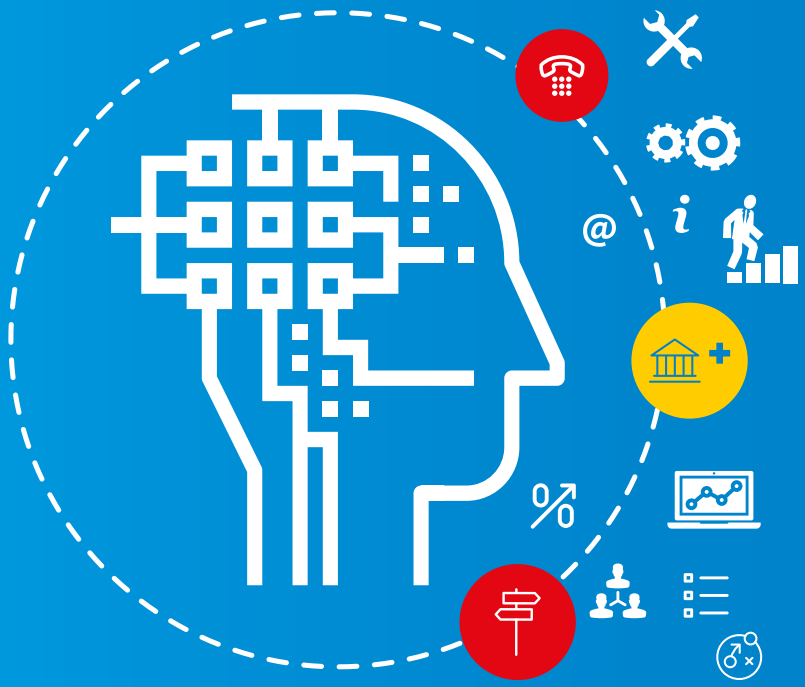
Scandinavian-Polish CHAMBER OF COMMERCE



Innovative

solutions of the Scandinavian companies in Poland

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Forewords

Scandinavian countries are the innovation leaders in Europe and stand out in terms of innovation also on the global scene. The level of their engagement in innovation as well as the implementation of new solutions into economic and social life is in large correlation with the level of competitiveness and stability of the Scandinavian economies, it is also the driver of their economic development.

This specific approach to innovation in the Scandinavian countries also translates into companies' perception of the importance of innovativeness in business.

Innovation is connected with openness to changes, curiosity in creation, streamlining in the implementation of new ideas and solutions that meet the needs of the market and clients, as well as the skill of assessing the risk connected therewith. Innovation is ingrained into the culture of Scandinavian companies and the way they manage processes in the entire value chain. Therefore, Scandinavian companies operating in Poland are a valuable source of inspiration and knowledge of the topic and, what is important, are a good example of a successful implementation of the innovation in the organization.

This publication is a part of the project initiated this year by the Scandinavian-Polish Chamber of Commerce in cooperation with member companies, the aim of which is to present the innovation potential of Scandinavian business in Poland as well as the possibilities of exchanging knowledge and experience between Scandinavian and Polish companies.

The publication presents examples of innovation implemented by the Scandinavian companies in the various areas of their operation - from new technologies in production, through processes in the supply chain, the unique offer of products or services, business partnerships and contact with the client.

We would like to thank our project partners: VELUX and IKEA, as well as Atlas Copco, Cybercom, Electrolux, NEFCO, SEB and Skanska for their engagement and support. We also would like to express our gratitude to the Honorary Patrons for recognizing our initiative.

Agnieszka Kowalcze
Director of the Scandinavian-Polish
Chamber of Commerce

Carsten Nilsen
Chairman of the Board of the Scandinavian-Polish
Chamber of Commerce

MINISTRY
OF ECONOMIC
DEVELOPMENT

Innovation is an opportunity for the development of the Polish economy. We are hopeful that thanks to the implementation of the Responsible Development Strategy, prepared by the Ministry of Development, the innovation indicators in our country will significantly increase.

We are focusing on industrialization and innovation, we are concentrating support on priority R&D areas. By using European funds, development programmes for various sectors, we are building a dynamic venture capital market. We are changing the law in the scope of supporting innovation, which removes barriers standing in the way of innovators and we are placing a great emphasis on strengthening links between industry, business and education. Let us also not forget about strengthening human capital and social capital, which constitute one of the elements of increasing innovation of the Polish economy. A long-term aim of both the "small" and the planned "large" Act on Innovation is an increase in the innovation of the Polish economy, which will be a deciding factor in creating an increase in the GDP and the level of prosperity in Poland. The cohesive system of diverse instruments is to speak to and encourage the adoption of innovative activities. The tax system is to be more friendly, and the manner of financing the commercialisation of scientific research and development works – more stable. The new regulations reflect the most important needs of Polish innovators and researchers. We would like the funds from the 2014-2020 financial perspective to be invested, and not spent, so that we could boast of our investments, which will be working for the economy after 2020.

This year, Poland advanced to 39th place in the Global Innovation Index, from among 128 countries. This is an advancement of seven places. We owe our place in the ranking, among others, to the ease in starting up companies, eduction, gross domestic expenses on R&D in the GDP, concluded contracts on the venture capital market, and the creativity of the ICT sector. This year, Poland also noted an increase in the innovation indicator, according to the European Innovation Scoreboard 2016. Our country moved up by one place to the 23rd position. This means that the aims which we have set forth in the Responsible Development Strategy are purposeful. Our ambitions aim very high, at the same time we are also aware that we are beginning a competitive race with strong, innovative economies and moving up in the ranking will be harder and harder.

In order to mobilize private capital due to legal facilitations, we are leading works on amendments to the Act on Supporting Innovation. This is a pool of solutions for companies allocating funds for the purchase of new technologies, patent protection as well as employment of research and development employees. One of the elements supporting investment in innovation is the prepared package entitled "100 facilitations for companies". Its objective is to set the basic principles for undertaking and preforming economic activities as well as improving relations with administration. We are convinced that the simpler it will be for companies to conduct their business activities, the easier it will be to follow the path of innovation.

Scandinavia is a valuable source of inspiration and knowledge in the topic of developing innovative solutions in various areas. It is therefore worth taking advantage of this experience and develop Polish-Scandinavian cooperation in this scope. The practices of Scandinavian countries are an inspiration for us. This initiative is a chance to bring us closer to our objective: an innovative economy.

Jadwiga Emilewicz
Under-Secretary of State
Ministry of Development

Innovativeness the Scandinavian way and fields for cooperation between Poland and Scandinavia

Factors of Scandinavian success

The Scandinavian countries decidedly stand out on the global map of innovation. Scandinavia's unique position can be observed on many levels - from international rankings indicating competitiveness and innovation of entire economies through actions taken by Scandinavian business, with its outstanding innovativeness both on a local as well as a global level.

