# Latvia

**Innovate. Collaborate. Elevate.**
**Smart specialization sectors**

Co-funded by the European Union

2027 National Development Plan

innovate Latvia

Investment and Development Agency of Latvia

MISSION Latvia

## Facts about Latvia

**Capital:** Riga
**Surface area:** 64 589 km²
**Population:** 1.879 million
**Currency:** Euro
**International calling code:** +371
**Time zone:** EET/UTC +2
**Member:**
- **EU** (2004)
- **NATO** (2004)
- **Schengen area** (2004)
- **Eurozone** (2014)
- **OECD** (2016)
- **European Molecular Biology Laboratory - EMBL** (2024)

**Associate member:**
- **European Space Agency - ESA** (2020)
- **European Organisation for Nuclear Research – CERN** (2021)

**Share of women employed in science and tech:** 62.7 %

**Latvia in particular is an European Union trailblazer in the technology sector and this is reflected in its rapid adoption and incubation of 5G cellular connectivity , fintech services and more. In my humble opinion, this serves Latvia well in welcoming new business opportunities on a global basis.**

*Will Townsend, 5G Analyst, Forbes Contributor, USA*

# Investment and Development Agency of Latvia (LIAA)

To grow and create new innovative products and services for the global markets, Investment and Development Agency of Latvia (LIAA), an executive agency underneath the Ministry of Economics of Latvia, and it focuses on supporting businesses in Latvia of all shapes and sizes from small startups and scaleups to large companies.

Through LIAA services and initiatives like pre-incubation and incubation programme for innovative companies and Deep Tech Atelier annual event, the agency aims to stimulate innovation, support the growth of technology-based businesses, and enhance Latvia's competitiveness in the global market. By stimulating ecosystem cooperation and knowledge transfer, we increase the Latvian export competitiveness and foreign R&D intensive companies landing in Latvia.

Innovative businesses in Latvia are also supported by the three Innovation and Technology offices abroad based in Brussels, Geneva and Telaviv. All the offices have direct contact with the Latvian business community and a community of Research organizations to facilitate their R&D activities and international scientific collaborations. Each of the offices is specialized in their own support.

Investment and Development Agency of Latvia

### Latvian office for Innovation & Technology in Brussels (LAT.TECH)

has a specific focus on promoting European cooperation and participation in EU-funded initiatives for the Research and Innovation community in Latvia.

### Latvian office for Innovation & Technology in CERN, Geneva

focuses on increasing the research and development capacity of the Latvian businesses through industry procurements and R&D projects at the European Organisation of Nuclear Research (CERN) and UN.

### Latvian office for Innovation & Technology in Israel

has worked towards advancing bilateral projects in innovation and technology development between Latvian and Israeli entrepreneurs.

# DEEP-TECH in Latvia

Over the years Latvia has emerged as a regional hub for deep tech companies and startups, with a robust ecosystem fostering innovation across various sectors. With a strategic focus on global markets, the country is building the ecosystem on strong educational foundations and a collaborative industry-research-state model, which makes it an attractive location for deep tech development. To build a more supportive environment for businesses Latvia combines the triple helix (industry-research-state) innovation model with a bottom-up approach.


Latvia's smart specialization strategy focuses on five key areas, each leveraging the country's strengths to ensure global competitiveness.

- **Photonics and Smart Materials, Technologies and Engineering Systems**
- **Information and Communications Technologies (ICT)**
- **Smart Energy and Mobility**
- **Knowledge-Intensive Bioeconomy**
- **Biomedicine, Medical Technologies and Pharma industry**

# Photonics and smart materials, technologies and engineering systems

Historically and today, Latvia manufactures and assembles various electronic devices, including 5G routers and sensors, with expertise in nanoelectronics and semiconductor technologies. Latvia particularly excels in nanotechnology and polymer science. Latvia is also one of the world's leaders in optical fibre production, providing and innovating customized solutions for different applications, including telecommunications and medical technologies.

