sven Zacek

Easy to access

You can come to Tallinn by air, sea or road.

Tallinn's award-winning airport impresses travellers with its simple, hassle-free and cosy layout. There are numerous cafés and a kids' play area, or you can spend those long travel hours in the company of a good book borrowed from the airport book collection.

You can fly to Tallinn from a number of larger European cities, including London, Berlin, Paris, Brussels, Helsinki, Stockholm, Copenhagen and Oslo, using Finnair, Norwegian, Lufthansa, or budget airlines (Ryanair, Easyjet) or regional airlines (AirBaltic and Nordica). A smooth connection between Tallinn and Dubai is provided by Air Baltic, with just one stop in Riga, Latvia.

The busiest passenger terminals in Estonia are located at the **Port of Tallinn**, a stone's throw away from the city centre. Overnight ferries from Stockholm land here daily, and numerous ferries departing from Helsinki every couple of hours will reach Tallinn in a matter of hours. Combine your trip to Estonia with a tour of the Baltic states, arriving by car or coach. You can catch a luxury bus to Estonian cities from as far as Warsaw, Prague or Berlin.

"If you look at history, innovation doesn't come just from giving people incentives; it comes from creating environments where their ideas can connect."
Steven Johnson

This is exactly what Tallinn offers.

For further information about Tallinnovation, visit
www.tallinnovation.ee

Future City comes from TalTech

By Mari Öö Sarv

Imagine a city that is simultaneously a community centre, a renewable energy producer, always online, fast and interactive, paperless and carbon neutral, clean and quiet — a city that takes everyone into account, is accessible for everyone, and in which most places can be reached without a car.



Iseauto — a self-driving vehicle developed in TalTech with partners has driven passengers in Tallinn and Greece.





Photo by Marko Soonurm





Smart infrastructure screens traffic lights onto the pedestrian crossing, so that people who are looking at their smart phones whilst walking can also cross the road safely.



Photos by Heiki Laan

A great city has little traffic and an abundance of innovations

Why turn on the heating when the hot spring sun behind the windows is a free source of energy? How can life go on effectively with a lack of oxygen in the room? The real-time building performance audit continuously monitors the optimal relationship between heating, cooling and ventilation and ensures a healthy indoor climate. Such a real-time audit in hundreds of city buildings (like schools) provides metadata which finds the faults and malfunctions — a means to better planning and solutions, saving energy and ensuring a quality indoor climate.

The city's carbon footprint is further reduced by regulating energy use, preferring renewable energy sources as much as possible. This is helped by closed distribution networks in electric micro-grids and digital substations equipped with energy storage devices. The streets of the future city will not exhaust people with noise and air pollution, because there will be close to no traffic jams. First and foremost the city is planned in 15 minute travel increments, meaning that everything a resident needs for life is just fifteen minutes away. This does not mean a 15-minute car drive on a multi-lane road, but right in the vicinity of your home. The focus is not on enlarging travelling opportunities, but on reducing the need to travel in the first place. After all, it is the opportunities and closeness to others that inspire people choose city life.

Secondly the future city will be free of traffic jams because of smart traffic lights and signs which are equipped with air and noise sensors, designed to disperse traffic in the most efficient way. Hence instead of traffic jams accumulating, all vehicles will smoothly take direct routes to their respective destinations.

Decisions taken in the future digital city will be data-based and made inclusively. A city which does not consider or listen to interest groups in governance is certainly not smart, regardless of how much silicon it may have. Also, with digital data it is possible to go beyond mere analysis of existing solutions. For example, a data-based management of transport must cover mobile positioning data, because in evaluating only existing public transport use, we only find out how far an existing bus line was suitable for someone (where they exited) and not where they actually wanted to go to.

It is no longer a surprise that the future city is a cash-free, paper-free digital town, where one universal "card" in your pocket serves as a payment method, driver's license, ID-card, digital health passport, customer card, employment card, door card, "key" for the rental bike, parking ticket and as a means of ordering a last mile vehicle. A card in quotation marks because, in a digital city, this card is virtual and kept on your smart device. Hence for everyday services you just need your smart phone or laptop.

But what happens when the battery is empty? Most of the new solutions work even on an empty battery, and the park benches, trash bins, columns, facades, bus stops, and pavements of this city are covered with thin solar panels providing a ready opportunity to charge all your devices on the go.



New solutions are regularly created in student projects and by scientists in the TalTech labs.



A smart city has no borders

In the future city, even people living beyond urban borders will easily get home. They will not need a private car since self-driving "last mile vehicles", based on the demand-based transport system information exchange platform, will extend public transport lines, helping people who live away from the final stop to work or school in the mornings and back home in the evenings. For those who cannot take advantage of this offer, there are fast rental vehicles, which are charged by solar energy which the city produces in abundance.

In the future city, decision-making and solutions will be inclusive: the procurements of the future will not describe solutions decided upon in some office, but by residents. For example, a solution to a traffic jam problem may not be the cheapest and widest crossing, but the establishment of services where people actually live, building bicycle roads or offering rental vehicles in strategic points.

The future digital city is larger than the metropolitan borders of the city, or even those of the country. As a result, similar services will be offered in neighbouring cities, so that if you work in another city, the "miracle card" on your phone functions there as well. A step further would be to unify opportunities and solutions with neighbouring states because people regularly travel back and forth between many cities in the world in established patterns. Valga and "Talsinki" are just Estonian cross-border commuting examples, where the country border fortunately crosses between cities, but there are also examples of towns where half a shop, parking lot or a concert house is based in one country and the other half within another that has different services and regulations.



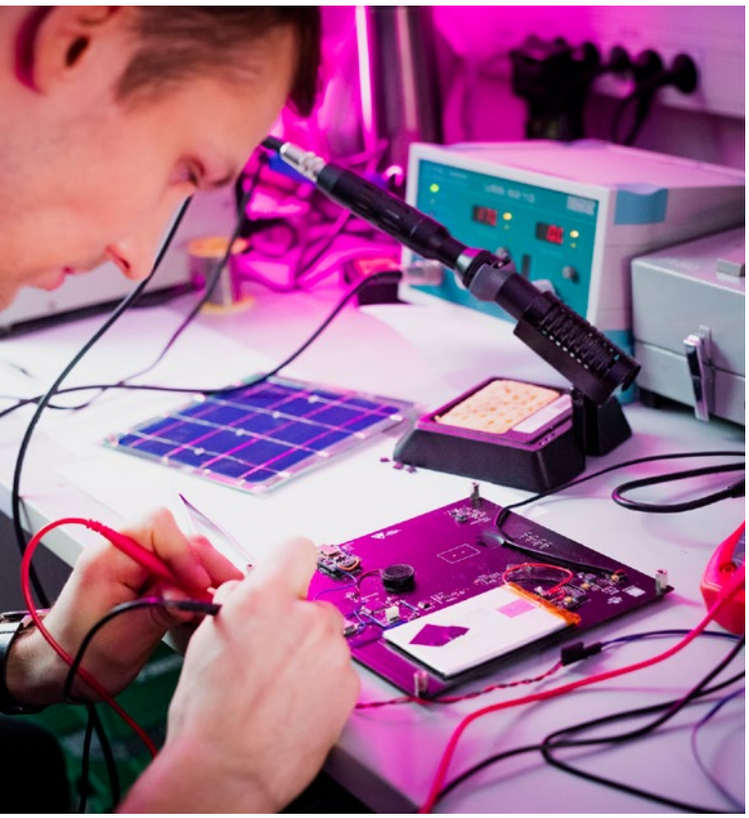


Photo by Heiki Laan

A good start

Seems like something out of a science fiction novel? Well, it isn't. Scientists and pilot projects in the departments of the Tallinn University of Technology are seeking solutions for all the above-mentioned ideas. City air is already measured on the streets of Tallinn, oxygen is measured in the classrooms, scientists are working on specifications for extremely thin, transparent solar panels. There are also several ongoing pilot projects, organised by the FinEst Centre for Excellence that is creating a future twin city living laboratory which is based on data, inclusive, carbon neutral, centred around collaboration with neighbours and compatible anywhere in the world.

Come to think of it, an offline-city in our world might be a refreshing intermediary stop, with plenty of opportunities to interact and take a book reading break in a city free of e-services and smart devices. Which city design [one built around devices or one without them] is more or less smart might be debated in the technology-free cafes of the offline city. Perhaps a good reason to prefer the term "digital city" over "smart."

Read more about the digital city projects of TalTech at the World Exhibition Expo 2020 Dubai:

taltech.ee/en/expo2020dubai









In city planning, the digital twin (left) of the city's green space allows to consider what the planned area will look like in different seasons (right).

Smart and green, Tartu attracts talent

By Sven Paulus

Tartu, situated on the banks of the magnificently flowing river Emajõgi, will celebrate the 1000th anniversary of its birth in eight years' time. It is home to one of the oldest universities in northern and eastern Europe, which has played a pivotal role in the development of the city. Before the "Athens of Emajõgi" transforms into the European Capital of Culture in 2024, Tartu will present its smart solutions at EXPO 2020 this autumn in Dubai.



Photo by Hendrik Mändla



Photo by Mana Maasik



"Tartu will present itself as a smart enterprise environment at the EXPO, introducing various collaborations taking place with local companies," says Deputy Mayor **Raimond Tamm**.

The exciting activities the city has planned for its year as the European Capital of Culture will also be introduced. The year titled **"Arts of Survival"** will focus, among other things, on sustainable city and countryside culture, movement and mental health, intergenerational co-creation, critical awareness and cross-sectoral collaboration.

All of it is available in abundance in Tartu and the surrounding area. The EXPO exhibit will be based on videos which demonstrate life in a very smart city of 100,000 inhabitants. One of **the smart city solutions** Tamm mentions is **Positium** — a company which deals with data analysis based on mobile positioning, which helped the city develop a new public transport network. In addition the buses using the network burn locally produced biogas as their fuel.

In collaboration with the telecommunications company **Telia**, Tartu is developing an innovative IoT platform and with a "smart city portal" as its basis. This allows users to see in real time the movement of public transport, the current traffic situation, how many electric car charging stations are in use in the city, and how many city bikes are available in parking spaces. Constantly collecting and analysing traffic data enables the city to plan traffic strategically. The smart city portal continues to grow and it will soon start to relay information about the energy use of buildings as well.

Green and digital city

In the last two decades Tartu has focused on developing electronic and mobile services. In addition, the City Council has been paper-free since 2003 and all documentation is electronic. Tartu is also the first community in the world to implement mobile parking services and has digitalised most of its services. According to Tamm, the aim is to offer a great living environment for Tartu residents and a simple business environment for entrepreneurs. At the same time, this youthful city tries to be an attractive testing ground for new solutions and, as Tamm says, those do not always have to succeed in the end.

This gives only initial insight into the smart solutions in use in city. In order to increase pedestrian safety, the company **Bercman Technologies** has installed the first smart pedestrian crossing. Soon the second one will be installed, which will make use of the opportunities of the 5G network. Whereas today the system signals when a vehicle or a pedestrian approaches the crossing, in the future the pedestrian crossings will directly communicate with vehicles via the network and they'll automatically slow down. The remote air conditioning system created by the company **Fortum** Tartu also is moving the city toward a smart and green future. The system is the first of its kind in the Baltic states and uses river water to cool the air. In comparison to typical technology, this system saves up to 70% on greenhouse emissions.

In a city which is bicycle friendly in Estonian terms, many residents and visitors already have made use of bike sharing for the past three years. There are 750 bikes available in 69 parking lots. Two thirds have an electric motor, giving extra power whilst pedalling. According to Tamm, this city-wide project has enjoyed a lot of success: "The active use of bike sharing has been much higher than the average in the world."



Photo by Riina Varol

In the framework of the grand project **SmartEnCity**, the ecological footprint of Tartu has been reduced by remodelling eighteen Soviet period apartment blocks into almost zero-energy buildings. The energy use is being monitored and there are solar parks on the roofs which help to move the energy balance in a positive direction.