Thanks to the presence of Scandinavian companies on foreign markets, also in Poland, the transfer of innovation and technology is possible, the effect of which is the creation of an added value and a new quality in products, services, or processes organized inside a company.

Scandinavia in global innovation rankings

One of the main gauges indicating the level advancement of economies in the area of innovation is the Global Innovation Index, prepared by Cornell University in the United States, INSEAD as well as the World Intellectual Property Organization (WIPO) a specialised UN agency, which studies the economic results as well as innovation capacity on the basis of data gathered from 128 countries. Innovativeness is measured with the help of 79 economic indicators, connected with innovative actions in areas such as: institutions, human capital, research, infrastructure, the level of market sophistication, the level of obtained knowledge and technology as well as creative solutions. In the latest edition of Global Innovation Index 2016, Sweden is the second most innovative country in the world, just after Switzerland. The remaining Scandinavian countries also took high positions: Finland ranked 5th, Denmark 8th and Norway took 22nd place.

The Scandinavian countries are also distinguished on the European innovation landscape. The Innovation Union Scoreboard 2016 ranking points to the innovation potential of European Union member states. According

Joy of innovation

Starting a business is easy in Finland. Highly educated people and public R&D funding is readily available. Tekes is the main public funding organisation for R&D and innovation.

We have high investments in R&D, over 3% of GDP, and one of the highest share of the R&D personnel. Especially on ICT, mobile, life science and health technology sectors we can offer world-class skilled professionals.

No wonder that the Innovation Union Scoreboard ranks Finland as one of the innovation leaders in EU.

Finns are easy to work with, and the collaboration between companies and research is a common way.

Finland is also an excellent experimentation laboratory for digital solutions. Users, companies, researchers and public sector join forces to form problem-solving communities.

We are working on to further develop Finland as an attractive innovation environment where top expertise, development platforms and networks inspire breakthroughs.

Pekka Soini
Director General and CEO
Tekes - the Finnish Funding Agency for Innovation

Photo: Piotr Hajda

to the latest ranking, Sweden is the second most innovative country in Europe, just after Switzerland. Denmark and Finland take 3rd and 4th place, respectively. Along with The Netherlands and Germany, these four countries are included in the group of "European Leaders of Innovation". The leaders of innovation are countries which show innovation indicators, much higher than the EU average. The ranking studies eight innovation dimensions, namely: human resources, open, perfected and attractive research systems, financing and support, enterprise investments, connections and entrepreneurship, intellectual assets, innovators as well as economic outcomes.

The actions of the Scandinavian states in the area of innovation also have a significant impact on the competitiveness of these economies and the stability of the Scandinavian economy. This is attested to by the data included in the Global Competitiveness Index, published by the World Economic Forum. In the Global Competitiveness Index 2015-2016 list, the Scandinavian countries were among the 15 most competitive world economies, in which Finland ranked 8th, Sweden 9th, Norway 10th and Denmark ranked 12th. A large part of the indicators in this ranking also have a significant impact on the level of innovation. What makes the Scandinavian counties stand out in this ranking are the clear institutional frameworks, outstanding results in the education sector (especially Finland and Denmark), attractiveness in the scope of submitted patents per resident, the use of ICT and the innovative business sector.

The Norwegian approach to innovation

We have three key objectives: more successful entrepreneurs, more companies with growth potential, and more innovative business communities and clusters.

Companies and entrepreneurs must target the global markets, as Norwegian market is too small. The public sector should play the role as a demanding customer, and the clusters should foster cooperation that has clear effects for the companies participating.

Climate challenges, new technology, an increased influx of refugees, more elderly people, the sharing economy and the circular economy are examples of driving trends which challenge established business models, terms of competition and power structures. These changes are taking place at the same time as Norway is affected by oil price drops, lost export revenue and increasing unemployment.

To meet these challenges, we have to: prioritize areas where we have international competitive advantages; elevate the challengers with global growth potential; strengthen entrepreneurial and cooperative culture; develop a strong national brand; trigger value creation based on regional advantages.

Kjell Arne Nielsen
Director
Innovation Norway Warsaw, Bucharest and Sofia

Scandinavian success factors in developing innovation

The innovative power of Scandinavian economies and Scandinavian business is based on several factors. The education system provides a solid foundation - the key success factor is not only one of the highest levels of expenditures for education in the world but also the excellent quality of the education system. According to the latest available data provided by the EU, the highest expenditures for education measured as a percentage of GDP are in Denmark (8,8%), Sweden (7,4%) and Finland (7,1%).[1]

According to the statistics of the Finnish Venture Capital Association (FVCA), the amount of venture capital obtained by startups and growth companies in Finland, in relation to the GDP, is the highest in Europe.

Research & Development (R&D) expenditures are the next factor - in case of Finland they reach 3,78% of GDP. Those expenditures are continuously being increased and the quota is divided between effective government agencies. In Finland - Tekes, in Sweden Vinnova, in Denmark - the Danish Agency for Science, Technology and Innovation and in case of Norway the innovations are supported by The Research Council of Norway. Such high expenditures on R&D are correlated with a high numbers of patents - according to National Innovation Capacity Index, prepared by Harvard Business School, Sweden is the second country to note the highest increase in the number of patents in the past 15 years within 173 researched countries. In the same ranking, Sweden was ranked 8th in terms of innovation capacity and the second, just behind Japan, in terms of the number of trained engineers.

The transparent institutional framework is not without significance, as well as effective government policies regarding innovation, cooperation between different entities aimed at implementing innovation policies and a strong tradition of public-private partnerships. Such environment provides good conditions for doing business and supports creativity - this is visible even at the very beginnings of conducting economic activity, namely in supporting start-ups. According to European Digital City Index, Scandinavian capitals - Stockholm, Copenhagen and Helsinki, are one of the most friendly places to conduct economic activity. Stockholm can even compete with the United States, because it has the second largest number of companies worth billion dollars per capita, just behind the Sillicon Valley. It's also becoming one of the biggest technological hubs in Europe.

Apart from international corporations, the engine of the Scandinavian economies are also small and medium enterprises, which are competitive thanks to innovations. The biggest share of the R&D resources allocated by the governments of the Nordic countries is used by private entrepreneurs - 1.35% of GDP in Iceland, 1.45% in Norway, 2% in Denmark, approx. 2 35% in Sweden to nearly 2.5% in Finland. The remaining part of the R&D supporting activities takes place at Universities, other higher education entities and public institutions.

Dialogue and supervision-based Innovation

In Denmark we have a very well-functioning bridge-building innovation system that provides Danish SMEs access to knowledge and collaboration with national and international partners. One of the secrets behind the success is dialogue.

We design our innovation policy in close dialogue with all relevant stakeholders; when we develop our national innovation strategy, we invite our stakeholders to contribute; when we decide focus areas for Technological Service, we invite our stakeholders to take part in a "Better Innovation internet-forum"; and when we develop our innovation policy action areas, we arrange stakeholder workshops to discuss the strategic priorities.