## Value proposal:

**Established Infrastructure:** Institutions like the Institute of Solid State Physics excel in the field of polymer photonics while Riga Technical University holds world records in data centre interconnection technology using silicon photonics chips

**High Technology Transfer Potential:** Contributions to international consortias and active participation in the projects of ESA and CERN, underscores Latvia's commitment to advancing smart materials technology on a global scale.

**Industry Collaboration:** Presence of high-tech companies like Light Guide Optics, Mikrotik and Groglass, which specialize in advanced materials and technologies.

## Did you know?

In December 2022, 12 partners from academia, industry and the public sector signed a Memorandum of Understanding (MoU), solidifying a commitment to developing semiconductor manufacturing capabilities in Latvia. The initial focus is on developing relevant skills in Latvia to support the broader aim of increasing EU independence from other global chip manufacturers and create EU based value chains in semiconductor industry.

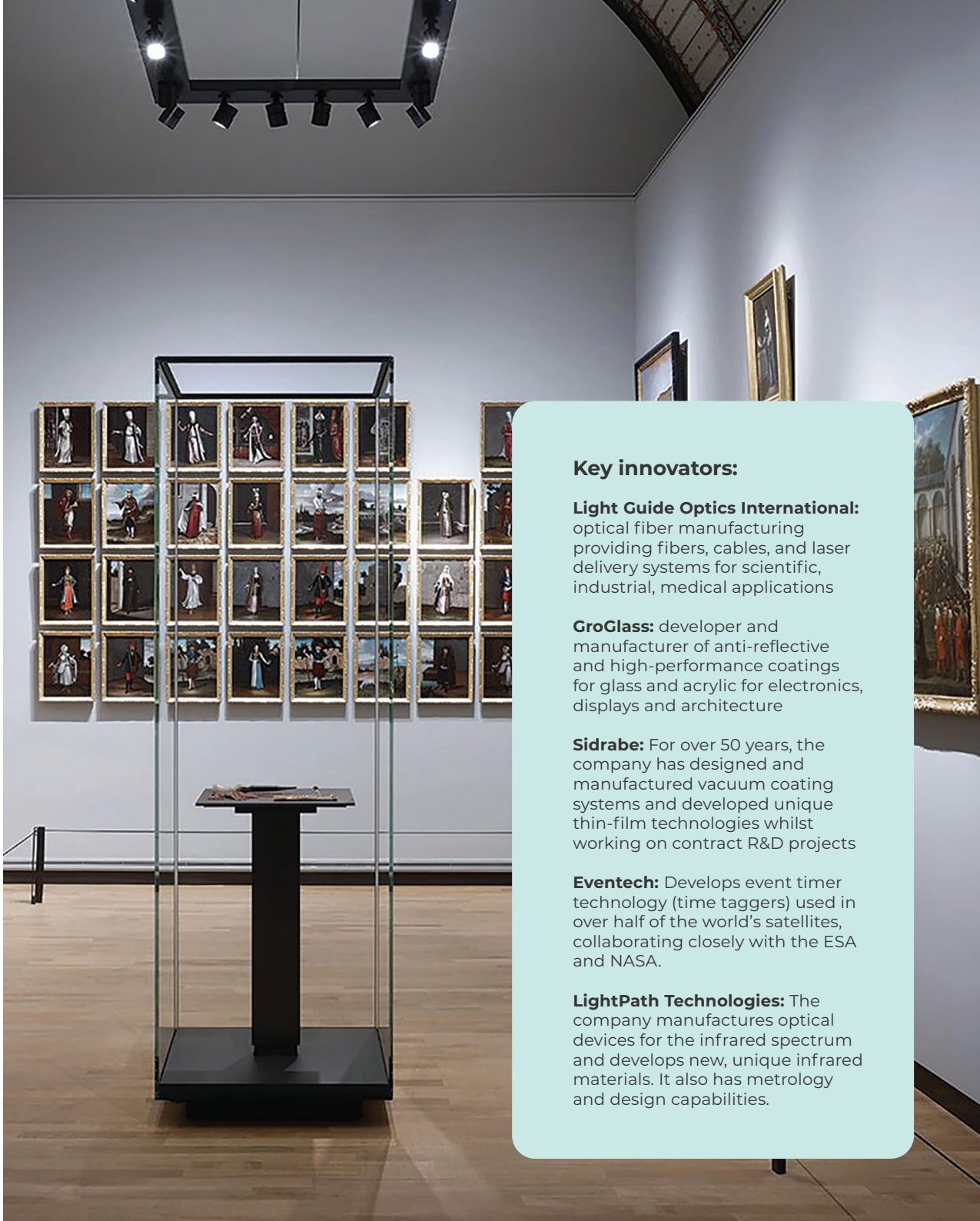

*Photo: GroGlass*

## Key innovators:

**Light Guide Optics International:** optical fiber manufacturing providing fibers, cables, and laser delivery systems for scientific, industrial, medical applications

**GroGlass:** developer and manufacturer of anti-reflective and high-performance coatings for glass and acrylic for electronics, displays and architecture

**Sidrabe:** For over 50 years, the company has designed and manufactured vacuum coating systems and developed unique thin-film technologies whilst working on contract R&D projects

**Eventech:** Develops event timer technology (time taggers) used in over half of the world's satellites, collaborating closely with the ESA and NASA.

**LightPath Technologies:** The company manufactures optical devices for the infrared spectrum and develops new, unique infrared materials. It also has metrology and design capabilities.

# Information and Communication Technologies (ICT)

The ICT sector significantly contributes to Latvia's economy, with exports generating around 1.4 billion euros. Latvia is generally recognized for its strong capabilities in cybersecurity, providing advanced solutions and services to protect data and systems, as well as innovations in AI, IoT, and quantum algorithms. Latvia has made significant strides in drone technology, particularly in developing applications for various industries, including agriculture, logistics, and environmental monitoring. For example, "Meta City Riga" is a project where the City of Riga is working on its digital twin to integrate education, entertainment, and urban planning and provide a testing ground for startups to launch their solutions with real clients.

