UNIQUE INNOVATION HUB FOR DIGITAL GAME CHANGERS

BUSINESS OPPORTUNITIES IN FINLAND

Communications technology is at the heart of Finland's expertize. The Nordic country has developed and designed countless connectivity solutions and innovations, which have reached all corners of the world, enabling experiences people have never had before.

In terms of communications technology, Finland opens up an exceptional ecosystem for global companies. The Finnish experience in radio technology dates back to the 1920's. Similarly, Finland has been at the forefront of mobile phone standard creation since the 1960's.

Finland's strong foundation on Research and Development plays a decisive role in this. In Europe, Finland ranks first on the list of R&D expenditure as a percentage of GDP, per the UNESCO Institute for Statistics.

Finland has also a deeply rooted culture of collaboration between public authorities, universities, research institutes and companies further supporting its case with R&D. Moreover, the country has established expertize in the technology sector with a talented workforce. The aforementioned have been considered Finland's core strengths in several international surveys like the ones from the European Commission and the World Economic Forum (WEF).

MOST ADVANCED 5G TEST NETWORK

Finland has given the world the SMS and the Wearable Heart Rate Monitor. Now, Finns are ready do the same with 5G. Finland's 5G test network is the most advanced in the world bringing together leading global connectivity companies and operators. The 5G test consortia are inviting new members to join the developing ecosystem.

With key technical infrastructure and ecosystems already in place, Finland is an ideal test environment to develop and test new 5G applications. The peak data rates of over 10 Gbps and constantly available user data rate of 100 Mbps create a platform that has not yet been possible in wireless networks. In addition to new waveforms and multiple access schemes, key enablers for enhanced mobile broadband will be advanced antenna configurations and simultaneous cooperative use of multiple radio access technologies.

For international companies working on ultra-reliable and low latency mobile services, Finland is the leading hub to innovate. Improved system reliability and availability combined with radio link latencies below 1 ms enable service creation and testing for solutions in remote medical surgery, wireless industry automation, cyber security, smart grids, and augmented reality.

The development of 5G is crucial for the likes of autonomous vehicles that need low latency and high data speeds. Finns know this very well. The country is actively shaping the future of mobility with the first Arctic testing ecosystem in the world called Aurora, which focuses on Automated Driving, Digital Transport Infrastructure, Intelligent Infrastructure Asset Management and Mobility-as-a-Service.

THE 5G TEST NETWORK FINLAND (5GTNF)

The 5G Test Network Finland (5GTNF) combines four different infrastructures. The ecosystem around these projects covers the entire telecommunications value chain from research, development and manufacturing to network operators, service providers and public authorities. For the first time, the network also brings together the "big three" – **Nokia, Ericsson and Huawei** – proving ultimate openness to the ecosystem. Already over 40 partner organisations are involved in the 5G cooperation and the number is continuously growing.

» READ MORE AT 5GTNF.FI

HAVEN FOR CYBER SECURITY

Finland's reputation as the haven of cyber security is world-renowned. Finland's core expertise lies within encryption, data privacy, threat prevention and identity management solutions. Some of the strongest encryption protocols like the SSH have been invented in Finland. Today, the Finnish cyber security business sector comprises close to one hundred companies, from global players to ambitious startups. Finns benefit from an education system that centers on mathematics, science and technology that brings in new generations of highly educated talent.

EMERGING ECOSYSTEMS THAT ATTRACT GLOBAL GIANTS

Outstanding connectivity expertize, mastery of new technologies and top-notch cyber security skills as well as exceptional R&D capabilities, public funding and corporate investments are the cornerstones of the Finnish technology ecosystem.

Consequently, a growing number of international companies have decided to locate their R&D activities in Finland. For instance, **Rolls-Royce** designs and tests its remote and autonomous ship technology on the west coast of Finland. Meanwhile, since its expansion to Finland in 2008, **Huawei** has opened already two R&D units in the country, employing currently over 300 engineers in Finland.

Building on Finland's existing strengths in connectivity and cyber security, the country has a notable cluster of international and local companies that develop secure phone technologies for public safety and private use. These include, among others, **Uros, Cloudstreet, Airbus Defence and Space, Bittium, Darkmatter** and **Gryphon Secure.**

Nevertheless, at the center of the Finnish tech ecosystem is the wide variety of innovative startups and emerging companies, ranging from **Wirepas**, which has developed a unique radio protocol software for the IoT, to **KNL Networks** with its infrastructure independent, MESH-radio network operating on the HF spectrum.

FACTS ABOUT FINLAND

#1 IN THE WORLD IN MOBILE DATA USAGE

10.95 GB – Finland has by far the highest mobile data usage per person in the world. It is about ten times more than the Western European average.

#1 IN EUROPE IN MOBILE BROADBAND SUBSCRIPTIONS PER 100 INHABITANTS

147 % – Finland ranks first in Europe and second in the world in mobile broadband penetration rate (99.3 % OECD average)

#1 IN EUROPE IN R&D EXPENDITURE AS A PERCENTAGE OF GDP

In Finland, the average cost of a 20-member R&D unit is 50% lower than in San Francisco.

The amount of venture capital obtained by startups and growth companies in Finland, in relation to the GDP, is the highest in Europe.

INVEST IN **FINLAND**
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