The Danish innovation policy is implemented under a strong governance model based on active dialogue as well as on continuous supervision. Our partly independent operators implement their activities within a framework of clear targets which are pointed out in performance contracts with the ministry.

We believe that collaboration on the strategic level provides a solid basis for operational activities to run smoothly and for innovative collaboration to thrive in Denmark.

Hans Müller Pedersen
Director General
DASTI - The Danish Agency for Science, Technology and Innovation

[1] http://ec.europa.eu/eurostat/statistics-explained/index.php/Main_Page

The Scandinavian approach to innovation in the scope of energy, the environment and new technologies

The Scandinavian countries are distinguished by their innovation on many levels. It is worth taking a closer look at their innovative actions aimed at sustainable development and energy and environmental solutions especially from the cleantech sector as well as the effective actions aimed at the development of the IT and communications sectors.

Energy and environment

Scandinavian countries have a special approach to natural environment. This approach and the effectiveness of actions undertaken to protect the environment is clearly visible in the Environmental Performance Index, developed by the Yale University. In the 2016 edition of the ranking, the Nordic countries took the first four positions among 180 researched countries. The first four positions were granted respectively to Finland, Iceland, Sweden and Denmark[2]. Actions aimed at developing environmentally friendly solutions and improving the energy efficiency facilitate innovation.

According to Global Energy Architecture Performance Index 2016 (EAPI) prepared by the World Economic Forum, three Scandinavian countries are in the top five - Norway is the 2nd, Sweden - 3rd and Denmark has taken the 5th place.

The biggest source of CO_2 emissions, which damage the environment, is the traditional energy sector based on fossil fuels. The Nordic countries, where environment protection is treated as a priority, are in the forefront when it comes to the amount of funds earmarked for research and development in that area, as well as implementation of innovative solutions which help use energy from renewable sources.

According to the Eurostat report, the share of renewable energy in the EU energy consumption increased, on average, to 16% in 2014, but the objective is the level of 20% by 2020. The Nordic countries have significantly exceeded that level, breaking EU records. The country which can boast the highest level of using renewable energy is Sweden with the gross share of 52.6%, as well as Finland (38.7%) and Denmark (29.2%). The data for Norway and Iceland are even more promising - in Iceland the share of renewable energy is 77% and in Norway - almost 70%[3].

[2] Norway was ranked 17th and Poland was ranked 38th.

[3] Data at the end of 2014: http://ec.europa.eu/eurostat/statistics-explained/index.php/Energy

Sweden: Innovative energy sector in the service of the natural environment

The energy used in Sweden comes mainly from renewable sources. Thanks to the newest technologies and wealth of natural resources, Sweden is at the forefront of the transition to more sustainable energy systems which we can observe throughout the world. Since the crude oil crisis at the beginning of the 1970s the country has invested huge funds in looking for alternative sources of energy. Thanks to advanced research and implementation work, crude oil provides less than 20% of the Swedish energy, whereas in 1970 it accounted for over 75% of the total consumption.

Sweden keeps making an effort to develop renewable, alternative fuels, which is why it's one of the global leaders in the area of ethanol research. Swedish researchers are currently working on obtaining ethanol from cellulose, which is called a second-generation fuel, because it's more effective than ethanol produced from grains, and doesn't have negative influence on crops. In the years 2011-2015, the Swedish government earmarked SEK 130 million for research and development work on ethanol.

Danish „2050 Energy Strategy"

The fact that carbon dioxide emissions have recently reached a record high level all over the world has led to a situation in which the Danish government's ambition is to make the country independent of fossil fuels by 2050. The government "2050 Energy Strategy", which sets out that transformation, stipulates that energy efficiency will play the crucial role here. After all, energy saving is a much less costly alternative than, for instance, construction of new wind turbines. Currently, approx. 40-50% of energy consumed in Denmark is lost, which is why its effective use is a key solution which can be introduced in all areas: from farming, through business, transport, construction industry and, finally, households. It's estimated that the demand for energy in 2050 will be much bigger than today, but thanks to wide-ranging measures aimed at increasing energy effectiveness, it will be possible to satisfy it with a smaller amount of energy.

Danes assume that by 2020 the gross energy consumption will decrease by approx. 6%. It will be possible mainly thanks to innovative solutions in those industries and sectors of the economy which have influence on effectiveness of electricity and heat production. Thanks to innovative solutions in the production system, fossil fuels lose their existing importance, and energy conversion losses will be very small. What is also necessary is to introduce innovative improvements at the end user, i.e. at households and companies, by using more cost-effective electricity devices and more efficient sources of heating. One of the areas in which the biggest amount of energy is consumed is buildings: heating, ventilation and lighting account for approx. 30-40% of the total consumption. Waste of energy can be prevented by diagnosing and monitoring such elements as windows, heating system or building's insulation. Denmark earmarks 2% of the gross domestic product for development of the R+D sector, whose task is to prepare and develop innovative solutions which are crucial for energy effectiveness - it puts the country above the EU average of 1.3%.

Copenhagen has won a European Prize for Urban Public Space in 2016 for its determination and persistence in reconquering public space from private vehicles so that it can be used by pedestrians and cyclists.

Finland: Modern forms of cooperation on development of clean technologies

In southern Finland, development of a cluster in the clean technologies sector (recycling, energy effectiveness, water management, soil decontamination) has helped transform the region into a flagship centre of the country's environmental technology. Companies which cooperate with each other improve products and processes, thanks to which they succeeded in creating

Photo: Ewa Rzepa

an exceptional innovative environment. What accelerated that undertaking was an EUR 1.5 million investment from EU funds which helped convince 20 companies from the clean technologies sector to move their headquarters to the city of Lahti, which resulted in 170 new jobs and ensured another EUR 30 million in investment. The centres promote growth in business activity of related fields, and jointly they account for 60% of the Finnish activity in the clean technologies sector and 80% in the research sector. Finland's top ranking stems from its societal commitment to achieve a carbon-neutral society that does not exceed nature's carrying capacity by 2050, a vision replete with actionable goals and measurable indicators of sustainable development. Finland's goal of consuming 38 percent of their final energy from renewable sources by 2020 is legally binding[4].

Norway - a leader in the production of hydropower

Hydropower plant construction and research in Norway came to a near standstill after the major expansion of the 1960s and 70s. The country had developed what it needed, and today 96% of the electricity in Norway comes from Norwegian hydropower, from the country's 937 hydropower stations. Indeed, Norway is the sixth largest hydropower producer in the world – which is all the more amazing when you consider the entire country has just 5 million people.