## Value proposal:

**Export Powerhouse:** Latvia has a strong international market presence with software and hardware solutions, generating approximately $1.4 billion in exports (2023). Many Latvian ICT products and services are innovative and patent-pending, placing Latvia globally among the top countries for patent activity in this domain.

**Innovative Industry Ecosystem:** Latvia is amongst the first countries globally to implement the 5G network and companies like LMT and Tilde are at the forefront of 5G and AI developments.

**Strategic Initiatives:** Innovative projects like "Meta City Riga" and VEFRESH provide a platform for urban planning and development. They allow private and public sector stakeholders to test solutions in real-world environments, making Riga a sandbox for the whole ecosystem.

## Did you know?

In 2022, Latvia's leading scientists and academics in quantum technologies created the Latvian Quantum Initiative. The initiative aims to support knowledge, skills, technologies, and ideas related to practical applications of quantum physics, focusing on quantum algorithms and software, quantum sensors and quantum communication. By the end of 2025, Latvian telecoms company Tet is planning to finish work and make accessible quantum network for secure services to public sector institutions, businesses, and private individuals. In 2024, Latvia and 20 other European Union (EU) Member States signed a declaration on quantum technologies.


*Photo: Mikrotik*

## Key innovators:

**MikroTik:** The company produces high-quality network hardware and software (routers, switches) popular worldwide and contributing to 1.8% of global trade.

**SAF Tehnika:** one of the world's leading manufacturers of microwave data transmission equipment, including microwave measuring devices and wireless IoT sensor systems.

**LMT:** Regional leader in 5G technology and IoT solutions, recognized for innovations and high-quality coverage.

**Tilde:** Specializes in natural language processing and AI, developing tools that enhance communication and accessibility.

**RedFrog:** With precisely tagged Augmented Reality overlays and any need to pre-map the room, the company develops a social networking platform based on Augmented Reality.