"All those buildings have CO2-based ventilation management, meaning that the CO2 level in the air is continuously being monitored and the ventilation intensity is adjusted accordingly," explains Tamm. He claims that the development of a smart city is only possible in successful collaboration between other sectors, like entrepreneurs and universities.

The university helps in managing the Corona crisis

The University of Tartu, founded in 1632, is also increasingly turning its face towards society. Due to the Corona virus, which as an uninvited guest turned the world upside down last spring, the university had to promptly transfer to distance learning. Fortunately, the adjustment was unproblematic as e-learning has been implemented at the University of Tartu for the last twenty years and a strong team of educational technologists exists. "All data indicates that we managed the transfer very well," says **Aune Valk**, Vice Rector for Academic Affairs.

At the same time, the university rushed to the aid of the community by putting together a value offer of monitoring programmes for the Prime Minister, in order to understand the real situation with the spread of the virus. By now this so-called package of Corona measures also includes many smaller projects which focus on reopening schools, testing students, measuring ventilation, and so on.

"It is the first time in my experience that the government and the university are strongly putting their thinking minds together," says Vice Rector for Research, **Kristjan Vassil**, in praise of the collaboration.

The University of Tartu is constantly searching for new study formats tailored to people who already have been active in the labour market, the key words being micro-degrees and one-year masters programmes. According to Aune Valk, the university is also looking for talents from Estonia and abroad which is greatly helped by the fact that, within the last decade, the university has risen by over 200 positions in international university rankings and is today securely placed in the top 300. Foreign students are primarily attracted to Tartu because of the opportunity to undertake top level studies in IT, natural sciences, international relations as well as semiotics. About half of the foreign students remain to work in Estonia after graduation.

Recently the university founded an asset management company, which participates in research-heavy initiatives which spring out of the university and invests know-how, not money. Kristjan Vassil says that the aim is to create a portfolio of own companies. Another aim is to increase foreign financing and the quality of published research. Again, the data speaks for itself: in 2016, there were 34 University of Tartu employees among the world's top one per cent of cited researchers; in March 2021 this number has risen to 71.

With its unique role in the world, the University of Tartu has a dual mission. On one hand it is a top research centre and on the other hand it has to promote local language and culture and carry out research in those areas. Vassil considers knowledge transfer to be very important and one of the forms it takes at the University of Tartu is industrial residency.

"All academic employees of the university have the opportunity to go work for a company for up to three years or to found a company themselves, he says. "For this period, the university guarantees that their job is maintained and they can return to the university within three years." Such a security network guarantees the transfer of knowledge into companies and that scientists are free to test themselves.

Think locally, act globally

One example of successful knowledge transfer is the university spin-off company **Antegenes**. The company works in a new field — the precise estimation of the risk of common cancers. According to current Estonian statistics, every third man and woman will become sick with one form of a malign cancer during their lifetime. Many most common cancers are not discovered early enough when the treatment would be more effective. This is a problem, not only in Estonia, but globally.

According to **Peeter Padrik**, CEO of Antegenes, the company was created in order to bring new genetic information into use in healthcare. The current selection includes genetic testing for breast cancer, prostate cancer, colorectal cancer and melanoma. The tests can also be used in combination. "We provide people with a risk assessment, interpret test results and, according to the risk level, give guidance about how to decrease the risk of cancer," explains Padrik.

He is convinced that their solution needs to be accessible to the world. The company has already started collaborating with a partner in the United Kingdom and soon joint programmes will begin in Sweden, Norway, Spain and Portugal. The success to date has been helped by synergy with the university, which has a strong background in biological and clinical medicine and computer science, as well as the e-healthcare system which allows for easy data exchange.

Thinking big and creating synergy is also the basis of the enterprise festival **sTARTUp Day**, which has been held in Tartu since 2016, organised by eight organisations. According to **Marili Vihmann**, chief organiser of the festival, it is their goal to spread start-up thinking and bring smaller similar events under one roof, whilst also offering companies international contacts. "We want to showcase Tartu as a great entrepreneurial environment and to put it on the world map as the city with the greatest start-up mentality in the world," says Vihmann.

There are already over a thousand startups in Estonia. The compact size of Tallinn and Tartu and the intense network of communication give them an edge which cannot be found in Silicon Valley. Whereas many start-ups used to set their sights there, the situation has turned around. "Many teams have come to Estonia from Australia or Israel because they have heard that it is the best location to build their startup," says **Triin Kask**, Programme Manager of sTARTUp Day.

She adds that it is equally possible to create a unicorn in Estonia as in Palo Alto but, in the case of Tartu, the added bonuses are cooperation, accessibility, the amount of talent and the existence of national support systems. Also, the seven local unicorns who have already created big waves in the startup world are a valuable resources for entrepreneurs just starting out.

Photo by Timo Arbeiter



Estonia – a springboard for unicorn companies

By Eve Peeterson, Head of Startup Estonia

With the recent emergence of two new unicorn companies [companies valued at over 1 billion USD] co-founded by Estonians, Estonia is now home to 7 unicorns (Skype, Playtech, Wise, Bolt, Pipedrive, ID.me, and Zego), which distinguishes the country in terms of unicorns per capita in Europe. Let's get deeper into the major factors behind the success of this business ecosystem and how you can be part of it.



Photo by Egert Kamenik

Photo by Kristi Sits



Estonians have always had a special relationship with nature and woods, retreating there to look for calm or just to pick berries. So, no wonder a startup has developed who deals with forests. **Timbeter** is a forest tech company that uses digital solutions to eradicate illegal logging and improve the timber supply.

All companies want their employers to be healthy and productive. Providing wellness benefits for employees is made easier by **Stebby** who has created a platform combining all wellness services and service providers. They have built a comprehensive network -- the leading wellness marketplace in the entire Baltic region.

Why Estonia?

Despite Estonia's relatively small population of approximately 1.35 million people, the country is big on advanced digital capability and creating an entrepreneurial-friendly environment. In fact, Estonia is the country of digital signatures and paperless communication with 99% of government services available from the comfort of your home. Where else could you establish a startup online in 15 minutes and file tax returns in a jiffy with just a few mouse clicks? Speaking of which, Estonia is a flagship tax-competitive country in the whole OECD. Although the country may not be a tax heaven on earth, it can boast of the simplest and most transparent taxation regime. We are also talking 0% income tax on retained and reinvested profits, clear stock options regulation, plus double taxation treaties on file with at least 60 countries. Add the affordable high quality of life, top-notch human capital, as well as a trustworthy legal system to the equation, and you have the most favourable and thriving business climate in existence.

Estonian Startup Visa

The Estonian startup ecosystem has made significant strides forward, with approximately 30% year-on-year growth over the past 5 years. The community saw the need for hiring new talent from abroad that gave birth to the idea of implementing a **Startup Visa programme** in 2017. The programme has been aimed at enabling startup founders to relocate their businesses to Estonia and benefit from the full range of perks of the first country in the world to offer e-Residency and e-voting. Additionally, the visa scheme facilitates the process of hiring talent from outside the European Union in Estonian startups. Since the inception of the programme, over 2700 applications were received from startups wishing to move to Estonia. It has had a significant impact on our business ecosystem since 25% of Estonian startup founders are now of foreign citizenship. As a matter of fact, in 2020 alone, Startup Visa applications arrived from 88 countries, meaning that the ecosystem is only going to get increasingly diverse.

Empowering entrepreneurial environment

With 5 times more startups per capita than the European average, it is safe to say that Estonia is the startup capital of Europe. Noteworthy, what sets Estonia apart is not the ever-growing number of unicorns bred, but the can-do attitude of locally based entrepreneurs. The Estonian startup ecosystem is led by inclusive individuals who are keen on lifting each other and organising incredible events. This can be seen in the commitment of the founders to give back to the startup community, whether through mentoring aspiring entrepreneurs or investing in them. A strong concentration of startups, which currently number 1175 in total, is also fostered by a robust network of community organisations. Around 150 support organisations, from startup incubators to investment funds, are available to help accelerate your business. Startup Estonia is honoured to work with these organisations over the years and excited about the many ways they bolster the local startup scene.

Estonia is a perfect place for brave hearts, independent minds, and entrepreneurial souls. Tap into the game-changing opportunities and supportive environment to supercharge your business with us! See you soon in Estonia!

Check out more at
startupestonia.ee



Photo by Riho Kirss

How to manage a digitalisation wave in construction sector

By Kuno Peek, Estonian Digital Construction Cluster Manager

Estonia is a unique and modest place located in the north-east corner of Europe. In square kilometres we are 6% larger than the Netherlands but, by population, we have nearly 13 times fewer people within the same area. This means we can afford a minimal public sector apparatus. We also must continuously explore and develop smart (digital) solutions and find opportunities for export while focusing on quality and a seamless user experience.

Therefore, it's not surprising that Estonian public sector is behind most of the world's digital success stories including digital signature, e-elections, digital prescription and many others. These solutions helped us to survive Covid-19 waves, experiencing minimum losses in service and quality within the public sector. Digital society is our secret, but we do not only talk about it — we live it!

In respect to digitalisation, the Estonian construction sector has been a slow starter. Six years ago, in 2015, a number of principles within the sector understood the need for a common organisation and digital platform to discuss what was desirable and on what terms it was wanted. But policy makers couldn't identify a single partner able to represent the diversity of companies across the sector. Out of this deficit, the **Digital Construction Cluster of Estonia** was formed.

Today our cluster consists of real estate developers, architects, engineers, builders and manufacturers, facility managers, universities and building industry IT companies, in fact, all the stakeholders of a construction lifecycle that offer knowledge-based construction solutions. We began with frank and challenging roundtable discussions between our cluster members and the government, based upon a common goal to create better built environments.

We dug deep in order to thoroughly understand the entire process and critical links between each stakeholder; to identify which factors are crucial to a successful project. And we came up with the Estonian approach to creating an excellent built environment, including first and foremost a smart and purposeful use of data for efficient construction and facility management. We are now able to use data throughout the whole building lifecycle. We live in an era of information overload, so differentiating between crucial data and mere noise is also a necessity.

Secondly, we concentrated on the belief that transparent and comprehensible design process must involve all stakeholders and focus on end users. Making the process easily understandable to non-engineers helps detect risks faster and on time.

Thirdly, we committed to lowering environmental costs and carbon footprint of buildings and built environments. We achieve that through a variety of simulations during design phase and constant learning and piloting, including the all-important circular economy principle in construction.

Within short time there are some notable success stories out there and the construction permit process has become 100% digital and 100% BIM-based. This will soon foster yet another success story — the partnering of digital spatial planning databases with processing systems that can add, modify, validate design elements. Soon we will be able to process spatial planning fully-digitally and much faster.

In June 2021, the Estonian government approved "Construction sector development long plan 2035", drafted in a collaboration between the public and private sectors. Digital Construction Cluster was one of the key partners in this initiative and will be one of key players in implementing the next steps in this policy "war plan".

When we think of export, we can be proud of our factorial houses — wood, class and concrete based modular and element houses that are very popular in Scandinavia and Central Europe. Scalability and growth hacking is in our veins. Estonia is #1 in Europe in number of unicorns per capita. The Digital Construction Cluster is supporting this by organising and partnering in a range of hackathons and meetings with Venture Capitalist. We've developed pitching and recognition initiatives for students who touch upon digital construction bottlenecks in their graduate theses.

We've initiated a transformation of construction companies to shadow innovations in the IT sector, to streamline our growth and development. Want to know more about the many ways we could contribute to your projects? Don't hesitate to get in touch. We will help you create an excellent built environment with a minimal carbon footprint! Last but not least, we will also help you to succeed in getting your citizens to trust e-solutions.

estoniandcc.com



New trends in our post-pandemic world

By Ronald Liive

Modular ventilation – the post-pandemic essential

Want to enjoy Nordic food with a twist of Estonia? The Estonian Pavilion offers the freshest seasonal produce available. But besides the highest quality food, a unique feature of the pavilion's kitchen is its state-of-the-art, sustainable ventilation system built by ETS NORD, a specialist in the field.