Norwegian hydropower could make Norway the "green battery" of Europe – not by building new power plants, but by further developing those we have. The first step is to solve the challenges associated with increasing the capacity and flexibility of existing plants. Thus, improving existing power plants, rather than developing new ones, is the focus of ongoing research conducted by NTNU's Hydraulic Laboratory. Engineers work on the world's first physical model of a waterway with an air-cushioned surge chamber – a design that could be key to transforming Norway's hydropower network into an international resource, a green battery that could soak up Europe's excess wind and solar power and release it on demand.

Finland has one of the highest shares of eGovernment users and users of eHealth services.

The ICT sector - information and communication technologies

At the end of the 1990s, new information and communication technologies (ICT) started to become a part of everyday life. Mobile phones, computers and the internet created new channels of communication. Numerous surveys show that the Nordic countries are leaders in the area of penetration and use of the ICT. Today almost every person who lives in Scandinavia has access to the internet - both companies, and households.

[4] Environmental Performance Index 2016 report, http://epi.yale.edu/

Danish citizens are the most advanced in the use of Internet: 88% of Danish Internet users does eBanking and 82% shops online.

The Scandinavian countries are also among top ten countries in the GSMA Mobile Connectivity Index ranking, which assesses countries' ability to provide their residents with access to mobile internet. The index analyses the situation in 134 countries, and covers 95% of the world's population[5]. Scandinavian countries are also ranked very high in the ICT Development Index which is published by ITU (International Telecommunication Union) - the United Nations specialized agency.

The Nordic countries top the Digital Economy and Society Index ranking announced in February 2016 by the European Commission. Denmark for the second consecutive year has been the best country of the European Union in terms of the use of digital technologies. On the other hand, the dynamic progress in such areas as connectivity, digital skills and public services have enabled Sweden and Finland to be in the top five of the report. The indicators presented include information on connectivity (access, speed and affordability of broadband networks), ability to take advantage of the internet, extent to which the possibilities it offers are used (regarding, e.g. reading news or doing the shopping), as well as the level of development of the key digital technologies (e-invoices, e-commerce, or cloud services), and digital public services, such as e-administration and e-health[6].

Denmark stands out in the use of smart technologies that improve urban traffic. Copenhagen - has invested in 380 new, smart traffic lights thanks to which the travel time of city commuters will decrease by 5-20%. 35-year-old traffic lights will be replaced with smart ones - the green wave will also benefit cyclists, whose commute to work or school will take, on average, 10% shorter. Copenhagen is the first big city in Scandinavia which has changed traffic lights at such a big scale. They are part of a DKK 47 million (EUR 6.2 million) investment package aimed at launching a smart road traffic system based on digital technologies in the city.

The authors of this year's European Digital City Index decided that the Swedish capital is the third best city in the European Union for start-ups, and the second best centre for scale-up enterprises, i.e. start-ups which have already completed the first stage of development, i.e. at the stage when a company achieves a good business model and wants to develop. Sweden was appreciated mainly for the level of the existing digital infrastructure and widespread knowledge of English. Stockholm beat the other Nordic cities: Helsinki, which ranked the 4th, and Copenhagen, which ranked the 5th. Warsaw was classified on the 24th place. The ranking was prepared as part of the European Digital Forum by NESTA. The authors of the study emphasise the role of a big number of ICT specialists in Stockholm, as well as good access to fast broadband and fibre-optic connections. Sweden for a long time has been one of the pioneers of new technologies, and, at the same time, the leader in the field of innovation among the EU member states. It is the capital of Sweden that some of the

25% of Danish SMEs is selling online (for Poland it is 9,6%), Danish businesses make 15% of their turnover from on-line sales, the 3rd best performance in the EU.

biggest European digital companies have been set up, e.g. Spotify, King (creators of Candy Crush) and Mojan (creators of Minecraft). Sweden is also one of the three European countries which earmark most funds for research and development. It's no wonder, then, that it is Stockholm that is one of the two cities which will soon have access to new, wireless 5G mobile technology, which is being developed by a Swedish company Ericsson.

[5] http://www.mobileconnectivityindex.com/# Poland was ranked 31st.
[6] Poland was ranked 22nd in the Index.

The Finnish workforce has by far the highest proportion of ICT specialists in the EU (6.7%). Second-placed Sweden stands at 6.0%, 60% above the EU average value.

Helsinki, as is the case with the whole Finland, has a great potential in the area of financial technologies, which are currently one of the most popular business topics. For a long time Finland has been famous for a prospering and future-oriented banking system, as well as state-of-the-art know-how in the area of ICT, and Helsinki contributes a vibrant startup community to this mixture. Finnish society is also really responsive to innovative solutions - mobile banking is commonly used in this country, and 87% of Finns use online banking services, believed to be one of the safest in the world.

Helsinki and Finland have also extensive experience in the area of game and mobile application development. Helsinki, after the Silicon Valley, is the second most abundant source of successful mobile applications. It was confirmed in a joint report by Mozilla and Caribou Digital, a think tank, on the global business environment of applications for mobile phones.

Finland owes its position to the great success of such games as Clash of Clans or Hay Day, produced by Supercell, as well as the legendary application Angry Birds developed by Rovio Entertainment. The game is one of the biggest successes of mobile applications in the world: up to now it has been downloaded over one billion times on all platforms.

In this context, the concept of 'gamification', i.e. the use of mechanics used in games for solutions existing outside the world of games, is believed by experts to be a potential opportunity for creating new startups and innovations in the fintech sector.

Fixed broadband is available to 99% of homes, a remarkable outcome given Sweden's geographical configuration. In Poland, fixed broadband is available to 86% of homes.

ICT is the third biggest sector of the Norwegian economy, and according to the Statistical Institute, the industry posted a 20% increase in Q1 2014 year-on-year. With such a growth dynamics, the demand for highly-qualified employees increases by 4% per year, so outsourcing for Norwegian ICT companies is an urgent need.