# Smart Energy and Mobility

Latvia's strategic location, abundant natural resources, and commitment to renewable energy make it a competitive player in the smart energy and mobility sectors, positioning the country well for future growth and innovation. Latvia's geographical advantages, including a 500 km coastline, offer significant potential for offshore wind energy. The smart energy sector encompasses hydrogen initiatives, wind and solar energy, hydroelectric power, and ammonia-based energy solutions. It also focuses on producing, transporting, transforming, and utilising various other bioenergy sources. Latvian innovative mobility initiatives are transforming cities through the integration of electric transportation solutions, advanced public transit systems, bike lanes, and ride-sharing services.

## Value proposal:

**Renewable Energy Potential:** ELWIND is an Estonian-Latvian cross-border offshore wind project. In it, Latvia and Estonia have selected locations in their respective parts of the Baltic Sea to tender for the rights to develop offshore wind farms starting in 2027/2028.

**Technological Innovations:** Companies like Aerones and Enefit SIA are revolutionizing robot-enabled wind turbine maintenance, inspection and energy solutions.

**Strategic Projects:** Rail Baltica is a groundbreaking smart mobility project that integrates innovative infrastructure and digital technologies to create a sustainable, efficient railway system connecting the Baltic States with the European transport network.

## Did you know?

Latvia is punching above its weight to become an innovative player in hydrogen technologies for energy storage and smart grid solutions. In September 2024, TechTour Hub will host and organise "The European Hydrogen Valleys 2024" international conference in Riga, bringing together industries across Europe. The programme is designed to foster meaningful connections, strategic partnerships, and (co-)investments within the hydrogen sectors.