Founded in Estonia back in 1998, **ETS NORD** operates mainly in Nordic countries but is planning to expand its business into the Arabic market, beginning with the United Arab Emirates.

When speaking of ventilation, we can't ignore the elephant in the room — a pandemic that affected everyone on the planet. Although many have suffered, certainly innovators in ventilation have come to the forefront. And **Urmas Hiie**, the founder and co-owner of ETS NORD, says that high quality indoor air should always be on everyone's minds because viruses and other airborne particles are so fine that human-beings are always at risk from them.

One of the solutions to detect the quality of air is a CO2 sensor, prominent in ETS NORD product range. Naturally the sale of the CO2 sensors has skyrocketed in the past year since, as Hiie says, any assessment of building ventilation systems is based upon the measurement of air quality with accurate sensors.

One of the latest products that ETS NORD is demonstrating at EXPO is a smart modular ventilation system aimed towards restaurants. Having been in the business of ventilation well over 20 years, Hiie knows that restaurants usually change-out their kitchens every five years or so and are in a constant process of improvement.

"For example, the kitchen that was built for the Estonian National Museum had one vision before the building process even started," he explains. "That vision changed when the builders started to work on it, and it changed even more after the restaurant started to operate there."



Photo by Arno Mikkor

For that reason, a modular system that grows with the needs of the restaurant is a more sustainable and budget-friendly solution for ETS NORD and the client. Modularity allows customers to change-out the ventilation system by adding or removing component parts quickly and economically.

Hiie believes that EXPO is a way to show the world that Estonia is not only strong in the field of e-governance, technology startups, and the ICT-sector, but also in the manufacture of high quality commercial equipment. There are kitchens all over the world utilising ETS NORD's modular system. Having signed NDA [Non-disclosure] agreements, Hiie can't reveal any famous names. He simply says they are used in some notable private kitchens.

Many ETS NORD's clients are from the cooler climes of Scandinavia and chose to have a smart feature built into their ventilation that returns extracted air into the building via a heat exchanger, substantially saving on heating costs.

Hiie says he has yet to see competitors' products which are comparable to their modular one. Besides the product itself, he is proud of the ordering mechanism ETS NORD offers to customers.

"We offer clients a way to configure the ventilation system in a 3D model with potential price and shipping dates already displayed. The ordering process is like a tip of the iceberg, which is mostly ignored, but is yet another advantage over our competitors," Hiie notes.

Talking about the future of ventilation, he foresees that the Internet of Things (IoT) and Artificial Intelligence (AI) are the way forward, allowing customers to control devices from a distance.

Cold-Cab – door to the future

What do you do when you've been in the same business for over 30 years? You innovate, says Veiko Põldsaar, the head of research and development (R&D) department of Viljandi Windows and Doors. As the name suggests the company specialises in windows and doors.

When **Veiko Põldsaar** and his colleagues began development of a new product two years ago, they were keen on creating a smart front door for apartments or private residences featuring a smart lock and CCTV cameras.

"As we already had a front door product in our portfolio which had a big glass pane next to the door we started to think about how to use the space more usefully," Põldsaar explains.

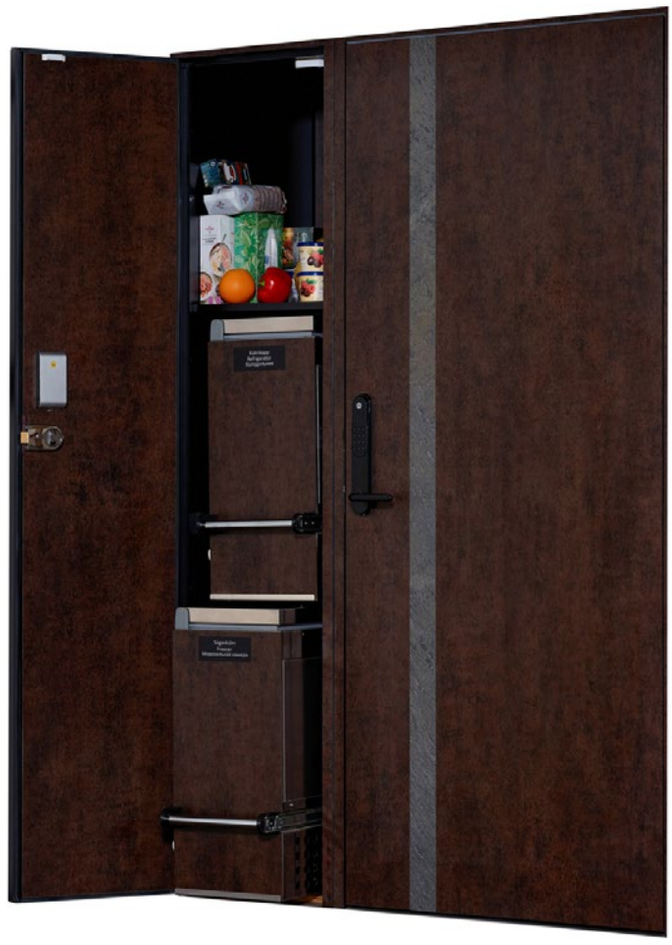


Photo by Martin Dremljuga

And from there emerged the idea to incorporate a refrigerator that could be accessed from both sides of the door. This innovation, named **Cold-Cab**, is useful for contact-free delivery from online retailers. It comes as a set: Cold-Cab plus a front door with smart lock and cameras.

Cold-Cab gives its owner the freedom to order food or other perishable goods by courier, whether there is someone to receive it or not, also giving the courier the ability to make deliveries at a convenient time.

The order confirmation document gives couriers with a unique access code that allows them to open the Cold-Cab and place items in the refrigerator, in the freezer unit, or on the package shelf. Access is only to the Cold-Cab and excludes entry to the home or apartment. Thanks to a built-in battery, the smart door-lock will continue to operate even if electricity fails and the courier can still make their delivery.

In the R&D phase the company experimented with a wide variety of fridge options, in the end selecting a refrigerator normally used on luxury yachts. They've built the refrigerator and freezer on in-out rails, allowing two-way access from both outside and inside the home.

Cold-Cab offers three different storage compartments — a freezer that holds up to 18 litres of goods, a refrigerator that can manage up to 24 litres, and a package shelf accommodating up to 180 litres which is adequate for client's larger high-value deliveries such as electronics.

The pandemic demonstrated both a need and a market for this type of product — a convenient, innovative solution that saves time, protects deliveries, and minimises the need for physical contact.

Dynomax: real-road power dynos

By Ronald Liive







Photos by Dynomax







Want to add some horsepower to your exotic supercar — a Ferrari, Lamborghini or even a Koenigsegg hyper-car — to be even faster? Dynomax, an Estonian manufacturer of professional 2WD and 4WD chassis dynamometers, developed for imitating the real road conditions, welcomes all types of everyday cars and gearboxes, as well as exotic supercars and electric vehicles.

Dynomax, innovation-oriented company is demonstrating one of their products in the Estonian Pavilion of Expo 2020 Dubai. And they've just finished their newest development, a totally new dyno product suitable for electric cars like the Porsche Taycan or Audi RS e-tron GT.

Dynomax uses revolutionary wireless software, giving it a considerable advantage over competitors. It is now possible to test speed and performance, to tune gearboxes, to adjust the engines of cars, trucks and motorcycles from your iPad or smartphone. The revolutionary wireless software is compatible with all modern devices. Using CNC-machinery and modern program engineering solutions, engineers have developed a highly competitive, affordable and essential tool for professional tuning studios, car enthusiasts, rally and race teams, engine laboratories, technical and research universities.

The company was launched by owner and founder **Maksim Zolotarjov** and his passion for maximum speed records. As the products developed the company's distribution increased and today you will find Dynomax machines all over the world, including most European countries, United Kingdom, Malaysia, Singapore, the USA. Dynomax will use the Dubai World EXPO as a stepping stone to enter the Arabic and African markets, beginning with the United Arab Emirates.

"If I would add a red dot on a world map for every country that we have made sales to, it would look quite red. Our loyal customers´ community has been expanding to the global networking scale," Zolotarjov says. Dynomax clients have set up online communities where they help each-other and share useful tips.

Zolotarjov compares dynamometers to musical instruments that sometimes take quite a while to master. "Our advantage over the competitors is also that all of our R&D, manufacturing and software development is located in Tallinn, Estonia," he notes.

Dynomax promotes technical creativity and offers safe solutions to test the performance of a vehicle in a secure workshop environment. In the Estonian Pavilion, the 2WD Dynomax dynamometer is being exhibited hoisted up vertically, attracting attention to its technological seamless pipe rollers. The visitor will be also surprised by Dynomax virtual reality solutions that will offer an immersive experience of choosing and placing your own dynamometer virtually into the room.

Dynomax will also organise "Real Dyno Days" outside the EXPO area, offering the real-life racing experience, smell some burning rubber, and enjoy an adrenaline-rush from the super cars in competition.

What does a dynamometer do for electric vehicles? For a green and ecological start, according to Zolotarjov, they can measure the effectiveness of the energy recuperation achieved during accelerating and braking.

So, if you own a vehicle — be it a luxury Bentley Continental GT, exotic Bugatti Chiron, environmentally friendly Porsche Taycan or even a Dakar Rally car — you should definitely take a look at Dynomax's exhibition at EXPO.

Inspired by the Northern Lights, Adamlights brightens up the place

By Ann-Marii Nergi

By Ann-Marii Nergi



Photo by Nunzio Prenna



In 21 years, Adamlights has become a company with global reach. In addition to Europe, they have created light designs as far as New Zealand and the USA. The next goal for Adamlights: to make itself visible in the Gulf region.

For over two decades, Adamlights has decorated public spaces and buildings with professional lighting solutions for the attraction and enjoyment of everyone. Today the company has a global reach and offers a full solution, from design and production to installation and maintenance.

When it comes to lighting, just name it — seasonal decorative lighting, light facades (Digital Multiplex Signal) or 3D light installations — Adamlights has experience in all.

"We do over a thousand lighting installations yearly and operate in more than fifty countries," says **Kristel Mäsak**, Export Director of Adamlights.

In London, Adamlights has created a colourful forest made of colour-changing RGB technology LED-trees in one of the city's most prestigious business districts, the **Canary Wharf,** and erected an LED Christmas tree by the River Thames near the **Tower Bridge**. The sparkling white snowflakes by Adamlights have created the festive mood in the windows of the world-famous chocolate brand **Patchi.**

"The next goal of the company is to make itself visible in the Gulf region," says Mäsak. "Our first aim is to find partners and resellers, to establish contacts. In the longer term we want to open a representation in the area. First and foremost, we want to approach shopping centres, real estate companies, hotels, restaurants, and, of course, local governments."
Just recently the company was invited to take part in a procurement — probably the most exciting challenge in the world for a lighting company — to create a design concept for seasonal decorations for one of the most famous buildings: **Burj Al Arab.** "It was a real honour for us to have been noticed and invited to participate, as the number of participants is limited. It is a sure sign for us that our product and design meet the requirements of the local market," says Mäsak, certain about the competitive edge of Adamlights.