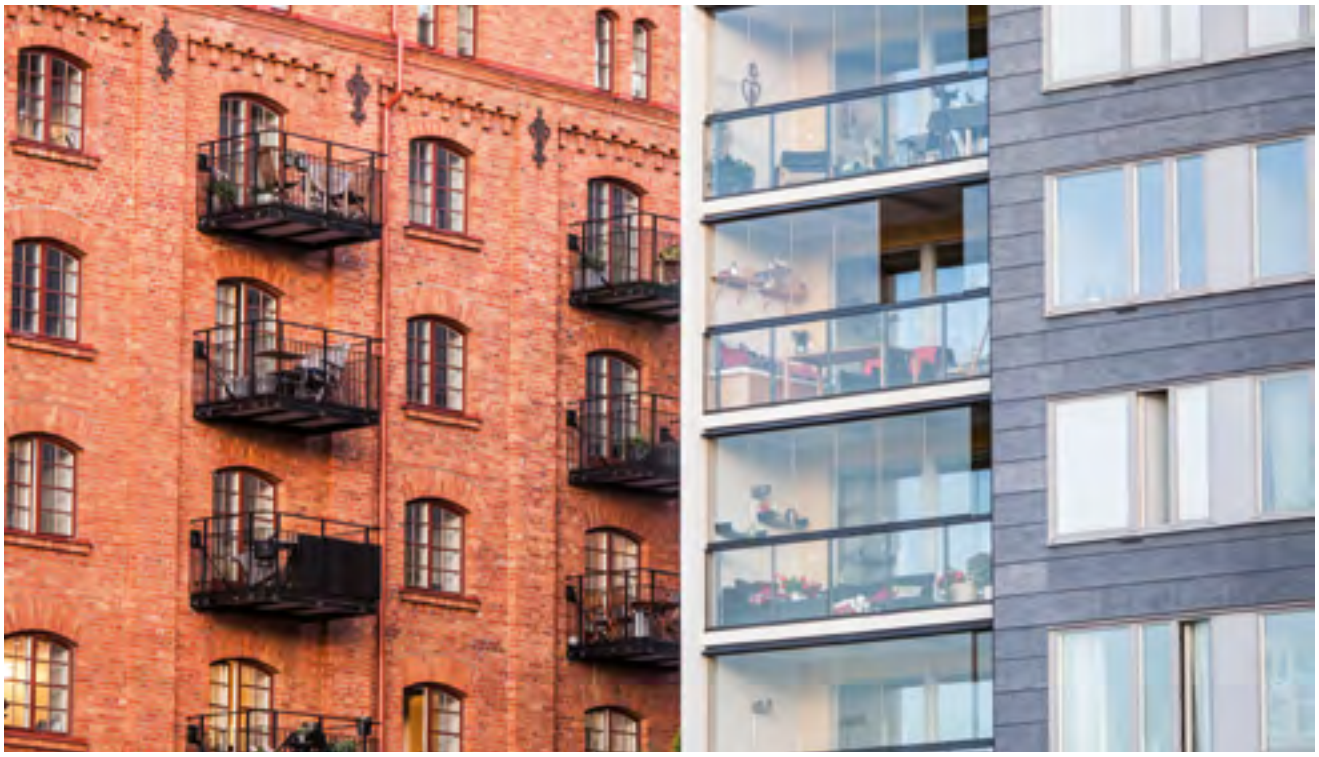


Photo: Ewa Rzepa

Poland and Scandinavia - potential fields of cooperation in developing innovativeness

Denmark

Ole Egberg Mikkelsen
Ambassador of Denmark to Poland

Danish-Polish Cooperation

The Danish-Polish economic relations have been quickly developing in recent years. This development is evident by a glance at figures concerning trade and investment. As of 2015, Danish investments in Poland totalled more than PLN 12 billion and Danish companies created ca. 60 000 jobs, in various sectors.

Innovation - the Danish way

Denmark is one of Europe's and global innovation leaders (2nd in EU on the European Innovation Scoreboard ranking 2016, 8th in Global Innovation Index 2016) being praised mostly for interplay and cooperation between industry and research, entrepreneurship as well as co-publication and intellectual assets.

The above two pieces of information make it evident that the best future way for cooperation between Poland and Denmark is innovation. But where is the best match?

Sustainability and health

Denmark has long prided itself by being a world-leader in green solutions and technology. It can be about as advanced equipment as windmills but also about something as 'ordinary' as better insulation of buildings or relatively minor energy-saving appliances, which at the outset can have a major impact on the environment and our pockets. In Denmark we have also realised that holistic approach is needed in for example urban development. This means looking at multiple variables - including, but not limited to, sustainable food production, more energy efficient housing and waste management or cleaner means of transport. Last but not least it is about informed and engaged citizens. Poland in the sustainable agenda offers one of the most interesting opportunities for partnerships, trade and investments seen from a Danish perspective.

Smart Living - a cooperation platform

In 2014 the Royal Danish Embassy in Warsaw started a three year project called SMART LIVING, which serves as a platform for sharing knowledge, experiences and know-how. The main pillars include energy efficiency and healthy living. It started with a series of workshops and seminars involving various Danish and Polish stake holders: local governments, experts and specialists as well as technology providers. In the long run it will hopefully result in establishing long term partnerships.

One of the main areas is energy efficiency in buildings. Within the framework of Smart Living project the Polish counterparts - mostly cities and local governments of various levels - learn about the best available practices and opportunities for reducing energy consumption assuring at the same time better indoor climate and more indoor light. Project's partners from the Danish side include Rockwool, Danfoss and Velux. They are actively involved on the Polish market not only with just sales but also with long term investment projects, not least to mention the opened this year Rockwool's app. 80 million euro project with a new state-of-the-art production line expanding its factory in Cigacice.

Another area where Denmark paves an innovative way is a healthcare system, now ranked as one of the best in the world. It applies common IT standards which mean that much of the communication between health service partners is electronic. This innovative approach allows for more efficient system in general and at the same time better service to the patients. Denmark is also addressing such important and common for both our countries issues as aging of population. How to best design and equip apartments for elderly people? How to help people with increasing problems with hearing? With respect to the latter, we have a great example of R&D cooperation project - Demant Technology Centre (part of William Demant Group), which has just been opened in Warsaw with an intention to employ several tens of Polish engineers and IT specialists in developing new hearing aid appliances.

Earlier mentioned Smart Living project is one of the many ways to seek innovative cooperation projects between Poland and Denmark but we are open for any others. So we are not limited to any specific sectors. There are many others to explore, not least to mention digitalisation, architecture or design. Innovative partnerships are about profits and creation of jobs on both sides of the Baltic Sea. But they are also about increasing the quality of life and health of citizens and helping to pave the way towards a cleaner, more sustainable future - truly a 'win-win' situation for all parties concerned.

Finland

Hanna Lehtinen
Ambassador of Finland to Poland

For Finland and Poland, innovations are considered as a main engine for future growth. Innovations have been in the core of the Finnish success story and regardless of the relatively hard times in our economy, the R&D investment percentage of the GDP is among the highest globally. The availability of scientists and engineers is substantial and Finland's long tradition in high level education and research cooperation between universities and business have laid the foundation for innovative ICT, healthcare and gaming companies.

To meet the challenges of the future, Poland is planning a knowledge leap to develop its economy. Finland has a lot of experience and extensive practices to share - it can therefore advise and guide on how to link private and public research and development together. World Economic Forums Competitiveness report 2015-2016 ranked Finland top of the world in university-industry collaboration in R&D. This has led to a flourishing start-up scene and the growing optimism can be experienced in the startup event Slush in Helsinki every autumn.

Finnish and Polish authorities have explored best practices together in the fields of innovation. A Polish-Finnish innovation seminar was held at the beginning of this year. The dialogue continued later in Helsinki and created the common ground to further intensify our bilateral relations in the field of innovation. In both events, several company representatives were present and we really believe that these kinds of initiatives can bring tangible results and cooperation possibilities for the private sector.