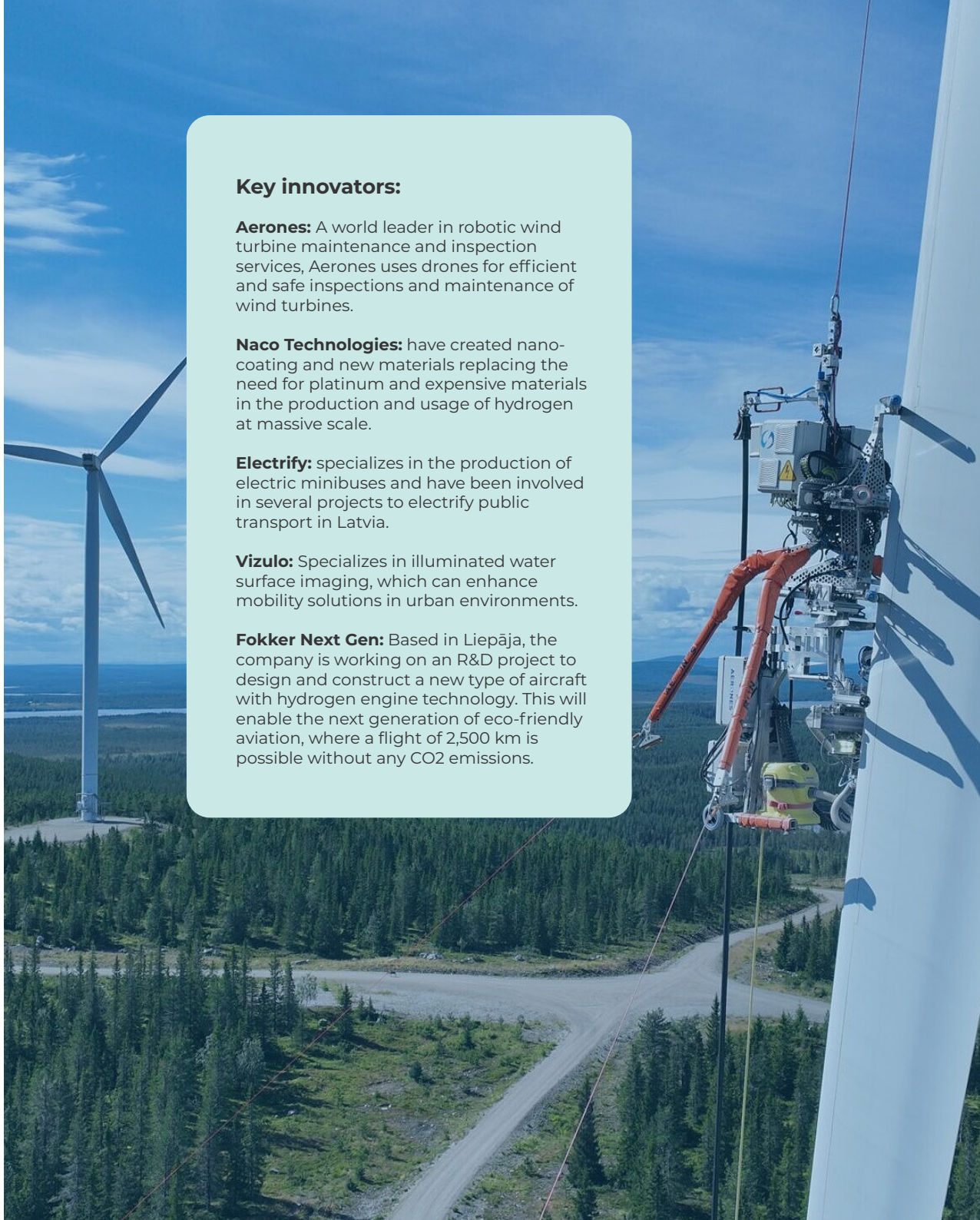

*Photo: Aerones*

## Key innovators:

**Aerones:** A world leader in robotic wind turbine maintenance and inspection services, Aerones uses drones for efficient and safe inspections and maintenance of wind turbines.

**Naco Technologies:** have created nano-coating and new materials replacing the need for platinum and expensive materials in the production and usage of hydrogen at massive scale.

**Electrify:** specializes in the production of electric minibuses and have been involved in several projects to electrify public transport in Latvia.

**Vizulo:** Specializes in illuminated water surface imaging, which can enhance mobility solutions in urban environments.

**Fokker Next Gen:** Based in Liepāja, the company is working on an R&D project to design and construct a new type of aircraft with hydrogen engine technology. This will enable the next generation of eco-friendly aviation, where a flight of 2,500 km is possible without any $CO_2$ emissions.

# Knowledge-Intensive Bioeconomy

With the strategic development of a knowledge-intensive bioeconomy, Latvia aims to transform the country into an innovation leader in the Baltic States for the sustainable management and use of natural resources. Using satellite and LiDAR technologies for accurate forest inventory and management and developing new wood materials with a focus on CO2-storing materials are just some of these innovative approaches Latvia uses to balance economic growth with environmental protection.

## Value proposal:

**Cross-sector innovations:** The integration of sustainable practices like zero-waste and biorefining with advanced scientific innovation across multiple sectors, such as forestry, agriculture, and biotechnology.

**Robust research ecosystem:** Research institutions like the Latvian Biomedical Research and Study Centre and the Latvian State Institute of Wood Chemistry are key players in developing and commercializing high-value-added bio-based products and services.

**Reducing carbon footprint:** By 2030, Latvia plans to become a regional leader in the knowledge-intensive bioeconomy, which will help reduce the impact of climate change.

## Did you know?

The company Fibenol has confirmed plans to invest €700 million euros in Latvia to build a commercial scale biorefinery plant. Biorefining is a type of timber processing that converts biomass into functional biomaterials like wood sugars and lignin. It offers sustainable alternatives to petroleum products such as phenol, bitumen, and polythene. Biomaterials produced at the Fibenol biorefinery will also contribute to further innovation along the entire product value chain.