Photos by Philipp Pley

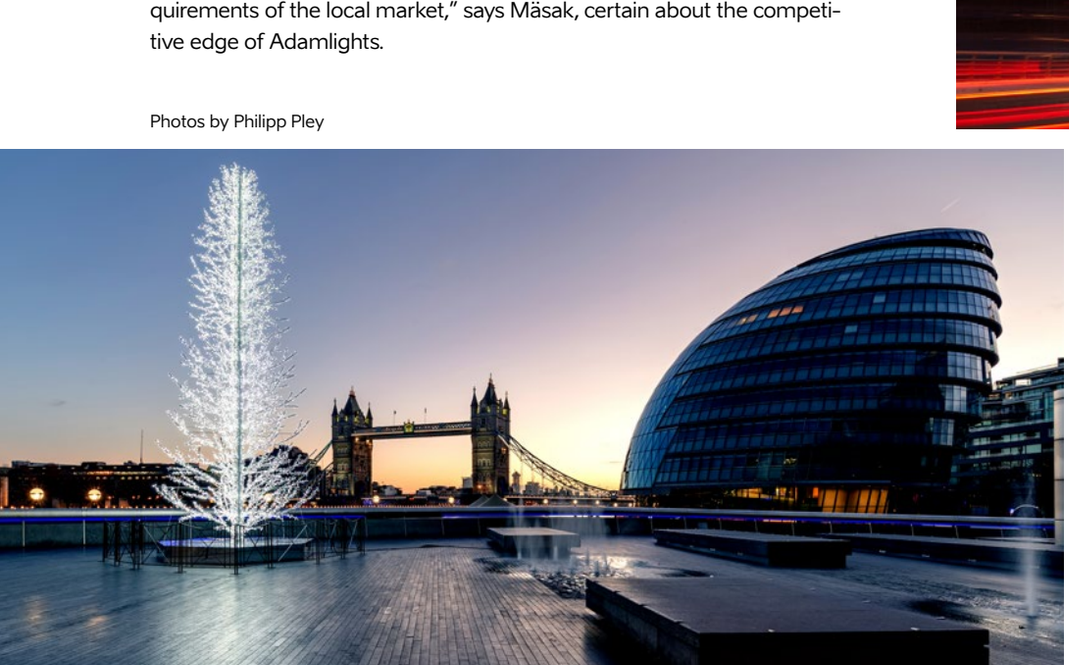
"The most important keyword for us is quality. All materials and components are chosen from the best manufacturers, we test the materials in different weather conditions all year round and, only when we are convinced about their operational ability, offer them to our clients. We have thoroughly renewed our production facilities, including a 4000 square metre production area in Estonia. Our employees are specialists in their field and processes are digitally controlled."

In today's world, entrepreneurs everywhere face the same questions — how to bring back customers and make them feel welcome again. Health and safety are important issues, but we shouldn't underestimate the importance of social interaction. The solutions by Adamlights help to create a safe public space where people like to spend time together.

"We are the light therapists. It is important to give people emotional resilience, hope and inspiration through lighting during the worldwide crisis of health," says Mäsak, adding "We want to spread the magic of the northern lights all over the world."

Photo by Kaupo Kikkas







Remo Savisaar

Remo Savisaar (1978) is one of Estonia's leading wildlife photographers. Remo was attracted to the nature around him at an early age and has been passionate about nature photography for the past sixteen years. His favourite subjects are birds, mammals and landscapes.

Remo has held numerous exhibitions and his work has been published in books and in magazines, including National Geographic. His knowledge of photography and eye for a good photography makes him a popular member of the jury for many photo contests.

With a strong knowledge of nature and animal behaviour, he lectures about nature and wildlife, leads nature and photography tours, and writes articles.



Remo has been named the Estonian Wildlife Photographer of the Year in different categories seven times (in 2010, 2014, 2015, 2017 and 2019) and he has won the Grand Prix of the Estonian Nature Magazine photo contest twice (in 2011 and 2020).

His award-winning photographs have received recognition also at international level.

Some key awards:

2006 Photobloggies Awards, the best blog in the world in category "Animal Photography"
2011 Baltic Nature Photo Contest — Winner in "The Best Photograph of the World Birds"
2012 Wildlife Photographer of the Year — Runner-up in "Black and White"
2013 GDT European Wildlife Photographer of the Year — Winner in "Other Animals"
2015 Golden Turtle — Winner in "Art of Nature"
2016 GDT European Wildlife Photographer of the Year, Highly commended in "Man and Nature"
2017 Nature Photographer of the Year — Winner in "Landscapes"
2017 Wild City — Overall Winner
2021 FIO 2021 "Wild Birds" — Winner in "Bird Portrait" and Grand Prix, overall winner

More of his work can be seen at **blog.moment.ee**

or in Facebook under the name: **Remo Savisaar Photography**

Portfolio
Remo Savisaar



"Lekking Capercaillie"
Tartumaa, Estonia



“Land of Wolves”
Floodplain with the River Emajõgi (meaning “Mother River”) and its oxbow lakes at Alam-Pedja Nature Reserve



“A Playful One”
Tartumaa, Estonia



"Great Grey Owl in his home forest"
With just 0-5 pairs, the Great Grey Owl is the rarest owl in Estonia



“Lynx in early spring”
Lynx population is estimated to be around 400 individuals in Estonia



"Winter Wonderland"
The River Suur Emajõgi at Alam-Pedja Nature Reserve, Estonia



"Colours of Summer"
Swallowtail (Papilio machaon) is the national butterfly of Estonia



"Ice Bird"
Wintering kingfisher is a rare sight in Estonia

Photo by Taivo Aarna

Estonia – where wilderness is never far from your doorstep

By Marion Jõepera

Welcome to Estonia, the land of ancient wetlands, dense northern forests and ice roads over frozen seas. Estonia is a meeting place of Baltic, Nordic, Scandi and Soviet cultural relics, white sandy beaches, long-distance hiking trails, and sailing routes between the numerous islands. In this tiny northern country, wilderness is never far from your doorstep and epic adventures are often just an hour away.

Although Estonia is a highly digitalised country with more startup unicorns per capita than any place in Europe, it is also a country where people turn to nature to calm their minds or to quicken their pulses. In nature, you will find the true spirit of Estonia coming to the fore.

From its long summer nights to long, dark winters, Estonia remains a mystery to many. As more than 50% of this tiny nation's land area is covered in forests, every outing can feel like an invitation to fully immerse yourself in the experience of the wild.

Epic kayak or bicycle trips, cross country wilderness hikes in huge forests, foraging trips under pine trees and in the romantic wetlands: in Estonia, each season connects you to the landscape and wildlife in its own magical way. And guess what? There are more than four seasons to take it all in.

Summer: no need to turn on the lights

As a northern country, Estonia is famous for its white nights. Summer sunsets last forever and, if you take a book with you, you can still read it on the seashore at 10 pm without any need for extra light.

Long days and summer breeze mean one thing: a perfect chance to explore the 2222 islands off the coast. Most Estonian islands are tiny and uninhabited, giving lovers of kayaking, canoeing, sailing, birdwatching and fishing a perfect chance for a really remote and wild getaway. Of course, it is also worth visiting the inhabited islands for their rural charm and traditional lifestyle.

When you have had your share of seawater, it is time to turn towards deep forests either for a day walk or for hiking in the wilderness for weeks. Six diverse national parks and protected areas take up almost one-fifth of Estonia's territory. Here, hiking trails guide you into versatile landscapes, inviting you to swim in bog lakes or wild camp on your way.

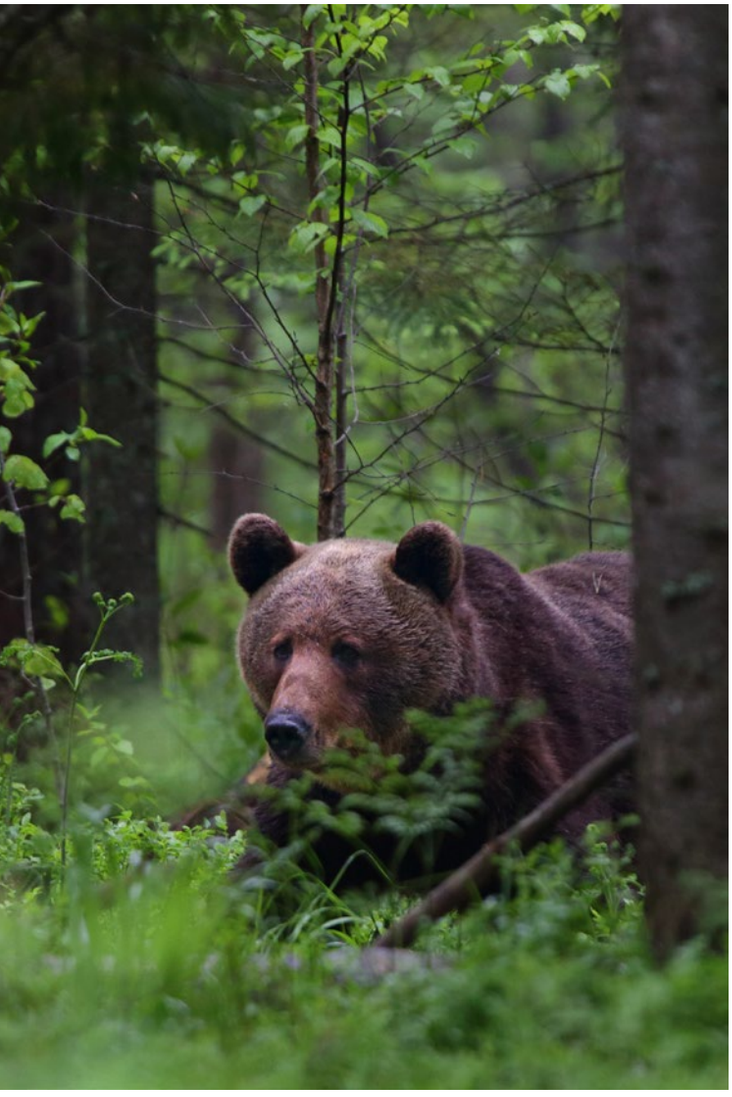
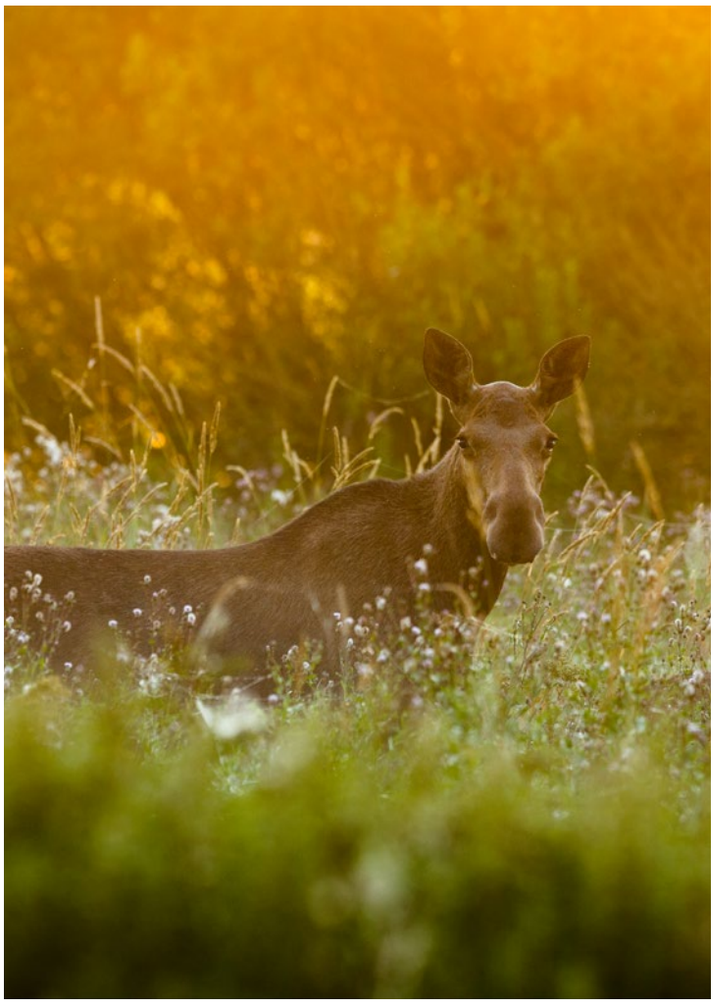


Photo by Remo Savisaar



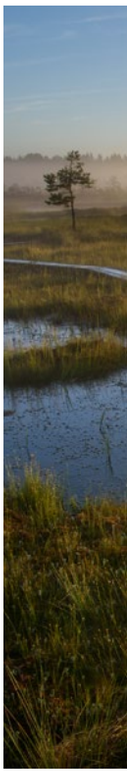


Photo by Jarek Jõepera

Here is what summer offers in some of them:

Lahemaa National Park is the largest national park in Estonia, and one of Europe's most important forest protection areas. The Eurasian lynx lives here, together with many other wild creatures who thrive in forest, bog and coastal ecosystems. This is an ideal landscape for relaxing walks and berry picking.