At the moment, several Finnish companies have R&D-facilities in Poland and good experiences will definitely maintain the current inflow of investment from Finland. Focus clusters of Poland's long-term economic plan correlate to Finnish companies' expertise. Finland has several high-tech clusters with many technology companies with world-class expertise, for example companies specializing in wireless and mobile solutions, cleantech and new materials and processes. The shipbuilding, cybersecurity and biotechnology industry are common strengths and in those fields, the cooperation possibilities are significant.

One of the main goals of the current Finnish government's programme is digitalization and we also see considerable support from Polish decision-makers. Disruptive technologies like smart city-solutions that combine IoT- and ICT-technologies will inevitably change the societies as a whole and make our everyday lives easier and more sustainable. As Polish growing startup agglomerations will be piloting the revolutionary global solutions in the future, Finland could be the test bed for them. Vice versa, populous Polish cities could provide a growth market for Finnish Mobility as Service-operators. Digitalization could definitely be the future innovation connector for Finland and Poland.

Norway

Karsten Klepsvik
Ambassador of Norway to Poland

Innovation - understood as the introduction of better solutions to existing or future needs - is central to any viable new business concept. Public and private investments in research and development are crucial for creating favourable environments for such new ideas, and previous experiences with programs and practices promoting innovation suggest that international collaboration can be especially relevant as it brings together actors with fresh perspectives and with knowledge of different technologies and markets.

The possibilities for cooperation between Poland and Norway are many as our countries share many common goals and challenges. Driving trends that challenge established business models in terms of competition and power structures include climate change, technological advances, ageing populations, the sharing economy and the circular economy. To meet these challenges, we need to foment models with global growth potential and competitive entrepreneurial and cooperative cultures.

The Green Industry Innovation Programme Poland is a business development programme financed through Norway Grants where EUR 17.8 million have been allocated to 28 projects for the greening of Polish industry. All these projects are now in their implementation phase, effectively contributing to green innovation, increased competitiveness of green enterprises and Polish-Norwegian cooperation. Towards 2021 Norwegian grants amounting to 809 million Euros will be allocated for projects in Poland within a number of thematic areas including Business Development, Innovation and SMEs, Research, and Youth Entrepreneurship. This effort will contribute to growth by supporting the development of the knowledge economy and strengthen the links between education and training systems and the market. The funding brings important opportunities for strategic piloting and testing of innovative approaches as well as for international cooperation and exchange of knowledge and experiences.

These substantial investments strengthen the foundations for future cooperation between Poland and Norway. The resulting bilateral links and networks between both public and private entities make it easier to match market demands with the right providers as well as for researchers to understand the markets in both countries.

It is the very nature of innovation that we cannot know where and how new solutions will appear, but we do know that enterprises that collaborate and are part of relevant networks are more innovative, more productive and more competitive. In the same way, effective bilateral cooperation serves to strengthen our national economies on the global market. As better connections provide companies with better access to necessary capital and expertise, we are lowering the barriers to global success.

I believe the ground has never been more fertile for new ideas, and through joint effort, we will continue to encourage this positive development.

Sweden

Inga Eriksson Fogh
Ambassador of Sweden to Poland

Sweden has in many international rankings been considered one of the most innovative societies in the world. The list of inventions and new solutions to old problems, which have been developed into commercial success stories, spans from dynamite and safety belts to IT-services such as Spotify or Skype.

There are many reasons for the Swedish success in innovation: one of them is trade. Originally, free market reforms and early globalisation in the 19th century offered new markets to those who could find innovative ways to use resources which had up until then been considered worthless, such as distant forests and waterfalls. Open trade and the continuous structural change and competition that come with it has remained a driver for innovation. The value of Swedish exports per capita is greater than that of China and the United States combined.

A high level of spending on research and development, between 3.3 and 3.5% of GDP during the last decade, also contributes to the ability to remain at the forefront. Only a handful of countries exceed this level. About two thirds are invested by the private sector and the rest by the government, mainly through universities.

Innovation is a priority for the government. One example is the National Innovation Council, led by the prime minister, with key ministers and leading entrepreneurs as members, with the aim to remove barriers and improve conditions for further innovation.

The Swedish education system places a stronger emphasis on critical thinking than on memorised knowledge. This has some drawbacks, for example a rather weak performance in the PISA ranking. But it fosters innovative thinking from a young age.

A strong commitment to human rights and democratic institutions is also a key factor. An innovative mind is usually quite rebellious. A society which tolerates and a wide range of opinions and choices, and encourages an experimental approach, enhances its ability to innovate.

Another factor is a long tradition of investing in communication infrastructure. One example is the high broadband penetration; despite that Sweden is a sparsely populated country. Another example is a classic incentives program from the 1990's to improve the population's computer skills, "the Home PC". This program made personal computers more affordable for many Swedish employees, but also happened to provide their children, some of who later became IT-entrepreneurs, with an advanced toy that opened many eyes to the opportunities of the digital world.

Finally, Sweden has gradually developed an integrated innovation system where key actors, among them local governments, academia and enterprises, cooperate to develop inventions and research results into commercially viable innovations. There are always more that could be done to make this process more efficient, for example to further facilitate access to venture capital, but so far the chosen path delivers clear results.

Many of these innovative Swedish companies are active in Poland. Their interaction with Polish suppliers, clients and well-educated employees constitute a formidable force for spreading ideas between our countries, and push innovation forward on both sides of the Baltic Sea. At the Embassy, we are ready to do what we can to help this exchange develop further, in the spirit of the agreement between Sweden and Poland on cooperation in the field of innovation.

The aim of the agreement is to increase innovative cooperation between our countries, an exchange which is open for all to take part in. The Embassy and other actors in Team Sweden have lately engaged in promotion activities to increase cooperation within a few promising areas, such as cleantech, energy efficiency, railroads and air traffic management. There is a clear potential for further activities in the year ahead.