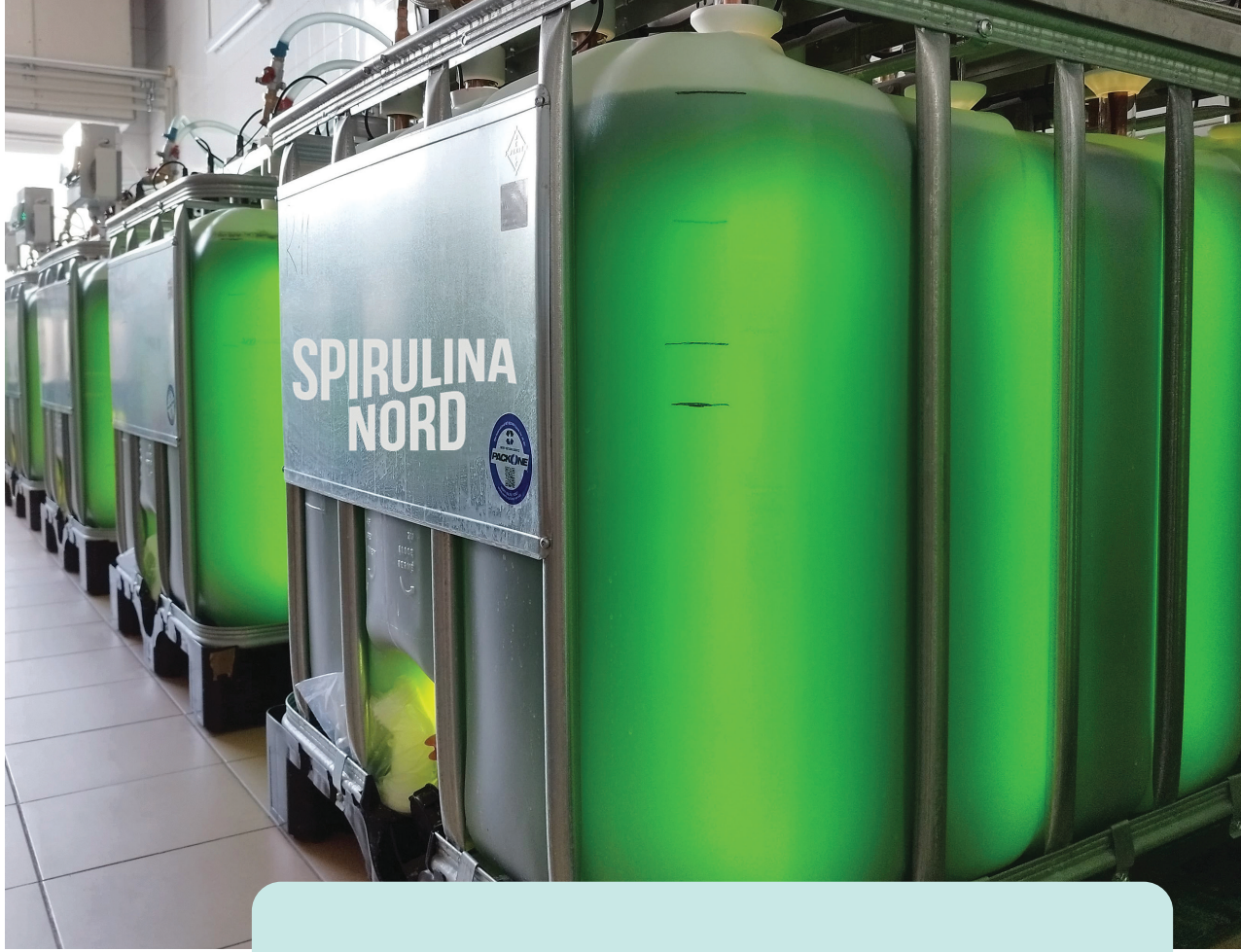


*Photo: SpirulinaNord*

## Key innovators:

**Golden Fields Factory:** Producing high-quality animal feed with local ingredients like peas and beans, which are grown and sources only in the Baltic region.

**Aloja-Starkelsen:** A leading food ingredient manufacturer in Latvia, specializing in the production of potato starch and various food additives using local resources.

**Biolat AS:** An innovative company producing biologically active products from tree needles and young shoots, using environmentally friendly zero-waste technologies.

**Fluffy Unlimited:** applies green chemistry principles and transforms otherwise wasted materials like sheep wool and chicken feathers into sustainable products.