Matsalu National Park is a late spring and early summer paradise for all bird lovers as the park is an important bird feeding spot on the migration route between the Arctic and Western Europe. Among other birds, you can see up to 20,000 Eurasian cranes gather here during their annual journey.

Alutaguse National Park is Estonia's largest coniferous forest and marsh area. As the majority of the park consists of vast bog areas and forested landscapes, Alutaguse is a sanctuary for wild birds and animals. Several mammals like the wolf, the Eurasian lynx and the brown bear move between Estonia and Russia via Alutaguse migration routes.

And speaking of bears... Estonia is the place to see them, especially during the white nights of summer. There are around 800 brown bears in this northern territory, making Estonia the number one European country in brown bear density. For spotting them, you can either join a wildlife tour or try your luck on your own. The best times for spotting brown bears in Estonia are from the end of April to mid-July and from mid-August to the end of October.



Photo by Sven Zacek

Winter: journeys into winter silence

Snowshoes are an old invention. About 4000-6000 years old, to be exact. Wearing modern versions with winter boots gives you deeper access to the landscape, making it one of the best ways to explore Estonia in winter. You can venture out on your own or join a winter bog shoe tour to tread lightly through the forests and floodplains of this snow-covered country. In the depths of winter silence, the landscape truly feels timeless.

It is also possible to hike the biggest Estonian bog on snowshoes in Soomaa National Park. And the bravest winter hikers can enjoy winter swimming in bog lakes. And if you love keeping your winter coat on, you can revel in the knowledge that you are breathing in some of the cleanest air in the world.

If you want to leave the vast wetlands behind and travel further — to an island, perhaps — you can often take the most direct route. In winter, ice roads can be opened between mainland Estonia and some of the islands, so you can drive on the frozen sea ice to the next destination you wish to explore.

Happy fact:
The World Health Organisation has ranked Estonia's air as some of the cleanest in the world.

Autumn: connecting to ancient landscapes

Although many people associate wild camping with peak summer months, there is nothing more romantic than waking up to the symphony of nature also in the early part of autumn. Virgin forests seem to acquire their own way of breathing then and the colours across landscapes start changing, following their annual pace.

Then there are wetlands — ideal places to get deeper into nature. If you don't want to wild camp there, you can come to the bogs in the early morning and step into a forgotten landscape from a lost age, just like that.

Greeting a new day and watching the sun rise over a misty bog is a unique way to spend time alone with your thoughts. This is the time to breathe in the fresh air and smell the unique marsh plants. And feel the world become more relaxed around you. A foggy sunrise comes with an extra bit of charm — there is no better time for a refreshing dip in a bog lake!

Bogs are the oldest organic landscapes of Estonia, with some of them reaching up to 10,000 years of age. The first bogs started emerging after the last Ice Age. As the ice sheet was melting, the leftover meltwater got collected in depressions created by the glacier ice. Over thousands of years, plants lived and died in these shallow, oxygen-deprived meltwater lakes, and never fully decomposed. This is how peat got created, and still does to this day.

Did you know?
Bog water is very pure and drinkable, but it can't take your thirst away. Why? Because there are no minerals or nutrients in it.



Spring: rejoice in the return of the birds

Estonia is among the top three European bird watching destinations for the number of species spotted. Six eagle species can be spotted here as well as eight of nine European woodpeckers.

You don't have to be a professional bird watcher to enjoy spotting hundreds of species while millions of birds fill the skies of Estonia. Of course, the migration does not happen in one day, so you can move between the numerous islands, forests, bogs and coastline locations to find your perfect spot for catching a glimpse of different species.

The bird-watching season can begin already in March, usually culminating with a spring migration in mid-May, and winding down by mid-June. With birds returning from the south, life returns in many other shapes and forms after a long winter. Estonian nature springs to life after the dark winter months, with vitamin-rich fresh wild garlic, dandelions, nettles and spruce shoots all waiting to be foraged and eaten. That is just an extra reason to return to the forest again!

Did you know?
You can tap a birch tree and drink its vitamin-rich sap on the spot. The northern people have collected birch sap for thousands of years, even giving it to babies to drink.

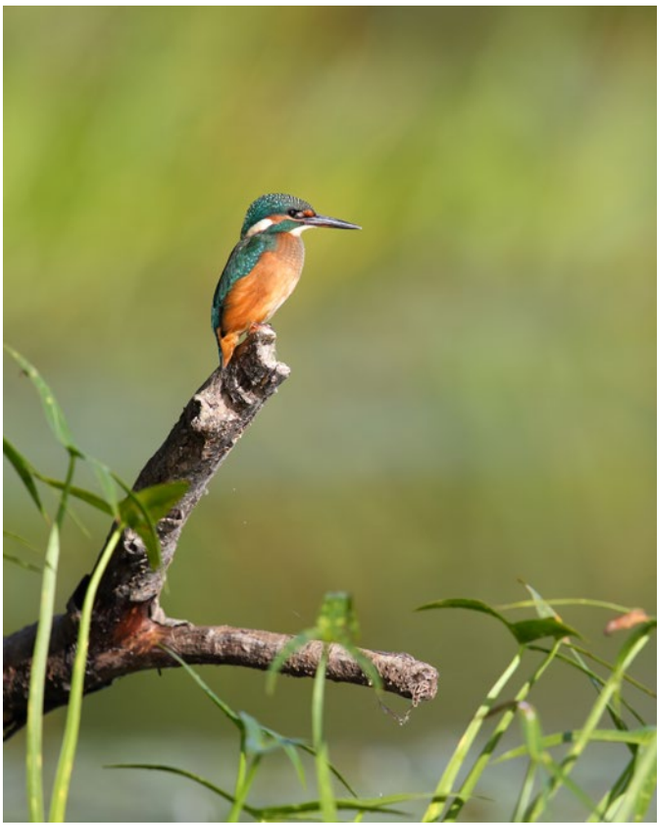


Photo by Remo Savisaar

The fifth season: gateway to another world



Photo by Jarek Jõepera

They say that there is so much to see in Estonia that there is an extra season to see it all. And there really is. Soomaa National Park is home to massive bogs, and it is the only place in Northern Europe with a unique fifth season.

Every year, the early spring floods arrive in **Soomaa,** rendering up to 17,500 hectares of roads, lower forests, and meadows only navigable by water.

The spring floods create an almost other-worldly canoeing experience and offer a truly special way to immerse yourself in the landscape. On top of that, Soomaa National Park is also home to the only flying squirrel species in Europe. It is a truly magical place. Just like the rest of this peaceful northern land.

Estravel, the largest travel company in the Baltic countries offers travel services for private and business clients. They'll be helping Estonians on their way to Dubai this season. Why not use them for your next visit to Estonia?

Clay – an old material leading us to the future

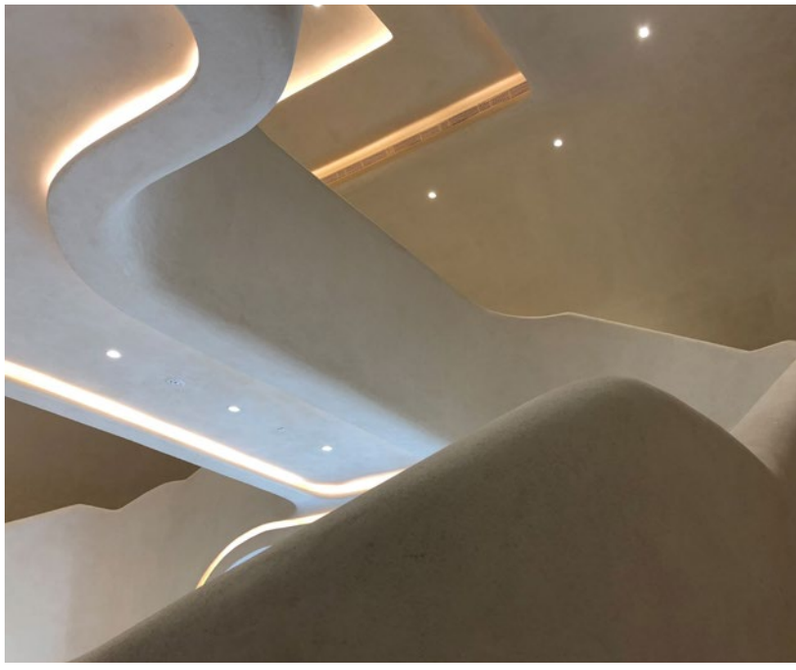
By Mailin Aasmäe and Ulvi Mustmaa



Photo by UKU – Pure Earth

In a rapidly changing world where slow living is increasingly being honoured, more-enduring values are sought after. This once more brings to light centuries-old craftmanship that helps to recreate our surroundings in a natural and conservative way. No doubt clay is a star in this equation and UKU – Pure Earth is its best advocate in Estonia.







Photos by UKU — Pure Earth

"The time will soon come when the ecological footprint will determine whether a building gets a permit or not," Marko Kikas, CEO of UKU — Pure Earth believes.

Clay is a material that can be reused over and over — and is the only binder that can be handled in this way. It is a ten-thousand-year-old technology but works perfectly in the present day because it looks beautiful, is easy to maintain, and antibacterial.

UKU — Pure Earth is one of the oldest natural building material companies in Scandinavia and the Baltic region with roots dating back three generations. They produce entirely natural building and finishing products including clay and lime plasters, paints, and polished plasters like Stucco Veneziano and Marmorino as well as Tadelakt — inspired by the traditional Moroccan material and representing a more than two-thousand-year-old technique.

"We keep old values alive. We do not add non-natural binders or stabilisers, which are widely used today, so as not to spoil the products," explains CEO **Marko Kikas**. "When I go to a construction store, the oldest plaster and paint manufacturers have been operating for maybe 25 years. But we are talking about natural materials that have been used for thousands of years and are valued by more and more people around the world."

For UKU — Pure Earth, clay is a direct link between man and nature and their work in many ways an art form that they learned from the practitioners who lived long before their time.

"From Venice and Italy, we took over the craftsmanship of the old masters of Marmorino and Venetian plaster. For example, in Japan it's not plastering what they do, it's a spiritual practice — no hurry, full presence is important. The wall is ironed with a trowel (until) the last piece of sand has been (smoothed) into place."

In Kikas`s eyes, clay is an ideal material. It creates a perfect connection among the house, nature, and people and does not pollute the environment. It's also a fire-resistant, heat-storing, and moisture-binding building material that fits perfectly with an all-green vision of the world.

"Concrete and cement production is energy-intensive. But if we run out of energy and the forests are cut down, what do we build from then?" Marko Kikas asks. "If all the world was to collapse, the clay would remain."



Company's largest delivery has so far been to Qatar for the house of the Royal Family for materials to cover 15,000 square meters.



"The production of clay plaster consumes 2% of the energy that would be used to produce the same amount of cement plaster," he continues. "The energy consumption difference is even bigger between making raw clay brick and so-called ordinary brick. Scandinavian construction companies are already asking about the life cycle assessment. I think the time will soon come when the ecological footprint will determine whether a building gets a permit or not."

Natural and elegantly luxurious are not synonymous in every situation, but in their case it`s true. "Our materials have been used in finishing palaces, villas, apartments, school classrooms, offices, and even hospital environments," adds Kikas.