Innovativeness of Scandinavian companies and business cooperation on innovation

All shades of innovation

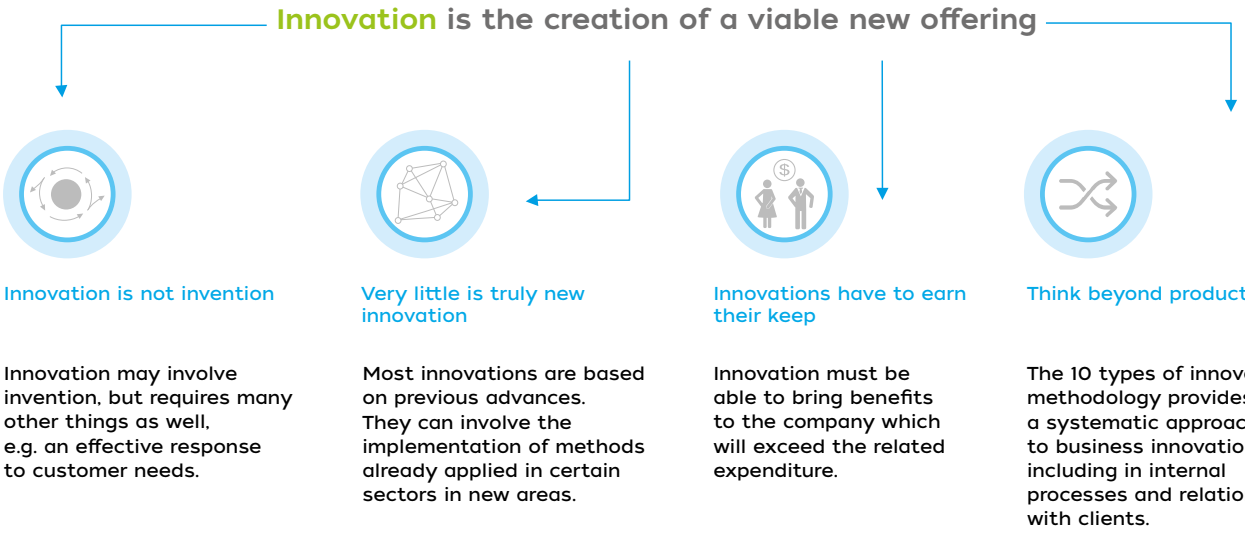
Jakub Weber, Senior Manager
Jerzy Grzesiak, Consultant
Deloitte Innovation Consulting Team

Innovation has become a widely discussed issue. It is analyzed by companies willing to gain a competitive advantage as well as central and local authorities seeking ways to streamline economic and social growth. Consequently, innovation has been surrounded by myths and ambiguities. Due to its novel nature, there is no common understanding of this notion. At the same time, it is widely believed to be characteristic of technology companies only, where large budgets allow for working on new inventions with no promise of any profit. In our work, we try to clear all these doubts and offer a rational approach to innovation for any type of entity.

Innovation: what is it?

Before examining innovative business, innovation itself needs to be defined. Based on many years of experience, Deloitte defines innovation as the creation of a viable new offering. All elements are important in the process, as indicated in the diagram below.

According to the definition, innovation must be feasible and marketable. Significantly, its profitability is also of key importance. Innovation for show or with no clear objective is pointless. Deloitte's definition also addresses the issue of high expenses, which is often raised by a number of companies, in particular smaller enterprises. It is just the opposite - innovative investments should bring an outstanding rate of return. Growing competitive pressure and a fast changing environment[7] leave no choice to any entity: they all must become innovative.



Innovating requires identifying the problems that matter and moving through them systematically to deliver elegant solutions.

[7] The research has shown that the average Fortune 500 company lifecycle has shortened. 40% of enterprises are expected to close down within the next ten years.

Another element of innovation is novelty. It is hardly surprising, as innovation is unique by definition. Still, this intuitive way of thinking also causes ambiguity and trouble. In market practice, most innovation is based on existing solutions. New inventions, which entirely change the rules of the game, are rather rarely designed. This is usually a long iterative process involving frequent failures. The majority of the greatest global innovators were not market pioneers. Good examples are Facebook (the advantage of which was iterative pre-launch platform calibration and determination of its originators rather than the freshness of the idea, as similar social networks were already in place) or Uber (a similar service was tested by Google before, when the number of smartphone users and their digital competences were insufficient, hence the project failed). The innovative combination of familiar components or the adaptation of solutions applied in other sectors is an equally efficient approach to innovation as laboratory work. Moreover, being faster and cheaper, it often proves to be even better.

Novelty is associated with another immanent feature of innovation - risk. The issue cannot be looked at from the bright side only. Innovation hardly ever leads to achieving predetermined goals, which is not always a negative phenomenon. Sometimes expectations are exceeded and the results are different than anticipated, but they still bring benefits for the company. Sometimes, however, an innovative project fails and such a turn of events must also be considered. Not only do successful innovators allow for increased operational risks, but they are also able to create risk-supporting environments without detriment to the current operations. Innovation almost never fails due to lack of creativity. It's almost always because of the lack of a systematic approach, discipline and methodologies.

Think beyond products

The last element of the definition indicates that innovations are solutions, i.e. they go far beyond products. Innovation offers much more than marketing new or improved products or services. In the course of 30 years of intensive research Doblin/Deloitte consultants developed a model of 10 types of innovation. Starting from the question "how to innovate and succeed?", we have separated ten areas where organizations can seek innovative profit generation. Our research has shown that successful innovators integrate many types of innovation in their organizations.

Source: L. Keeley, "Ten Types of Innovation. The discipline of building breakthroughs"; © Deloitte Development, LLC

The indexed stock price returns of the top innovators versus S&P 500 clearly support our thesis. Integrating even two types of innovations can help deliver superior financial results. Companies applying more than five types of innovation turn out as top players generating 100% higher results than the market average. There are multiple combinations of innovation types. Moreover, various types of innovation offer about 100 tactics, which can be combined in a great number of manners.