**SpirulinaNord:** the company grows spirulina in Latvia, in unique bioreactors created especially for this purpose. Innovative cultivation technology ensures the highest product quality, purity and nutritional value. In addition, it has a neutral taste and smell!

# Biomedicine, Medical Technologies and Pharma industry

Latvia has established itself as a strong player in biomedicine and medical technologies in the Baltic and broader region due to its historically strong pharmaceutical sector and current excellence in big data research, precision medicine solutions, and medical technology innovations. Other key areas include microbiome and biomarker research, cancer prevention and treatment, biomaterials development, medical technologies, and innovative telemedicine solutions.

## Value proposal:

**Research Excellence:** Strong fundaments with research institutions that are regional leaders in drug design and molecular biology, including Latvian Institute of Organic Synthesis and the Latvian Biomedical Research and Study Centre.

**Cutting-Edge Technologies across value-chain:** Strong home-grown pharma companies (Grindex, Olpha) exporting globally with thriving startups developing advanced health technologies, including organ-on-chip systems and AI-driven clinical trial processes.

**Laboratory Equipment Production:** Local companies (Biosan, ELMI) developing and manufacturing sophisticated laboratory equipment for various biomedical applications.

## Did you know?

Within the CERN Baltic group, Latvia, along with its Baltic neighbors Estonia and Lithuania, is working toward the creation of a modern and innovative research and cancer treatment center in the Baltic States. The countries are leveraging CERN's contribution of particle physics to medical advances and moving towards a feasibility study for the "Advanced Particle Therapy Center for the Baltic States".

## Key innovators:

**Cellboxlab:** Develops "organ-on-chip" technology—miniature organ replicas outside the human body, or in vitro test models, used for studying various biological processes and drug testing.

**Sepsiscan:** Develops a medical diagnostic device for the early detection of sepsis. It is intended for use in hospital intensive care units to help identify sepsis more quickly and decide on the appropriate course of antibiotics, thereby reducing mortality risk.

**Bdetect:** Develops a non-invasive melanoma detection device that combines multispectral data with AI to improve skin cancer detection and save lives.

**Biosan:** develops and manufactures equipment for sample mixing, centrifugation, thermostats, cell cultivation, DNA workstations, biological safety devices, thermostatic control, spectrophotometry, and fluorimetry.

**Longenesis** provides solutions for managing and analyzing medical data using blockchain and artificial intelligence, helping medical institutions and research organizations manage patient data more efficiently.