UKU — Pure Earth has joined the Estonian Pavilion because they see a huge potential in the UAE: "The Arab countries are no doubt plaster countries. They understand the aesthetics and value its quality." The company's largest delivery has so far been to Qatar for the house of the Royal Family, where they sold materials to cover 15,000 square metres, and were also the general contractors of the plastering works.

UKU — Pure Earth also believes that everything necessary for life, even building materials, must be produced when possible both locally and from local raw materials. "Today we are working with this idea in Oman, Germany, Georgia, and we have advised on the development of the manufacturing facility commissioned by the national programme of the Republic of India," he explains.

Why? To build a cleaner living environment for our future generations, concludes Kikas.



The future of farming – hyperlocally grown food

By Ronald Liive



Photos by Janar Raidla

Eating healthy and freshly grown food has been on the minds of people around the world lately. But what do you do when you live in an apartment or an area that does not meet the needs to grow salads, tomatoes and other produce?

Hyperlocally grown food is the option. **Click & Grow** is a company that has been manufacturing smart gardens for 11 years. With the help of their products everyone can become a gardener and have a supply of healthy produce all year round no matter what the climate outside may be.

The company sees growing food at places of consumption — such as in homes, schools, hospitals — as the most sustainable and economically viable solution: the textbook definition of hyperlocal.

Click & Grow has put up a wall filled with 500 living plants for the duration of the Dubai EXPO 2020. The wall consists of 13 different plant types ranging from dill to dwarf basil, thyme, red chard and green sorrel. The last of them is a plant that does not like heat so is not an ideal type of plant for areas with extreme temperatures such as Dubai.

The company will not use the EXPO as just another fair to introduce their products but as an event that will popularise plant growing for urban areas in general, says **Martin Laidla**, the PR Manager for Click & Grow.

"We took part in the previous EXPO that took place in Milan, Italy, and we enjoyed the experience. We saw that we have something to offer during the Dubai EXPO so we jumped on board. We are aiming to make growing fresh foods even more popular," Laidla adds.

The product list of Click & Grow consists of five different smart gardens that are intended for indoor usage. The core of the technology they use is actually in the innovative soil mix that creates the perfect environment for the plants.

Laidla stresses that with the help of Click & Grow it's possible to grow up to three times more vitamin-rich foods and it also takes 95% less water than in traditional agriculture, all without the introduction of pesticides or other harmful chemicals. The soil is packed into a pod with seeds. At the moment, there are 60 different plant types available.

Remember Kickstarter, the once popular crowdfunding website? Click & Grow launched their first product there. Their latest one, named **Click & Grow 25**, was also launched there and managed to surpass the modest 35,000 USD goal many times over. Backers pledged over half a million US dollars to fund the product.

The unique part of the 25 is that it is modular. Up to three modules can be stacked on top of each other, meeting the average family's nutritional needs for fresh greens. All the gardens' systems are controlled via a smartphone app and have built in LED lights which are vital to produce fresh greens year-round.

Retailers are already selling Click & Grow products in the United Arab Emirates, but you can place an order at the Estonian Pavilion and the product will be shipped to your door.

Silence: cherished more than gold

By Johan-Paul Hion



Silen is an Estonian company that provides workers with one of the most valuable resources: silence. We need it to get stuff done – it's as simple as that. To that end, Silen manufactures quiet working and meeting pods for office spaces and soon, your favourite café as well.

Photo by Aron Urb



Photo by Silen

Finding a place for focused work is getting more and more difficult, whether you're trying to get work done in your favourite coffee shop or having to shout over your colleagues in an open-plan office. Silen has a solution: mobile and modular pods of different sizes that can be used for focused solo work sessions or bringing your meetings into a quiet, well-ventilated and comfortable space so you can concentrate on the task at hand.

Founded as an offshoot of an office furnisher **Wallenium**, Silen is the brainchild of CEO **Endrus Arge**. A long-time player in the office furnishing market, Arge put down the first sketches of what a silent work pod could look like whilst bored at home during a bout of flu in 2017. From there, it only took his team a year of research and development to launch the first product in 2018.

Since then, Silen has grown at an astonishing pace and now boasts clients like Spotify, Airbus, Amazon and Volkswagen in over 40 countries whilst still maintaining the core of its business in Estonia. Both the offices and production have been located in the small Nordic country from day one.

Even though many clients already see the value in Silen's pods, competition in the office furniture industry is tough. Arge claims it's the high build quality and innovation in design and materials that sets Silen apart: "Innovation isn't really about trying to cram the latest gadgets into the pod. We find each customer and worker have their own preferred products that they like to use, and technology becomes obsolete so quickly the pods need to be separate from the tech used in them. Our pods are made to be used for 15-20 years. Would you want a meeting pod with a fax machine in 2021? That's why we focus on build quality, acoustics and comfort."

Currently, Silen's pods are available in 1, 2, 4, 6 or 8-person sizes with lots of customisation options for furniture, appearance, ventilation, and electrical connectivity. The future will see product mobility and modularity improve even more. It's important that customers can easily join different modules together and relocate the pods around the office with the space's hidden wheels.

In addition to offering flexible work and meeting space options for offices all over the world, Silen have also realised there's a pressing need for quiet elsewhere in our urban centres. That's why **Silenbooking** is launching in August-September 2021. To put it simply, Silenbooking is like Airbnb for quiet working spaces (with great WiFi!). The first public working pods will be popping up in coffee shops, transit hubs and other public places in Tallinn and on the U.S. east coast in the second half of 2021 and expand from there. Just visit the website, find your closest pod and whoosh — you have your own nest of tranquillity in the midst of urban chaos. Perfect for that important video call or getting a good hour's work in while you wait for a train. When you're done, just close the door behind you.

With new working and office arrangements introduced by the recent mass-migration to video calls, telecommuting and being constantly available, there's another area where quiet is desperately needed: relaxation. To help with this, Silen have teamed up with 3D-sound meditation journey provider **Synctuition** to launch **MindSpa**.

MindSpa will be a series of custom-built Silen pods that provides a space to get away from it all and switch off for a few minutes. The interiors feature custom decor, comfortable armchairs and hi-fi grade headphones to immerse you in Synctuition's audio journeys, which are scientifically proven to give the same effect as 4 hours of traditional meditation with a 20-minute sound journey. With the help of MindSpa, employers can give their teams a way to switch off and recharge in the middle of their busy work lives. For now, you can visit the Silen Showroom in Tallinn to see MindSpa. In the near future, you will be able to use them in hotels and airports all across the globe.

So, if you need a spot away from the noise to get some work done or to just take your mind off everything for a few minutes, you now know where to look. There's a good chance we'll be hearing more from these crafty Estonians soon!



Photos by Amnajeda

The luxurious ways to pamper yourself Estonian style

By Ann-Marii Nergi

Estonia has always boasted unique and exclusive handicrafts and displays its high-quality handwork even in such traditionally "industrial" areas as aviation and shipping. The best examples of such luxury will be on view at EXPO.





Fashion icon, Amanjeda by Katrin Kuldma, dresses all Estonian guides and managers at Dubai EXPO

For decades **Katrin Kuldma** has worked as a successful fashion designer and interior architect. Her brand, **Amanjeda by Katrin Kuldma**, operates in the luxury products sector, creating items and services of uncompromising quality. "Our customer looks for the best — authenticity, functionality of the clothes and furniture, but also uncompromising aesthetics. In my work I combine innovation and heritage: for the creation process we use digitalised models and modern technology, but for example the ancient embroideries of the small Estonian island of Muhu have had a deep impact on my work," she explains. All of her creation then comes into life with using the best raw materials in the world, deeply supporting the values of the slow movement.

Amanjeda by Katrin Kuldma offers full lines of designer clothing for men and women, while Amanjeda Home is a premier line of interior elements such as sofas and textiles. In December 2019, Katrin Kuldma opened a new concept store and an impressive showroom of northern luxury — the **Ultima Thule Gallery**. Besides her own brands, the gallery offers a unique selection of high-quality clothing, jewellery and interior design brand, interior architecture projects, artwork and lifestyle services from the creators of Northern Luxury.

The Ultima Thule Gallery is partnering with Dubai EXPO in presenting the best premium and luxury design, interior, art and lifestyle brands of Estonia to the world. The target of the exhibition is to find export partners for all. Kuldma feels honoured that her brand Amanjeda was offered to dress the EXPO guides and managers. This is the second time running that EXPO guides and managers are dressed in Amanjeda. Although, at the Milan EXPO, the brand did not have a display of its own, the collaboration established great contacts with fashion showrooms there. On this occasion, Ultima Thule Gallery presents Amanjeda by Katrin Kuldma and other Northern Luxury brands at Dubai EXPO, both with actual products and with impressive virtual display.

"There are limited opportunities to present the entire collections of the Ultima Thule Gallery in Dubai, but ideal conditions have been created in Tallinn. Due to the changes in the world, we have used the virtual showroom on many occasions in the last year. Now we can also take advantage of the same idea for EXPO. We have videos and virtual shows on the screen of the Ultima Thule Gallery. We are also participating in visits, and have events on location, and our gallery in Tallinn is kind of a continuation of the EXPO Estonian Pavilion.

The Ultima Thule Gallery catalogue that expresses the philosophical concept and presenting products and services in the best possible way, is available at the Estonian Pavilion," says Kuldma.

Ultima Thule Gallery also offers its partners clear and thorough support in marketing and modern economic software solutions. "We consider it very important when moving to export markets that our partners have the technical capacity," Kuldma adds. "Therefore, we have created opportunities for the application of the most modern economic software solutions."

Professional buying-in partners are key when it comes to designer products. In the case of clothing, accessories, jewellery, and interior design products, those are the international resellers of luxury brands. Contacts with international showrooms are equally important.



Photos by Fort Aero





The sky is no limit for Fort Aero

Estonia also has exciting and exclusive solutions when it comes to private aviation.

Eight years ago **Fort Aero** was a small business-charter brokerage company that has now become a serious business aircrafts air operator with an impressive fleet of two Falcon 2000s, a Falcon 900 LX, a Nextant 400 XTi and a Hawker 850XP and its own Part 145 organisation, providing services to Falcon 2000, Falcon 900LX, Hawker 850XP and Nextant XTi aircraft types.

The COO of Fort Aero, **David Shlick,** emphasises the importance of participation in Expo 2020 Dubai: "Our goal is to present ourselves and our services, to offer solutions from the Estonian business environment and aircraft registry. We'll demonstrate the advantages of Estonia's technological lead and establish a connection with business aircraft owners, business aircrafts operators, aviation bankers and lawyers, business aviation brokers, family offices representatives, luxury travel agencies and other players in the luxury travel market segment."

As the company is constantly looking for new markets, new partners and new clients, EXPO is an amazing opportunity for that.

"Fort Aero is operating its fleet anywhere the client would like to go, including Middle East, Asia, Africa, North America. Mostly we are operating flights in our European market, but we were always thrilled to discover new markets and create new partnerships," says Shlick.

But besides flying their clients around the world, Fort Aero also provides jet management services like aircraft registration, operation, airworthiness management, charter sales, aircraft selection, design, and financing solutions.

Elegance on water — speed-boats by Furus

Photos by Indrek Kasper







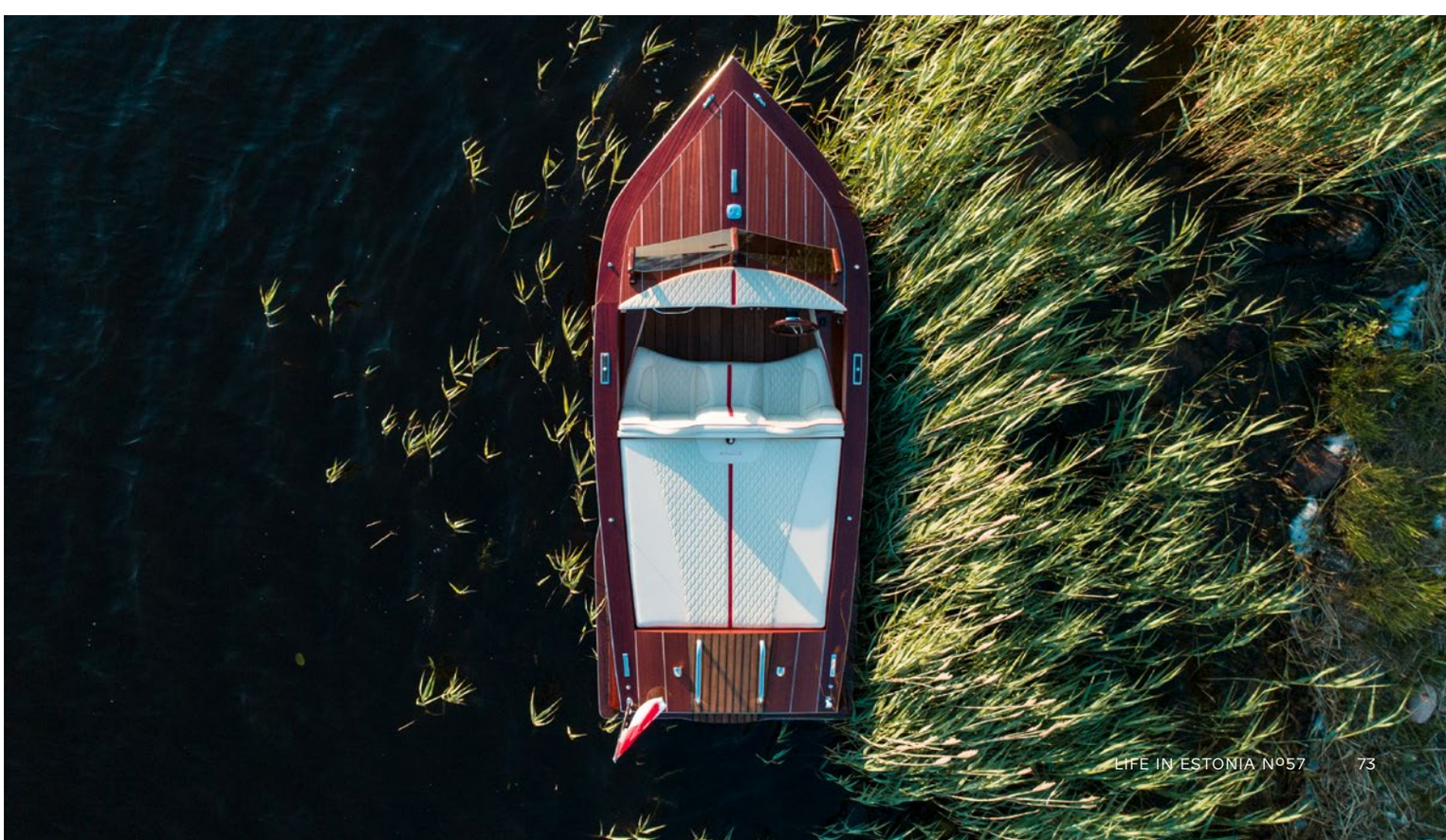
Another Estonian company worth introducing takes us from the air to the water. **Furus** produces luxurious hand-made speedboats.

Hand-made mahogany speedboats represent and unite boat building experiences from Scandinavia and Estonia. This union creates an uncompromising quality that will make Furus' boats last for generations. In building the boats, the company has tried to answer the question — what should an elegant and luxurious speedboat look and feel like?

According to **Indrek Pähnapuu**, CEO of Furus, the answer is that each boat looks like its owner; a form of expression that invites the client to fulfil their personal dreams. At the same time, a speedboat is a long-term investment. In fact, they can be called "father to son boats" due to their long-lasting quality.

Pähnapuu says that by being at Expo 2020 Dubai, Furus has taken Estonian custom-made design onto the world stage. "We want to put Estonia as a naval state onto the world map with our handmade speedboats and offer people many great emotions, both for the soul and the eye. Of course, we also hope that EXPO opens up a bridge for us into the world where the majority of Furus' customers are. There is a lot of interest in us from the Middle East and Asia, as well as Russia and, of course, the Mediterranean — Monaco, France, Italy — where Furus' speedboats normally sail."

At the EXPO display Furus emphasises samples of their high-quality work. There is a scale model of a boat showcasing the bow and some leather design. At the Estonian Pavilion you can imagine yourself sailing and have your photo taken at the helm.



The nicEST guys of Estonian music

By Maris Hellrand

Moving on rooftops

Tall and handsome, he steps onto the stage and, after a few beats on digital drums, the public is jumping through the roof. High energy, irresistible charisma and ingenuity make him one of the best loved live artists in Estonia. However, his fan-base is international after the amazing success of the first hit single "Move" in 2015, followed by "Rooftop" a year later. NOËP (alias Andres Kõpper) is among the top three most popular Estonian musicians in the world.





Photos by Arun Tamm

A video designer by education — NOËP is usually producing his own music videos, combining the storytelling abilities of music and visual language. The videos often include a pinch of healthy self-irony and humour.

NOËP is releasing his first full album in autumn 2021. Free of exclusive-label contract constraints, he can let his creativity run free, noting that: "I had planned to change direction in my music and production style, and this makes sense with a whole album."

"No Man is an Island" is the title of one of the singles from the album which, for NOËP, sums up the whole album quite well. "No person can function alone in life — both in terms of friendship and love. At the same time, the title also refers to the questions of sustainability, carelessness and ignorance of the society." His debut album will be represented by Warner Music for the Nordic/ Baltic region and by **Humming Records** for the rest of the world.

When traveling in Asia some years ago he was shocked by the plastic waste in the ocean. Inspired by this, NOËP got involved with the **World Cleanup Day** and has been producing video clips and ads for the initiative.

"I care about the issues of sustainability, and it has motivated me to research these topics and adjust my own behaviour," he says. "If I forgot my cup, I don't buy a coffee. All last year I only bought second-hand clothes. I try to move around on foot and avoid eating meat (the only exception is when I visit my mum). Small usual things. I feel I should actually make a next step."

Travel footprint of the global population has shrunk considerably in 2020 and 2021. And travel has been an essential part of a pop artist's life until last year. NOËP actually has enjoyed the break from the annoying and tiresome travel routine: "A lot of my travel is for music camps. I don't care about fast travel. I'm happy not to do these quick day trips for a gig in Berlin or a like (event). I really didn't like it even before the restrictions, but there was a certain pressure professionally to do it. I like that the online opportunities have become much more common, and I hope this will remain. As for concerts, I have a few offers for small concerts. No big festivals that would give a major career boost. So, I'd rather save my CO2-footprint for a surfing trip once a year. I have to earn these karma points somehow."

As an artist, he has a voice and a responsibility. "This has been a driving force for me. Especially since I lost a bit of the professional ambition for a while. The motivation to reach bigger audiences with my music in order to also be able to communicate the message of sustainability has kept me going throughout the years." At the same time, NOËP humbly admits to not being an expert: "I don't have an illusion that my views count."

Deeper reflections

His new album has many quieter pieces than NOËP's music so far. He himself considers it much more alternative, even darker: "The feel-good aspect that I've been known for is not quite lost from the album, but there is a lot more thoughtfulness and darkness. This felt right. I felt I was a bit tired from the musical naïvete. It felt honest not to go after a feel-good vibe. For quite some time, I have felt uncomfortable writing just another love song. It has felt so trivial that it has not tickled the creativity. It seems meaningless. Therefore, I have written many songs that have a double layer depending on how you interpret the lyrics. It can seem as a love song on the surface, but there are other layers if one gives it a bit more thought. I like to seek for the balance. I don't want to be too pathetic about it or whining or dystopic. People don't like it either, life is hard enough, and a kind of musical escapism is why people listen to pop music. I don't want to completely move away from that, but I hope there is a tasteful balance."

NOËP's audience has grown up with the artist. Looking at concert audiences or Spotify demographics he sings to ages 20-45 — something that makes him happy and proud: "I can recognise myself within this group. What I care most about is feedback from my friends and other musicians whom I respect. If they say they like it, it's a big deal. My goal with the new album is not to dominate the top of radio billboards, but rather to make music that is recognisable and has character."



Gentle sounds for human beings

Mick Pedaja (28) is adding his touch to the senses tickled at the Estonian Pavilion. The special playlist by the Estonian singer songwriter is inspired by people around him, by feelings and sounds of nature.





Photos by Siiri Kumari

Mick Pedaja's musical journey has taken him from a school basement punk band to the large stage of Estonia's Eurovision finale and cinema screen. He told how he "got a kick out of live music" from an early age and was drawn to learning guitar and singing while growing up in the small rural town of Rapla, about one hour's drive from Tallinn. Like most Estonian kids, Pedaja sang in the school choir but also took additional singing lessons. From those loud and noisy beginnings, his music has become more and more quiet. By the time he began composing he had developed a taste for a mix of ambient, acoustic folk and new age sounds. The Eurovision Estonian finals success in 2016 was a career boost that opened up new horizons.

Meanwhile, the dream to write film music has come true. Pedaja composed the award-winning soundtrack for **Martti Helde**'s **"Scandinavian Silence"** (2019), which brought him the best film composer award and has gone on to create music for several films and series since then. Cooperation with film director Martti Helde has been special, as they "discovered a strong spiritual connection" according to Pedaja, and this is what also brought Pedaja's sounds to Dubai, as Helde is the creative storyteller of the Estonian exposition.

Mick Pedaja sounds extremely grounded: "I have grown out of this drive for instant gratification and chasing fame and success. It's been a great relief to step off the album-tour-album-tour rat-race. Today I can't separate my music from other parts of my life — who I am as a person, as part of society." He feels a sense of duty and responsibility both in music and life: "How does my music make people feel? Does it serve the best interests of the society? What are the small steps that I can do to make the world better?"

Many recent film projects address the big issues of today's world, like the short documentary **"Human Being"** (directed by Martti Helde) about philanthropist Bobby Sager, or the one-minute-documentary about Estonian forests. He says that the combination of film music and solo song writing works well: "I enjoy the intensity of film composing. For three days and nights there is nothing else, a new and different vibe." Pedaja loves to experiment with analogue synthesizers to create new soundscapes. This immediately brings to mind a reference to **Sven Grünberg**, the grand old man of Estonian electronic music and legendary film composer since the 1970s. Pedaja admits that like most other Estonians he soaked up Grünberg's soundtracks from cartoons and films adding, "When I watch the legendary cartoon Naksitrallid, it creates a nostalgic feeling of kindness."

Pedaja didn't follow an academic musical path after high school and still can't read the scores, however, with today's technology this is no longer necessary. "At school I was a lazy teenager and just wanted to rock. I might take it up one day just in case I want to write a symphony," he jokes. This might not be a joking matter, actually. Asked about the highlight of his musical career so far, Pedaja lists a concert in Germany in 2019 together with his wife **Angeelia Pedaja**, conductor **Kristjan Järvi** and his orchestra. Just a few days after the interview he was off to Novosibirsk in Russia with Järvi again for a large-format performance. However, there's a balance, as with everything he touches: "An equal highlight was an acoustic live that I performed for just two people at the Maidla Nature Resort. Amazing connection and energy."

From ballet to classical rave and back

Sander Mölder is a musician, composer and DJ beyond and above musical genres. He is contributing to several musical events at the Estonian Pavilion at Expo 2020 Dubai.



Photo by Marleen Muhuste



Photo by Andres Raudjalg

Beginning with the typical musical biography of an Estonian kid in Kuressaare (Saaremaa island) that included boys' choir, classical instrument lessons and the obligatory school band of earlier rebel years, Mölder has found his way to the stage of the Royal Albert Hall and discovered his niche as both an opera and ballet composer.