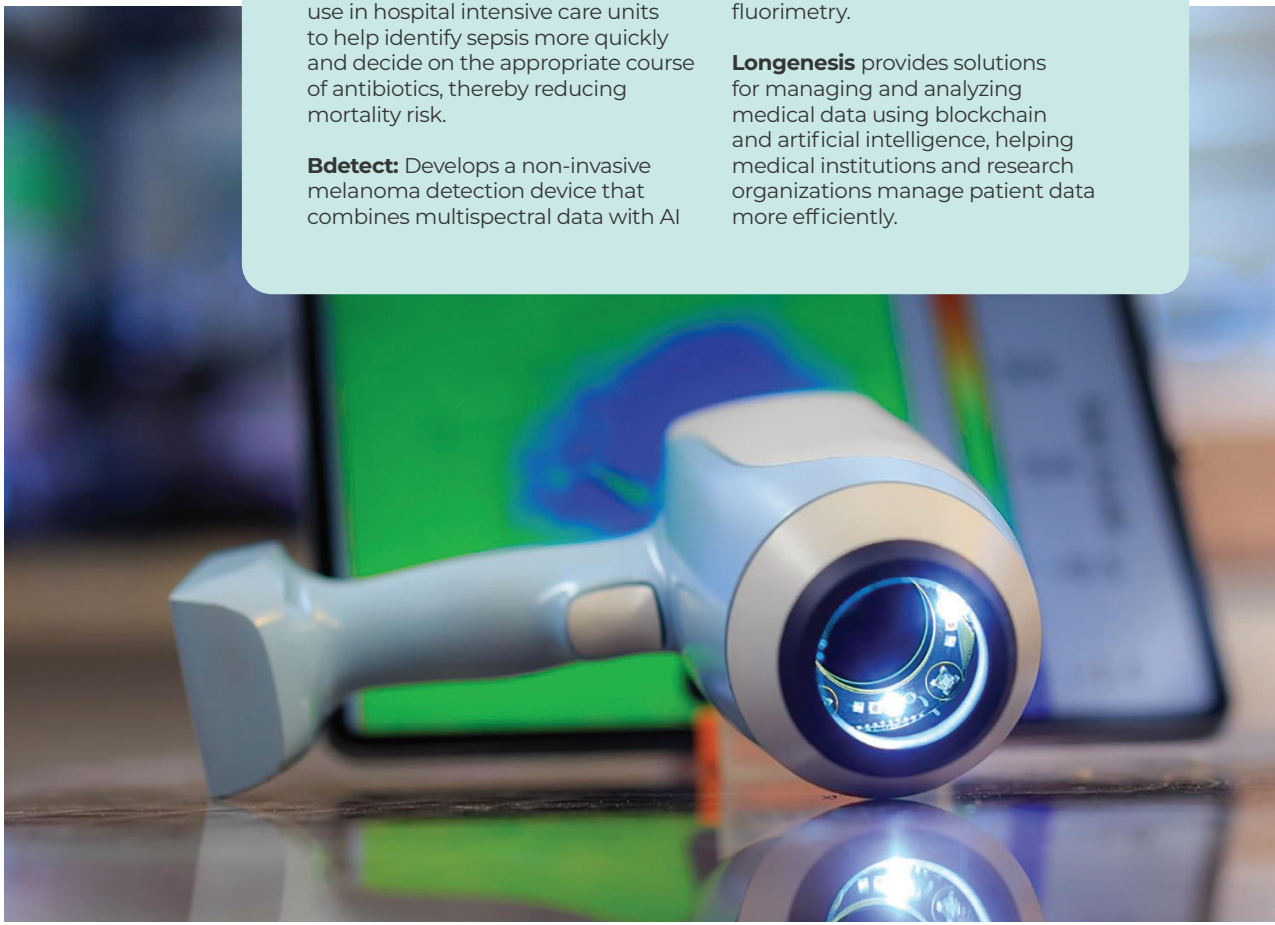

*Photo: Bdetect*

# DEEP-TECH Startup Scene

According to Dealroom, 13% of Latvian startups and scale-ups founded since 2012 are in deep tech. The government support for deep tech companies in Latvia stems from looking into areas where they have more significant potential to add value to Latvian exports. Backed by strong research, Latvia's private sector companies are re-focusing on key deep tech sectors and enriching the ecosystem with new startups. It makes Latvia an attractive destination for startups looking to thrive in advanced technological fields. With the help of the government and LIAA, Latvia-based startups raise money from European funds and attract the increasing attention of venture capital. Finally, 62 million euros of public and private resources will be invested in Latvian startups in the coming years via three investment funds.


# Disruptive Startups on the Rise


### Giraffe 360

Giraffe360 is a property technology company that streamlines the capture and creation of high-quality listing content. The camera captures multiple forms of content at once, and more than 50 machine learning models then assemble all assets.

### Roboeatz

The company has produced the world's most advanced autonomous robotic kitchen, initially designed by restaurateurs and aerospace engineers for the food service industry.

### Sonarworks

Develops sound calibration technologies for professionals and music enthusiasts, ensuring precise sound reproduction in headphones and acoustic systems.

### Localize

is a cloud-based localization and translation management system for agile teams, recognized for its web-based collaborative editor, cross-platform projects, numerous integration options, and time-saving features. Some notable customer names include Amazon, Revolut, Yelp, Virgin Mobile and others.

### Exonicus

The company is bridging the gap between theoretical knowledge and real-world medical scenarios using immersive virtual reality technology. Exonicus produced the first Virtual Reality (VR) trauma simulator, revolutionizing the training of military medical personnel in combat and emergency medical treatment scenarios.

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