Looking back, Mölder remembers a fierce competition between choir and cello for his dedication: "My career as a drummer remained short, though — my experiments with drum'n'base rhythms didn't go down too well with the classic rock covers that we played, so I got expelled from the band." This, however has not put him off experimenting between genres and crossing musical borders. Cello has been a pillar of his musical foundation ever since, including a performance at the Royal Albert Hall with the orchestra of his Scottish high school ... wearing a quilt. Academically, his music studies led to electronic music with a short stint in Brighton and a master's degree from the Estonian Academy of Music in electronic composition. This led to composition of a first opera in 2014 — a joint graduation project with **Marianna Liik** entitled **"Frequently Asked Questions"**.

After that, ballet was a logical next step, says Mölder: "I had the feeling that ballet music has been pretty much stuck for the last 50 years and it seemed like a great challenge to tackle. I want to search for something fresh in the classical ballet dance language."

The first ballet **"Keres",** composed as a commission for the Estonian centennial in 2018 together with **Timo Steiner**, is dedicated to the best Estonian chess champion of all times, **Paul Keres** (1916-1975). This creative cooperation with ballet director **Teet Kask** continued in further joint projects. **"The Golden Temple"** was inspired by the book of the Japanese author Yukio Mishima and premiered in 2020. Mölder himself considers this "perhaps the darkest piece." Now the team has moved on to a more lighthearted topic and is working on a ballet about Louis XIV, the French **"Sun King"**, a passionate ballet dancer himself.

In his solo projects Mölder has published several award-winning solo EPs and runs a popular club night series in Tallinn — TIKS. He doesn't see the different parts of his music career as any sort of contradiction: "For the moment it seems that ballet has become the main focus considering time and effort spent and the depth and meaning of it. This doesn't diminish my role as a DJ. It's quite nice to just play a set for people to dance but I'm mostly disappointed if I don't add a special twist."

He finds it particularly easy to jump between the genres and various compositional mixes. While working on a new album of his electronic compositions, for example, an earlier cello concerto seems to fit in nicely. Mölder is also experimenting happily with mixing classics or even children's songs with electronic rave beats.

The Dubai EXPO stage will feature Sander Mölder in a range of cooperative projects with other Estonian artists including the leading *a cappella* group **Estonian Voices** and the string orchestra **Tallinn Sinfonietta**.

Some fun facts you might not know abut Estonia

If you were to play connect-the-dots with a map, Estonia would be the link between Scandinavia, Central and Eastern Europe. After learning of its hidden charms, you might find it impossible not to pay a visit.

Here are some of the country's most surprising strengths and entertaining facts.

Land of capitals

While Tallinn is the official capital of Estonia, several other towns are "capitals" in their own right: Tartu, the second biggest town, is the long-standing capital of culture, Pärnu that of summer, Otepää of winter, Kuressaare of weddings, Jõgeva of frost, Kärdla of sun, and Türi of flowers and spring.



e-Estonia

Estonia is a digital society; the first country to implement online voting in 2005, and virtually all tax returns are filed electronically. Citizens can sign legal documents remotely with their ID cards or Smart ID and anyone in the world can apply to be an e-resident. And yes, it's true — there is 4G coverage even in the middle of the woods.



e-Residency

Estonia is the first country to offer e-Residency, a government-issued digital identity and status that provides access to Estonia's transparent business environment. It allows an EU-based company registration, document signing, encrypted-document exchange, online banking, tax declaration, and fulfilment of medical prescriptions.

The programme, launched on 1 December 2014, had a high-flying aim to get 10 million e-Estonians by 2025. Today the total number of e-residents is 82,008.

There are two kinds of e-residents: VIP e-residents who are given the status for marketing purposes, and regular e-residents who have gone through the application process and want to start a business.

The first e-resident of Estonia was British journalist Edward Lucas. The first person to apply for and be granted e-residency through the standard process was Hamid Tahsildoost from the US. Other notable e-residents of Estonia include Shinzō Abe, the longest-serving prime minister in Japanese history, venture capitalists Tim Draper, Steve Jürvetson, Ben Horowitz and Guy Kawasaki, Microsoft founder Bill Gates, Pope Francis, German Chancellor Angela Merkel, host of the Daily Show Trevor Noah, the wealthiest man in India Mukesh Ambani and so forth.



Singing nation

With the largest collection of folk songs in the world [133,000 recorded tunes] Estonia has aptly been called the "singing nation". The lyrical tradition culminates every five years in the Estonian Song and Dance Festival, a gathering of up to 200,000 performers and spectators.

Clever nation

The results of the 2018 PISA study rank Estonian basic education as the best in Europe. Estonia's 15-year-olds rank 1st in reading, science, and mathematics in Europe while, in the world, Estonia's students rank 5th in reading, 8th in mathematics and 4th in sciences. Consequently, Estonia also has a literacy rate of 100%.



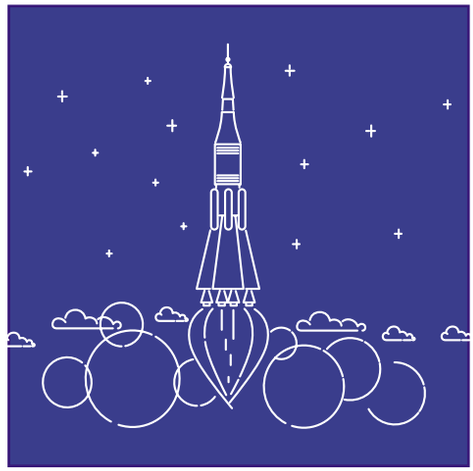
Top models

Estonia produces more fashion models per capita than any other country in the world with about 74 models per one million people. It certainly doesn't hurt that Estonians are the 3rd tallest people in the world, according to century-long study. The average height of Estonian women is 169 cm and 180 cm for men.



Wife-carrying champions

Estonians have a knack for peculiar sports, including wife carrying. Though wife carrying originates from Finland, Estonian couples won the World Championships for 11 consecutive years, from 1998 to 2008. To what do they attribute their success? Perhaps to the popular 'Estonian Carry' technique, in which the woman clings to the man's back, upside down. It's a favourite among competitors worldwide!



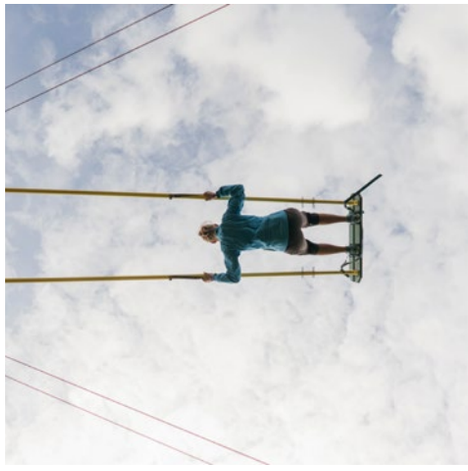
Meals for cosmonauts

Estonia contributed its part to the international Space Race by producing the first food intended for space travel at a factory in Põltsamaa in 1962, a year after Yuri Gagarin became the first man in orbit and seven years before Apollo 11 would land on the moon. Põltsamaa's production of cosmonaut meals has ended, but Estonia's involvement with space has not. In 2013 the country's first satellite, the ESTCube, was sent into orbit and the preparations for launching ESTCube 2 are on the way.



Fairy tale forests

Estonians have a tree-hugging streak, and rightly so — roughly 50% of the country is covered by forest, inhabited by all kinds of fauna including lynxes, wolves, brown bears, foxes, rabbits, and deer. Over 380 species of birds can be seen throughout the year.



Extreme swinging

As a child, you've surely dreamt of swinging so high that you go sailing over the top of the swing set. Estonians have turned this fantasy into a sport called 'kiiking' (*kiik* is Estonian for swing). It involves strapping yourself upright onto an enormous swing and vigorously pumping your whole body with the goal of rotating 360 degrees. Your inner child will love it.



Clean environment

The WHO has ranked Estonia's air as some of the cleanest air in the world, along with countries like Finland and Iceland. The fact that over half of Estonia's land area is covered by forest (52%), making it the 6th most forested nation in Europe, contributes to the pure air quality. Nature reserves make up about one fifth of Estonia's wilderness, ensuring preservation for the future.



Europe's most famous oak

Of all the trees in Estonia, a 500-year-old towering oak in the village of Orissaare, Saaremaa, is undoubtedly the most famous. It was voted European Tree of the Year in 2015 and stands right in the middle of a football field. Legend has it that, during Soviet times, two tractors tried to remove it but were no match for the mighty oak. Today, it enables young footballers to execute perfect kicks with an intervening tree bounce.

Fun facts about Estonia



Highways on ice

During winter, cars can travel across 25 km of frozen sea to the island of Hiiumaa on the longest ice road in Europe. A total of seven official ice roads give motorists the unique opportunity to drive to coastal islands otherwise only accessible by boat.



European sauna marathon

Europe's largest sauna marathon takes place in Otepää. Teams from around the world race between about 20 different saunas to be crowned the winners. When they're not busy plunging into a freezing ice hole, competitors can enjoy the wintry sights of Southern Estonia.



The origin

The name *Eesti* (Estonia) has been connected to *Aesti*, first mentioned by Roman historian Tacitus around 98 AD. The Scandinavian sagas referring to Eistland were the earliest sources to use the name in reference to "the east". Human settlement in Estonia became possible when the ice from the last glacial era melted. Pulli by the Pärnu River, settled around 11,000 years ago, is the oldest known human settlement in Estonia. A dog tooth found at the Pulli settlement is the first evidence for the existence of the domesticated dog in the territory of Estonia.



Estonian Vikings

Several Scandinavian sagas are referring to confrontations with Estonians, notably when "Estonian Vikings" defeated and killed the Swedish king Ingvar in the 7th century. In 1187 Estonians from the island of Saaremaa (Oeselians) sacked Sigtuna, which was a major city of Sweden at the time. The inhabitants of Viking Age Estonia are seen as the direct ancestors of modern-day Estonians.



Kaali Lake — home of the big bang

Estonia has the highest amount of meteorite craters per land area in the world, the most spectacular of which is the Kaali crater field on the island of Saaremaa. The largest crater, the Kaali Lake, measuring 110 m across and 22 m deep, was an ancient sacrificial site. Seven thousand years ago a meteorite weighing forty-six tons landed on Saaremaa, causing a natural catastrophe and kicking off generations of legends. According to Lennart Meri, an Estonian writer, film director and statesman who served as the second President of Estonia from 1992 to 2001, due to this crater Saaremaa was the mythical and mystical end of the world or the island Ultima Thule — "a place where the Sun went asleep".

Distinct language

Based on the US State Department's Foreign Service Institute rankings, due to its 14 grammatical cases, Estonian is the 5th most challenging language for native English-speakers to learn, and yet sounds whimsical and fairytale-like. There are only (approximately) 1.1 million people in the world who speak this extraordinary language. The Estonian Institute asked foreigners studying Estonian their opinions about the language. Their responses indicate that the most beautiful Estonian words are *lauluhääl*, *laulupidu* and *lauluväljak* (all referring to singing and song), while the strangest words are *küsimusi*, *jääääär* and *loll*. The word *öö*, meaning night, belonged to both lists, making it one of the most lovely and peculiar words.



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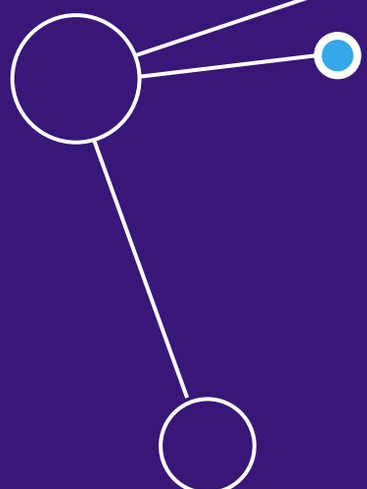
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