10 types of innovation

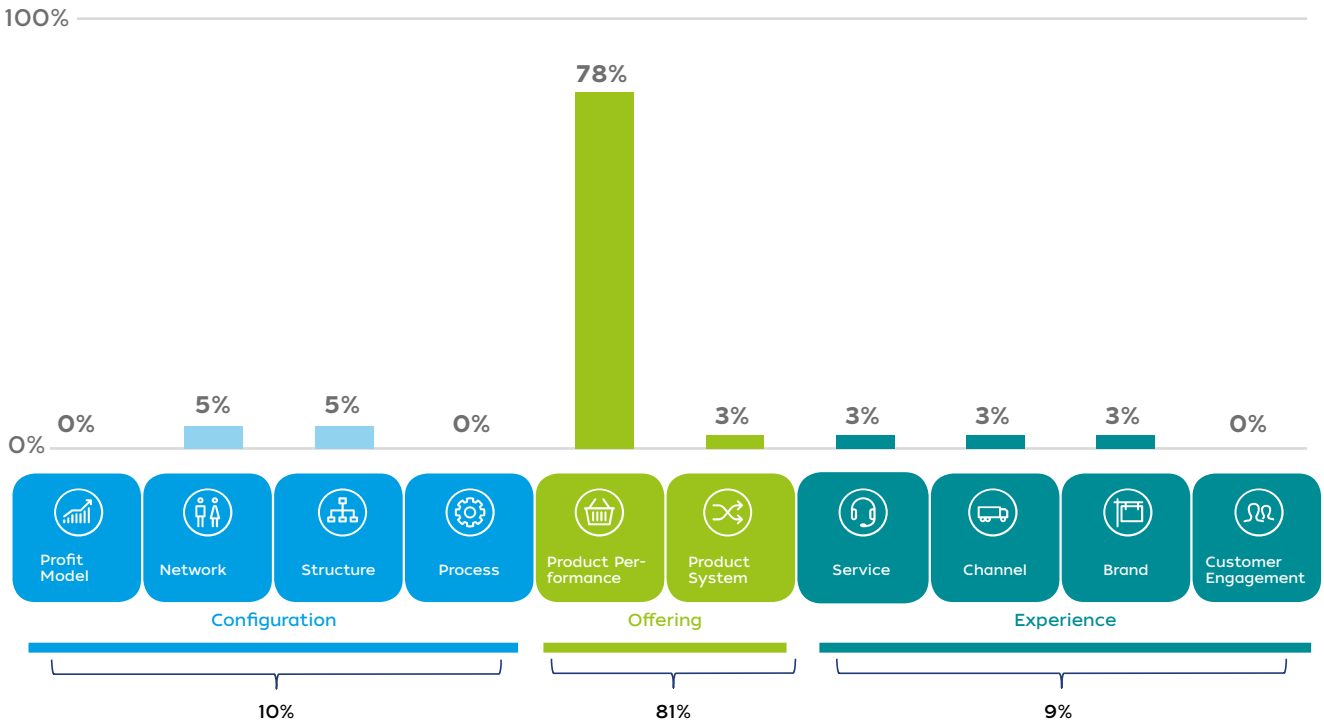
We have shown that more is better in innovation types. The 10 types of innovation model presents a wide range of available options starting from configuration (internal operations of the company) through offering (products and services) to experience (relations with the external environment and clients). We have presented a number of tactics to be followed in each type. When designing new business solutions or long-term business goals, companies which apply the 10 types of innovation approach can appropriately structure the actions steps and identify new opportunities.

IKEA is obviously one of the top most innovative companies. Contrary to what one might think, its flat packs are not examples of product innovation, but process solutions. IKEA developed flat packs with no variation by region or country. Its products included the same hardware and instructions regardless of where they were purchased, thus helping to streamline the company's internal production processes (design, manufacturing and logistics). This also fosters innovation related to customer experience, focusing on the brand and customer engagement. A good example are furniture catalogues with authentic client photos obtained through crowdsourcing. Moreover, IKEA restaurants constitute a complementary offer aimed at cultivating customer relations.

Spotify is another interesting example of a company using non-standard innovation types. The analysis of Spotify's activities shows how an innovative approach may constitute a threat to traditional entities. The new music distribution model was an innovative solution not only when compared to the purchase of traditional CDs but also to downloading files from iTunes. Moreover, a subscription revenue model was an additional change. Using viral marketing techniques and engagement in social networks the company sparked a revolution in the entire music industry.

Select non-obvious solutions

Our experience has shown that a majority of companies select the most obvious solutions and focus their business activities on the central group of innovation types, i.e. on expanding and improving the offering. This, however, leads to certain consequences. Firstly, competition is the toughest in this area. Moreover, a considerable portion of R&D expenditures is allocated to the field. An organization has to incur even higher expenditures to stand out from the crowd and the marginal profit may be modest. At the same time, when focusing on the product, companies may miss considerable opportunities in other areas. Experimenting with new distribution or business models may bring spectacular results and require lower expenses than when designing new product functionalities. Such structures are popular in many industries. They have been presented in the report on the analysis of the mining sector[8] prepared by Monitor Deloitte in Canada. Most innovative initiatives were offering-related (more efficient and less expensive mining methods) and did not take opportunities of the configuration and experience area into account.



Source: Innovation in Mining, Canada 2015, Prospectors and Developers Association of Canada, Monitor Deloitte

[8] Innovation in Mining, Canada 2015, Prospectors and Developers Association of Canada, Monitor Deloitte

10 types and a lot more

Diversified innovation is not the only success factor. The nature of innovation, which entails increased risks, requires a different business approach and the ability to embrace the change. It requires a marriage of current business security and the need to respond to changes as well as following the latest trends, in particular in ICT. The traditional management structure and corporate work methods will no longer work. As Salim Ismail from Singularity University put it:

I've learned from experience that when you're attempting disruptive innovation inside a big company, the immune system of the company will attack you. Large organizations are built to withstand change and avoid risk, and now we're telling them to move fast and take chances.[9]

To adjust or turn off the immune system appropriate project management approaches should be applied such as: stage-gate, lean startup, resource allocation to incremental, adjacent and breakthrough innovation (the famous 70:20:10 rule[10]) or the open innovation model. Despite a wide range of risk mitigation tools, a number of companies, even the top enterprises, do not take any innovation efforts or are not aware of the fact that when rejecting innovation and risks, they expose themselves to significant threats.

Our experience from the Partnership Program for the Fortune 500 companies shows the deficiencies of this approach. The Program carried out by Singularity University, X Prize Foundation and Deloitte is addressed to top executives of the largest global companies. At the beginning of the survey we requested the respondents to assess their understanding of exponential technologies, which are currently transforming all industries. About three fourth of the surveyed knew nothing or not much about these technologies. At the end of the workshops, participants were asked to describe a possible impact of exponential technologies on sectors in which they operate. Eighty percent of executives agreed that these technologies would change the rules of the game in the market in the next two years and all of them claimed to expect such transformation in the period of five years. Performance of companies presented in the report often indicates that these organizations anticipate the changes to come. Still, only those which are best prepared will be able to maintain their competitive position in this dynamic environment.

Please read this report to find out which types of innovation that were implemented by Scandinavian companies became the key to their success.

[9] Singularity's Salim Ismail on Exponentials, WSJ, http://deloitte.wsj.com/cio/2015/06/02/singularitys-ismail-on-disruptive-exponentials/

[10] The rule originally applied in Google stating that employees should spend 70 percent of their time on their "bread and butter" jobs, 20 percent - on validated innovation, related to their key job and 10% on their own initiatives.

IKEA – Swedish innovations on the Polish market

The vision of **IKEA Group** is "To create a better everyday life for the many people". Within the global sustainability strategy, IKEA engages in numerous activities with positive impact on people and the planet. The company is working towards 100% renewable energy in 27 countries in which it operates – producing as much as it consume in all buildings. IKEA Poland already achieved this goal – the company acquired 6 windfarms and uses biomass in its factories. www.ikea.pl

New models of consumption, climate change and intensive exploitation of dwindling natural resources are an impetus for the transformation of the modern economy – from material-based, pertaining to the economies of scale, to building their competitiveness on intellectual potential, innovation, and on a responsible approach to raw materials. The inspiration for the ongoing changes is Sweden, which for years has been occupying leading positions in international rankings of innovation. The country spends more than 3% of its GDP on research and development. It is also the world leader in the use of renewable energy sources, invests in photovoltaic panels and wind turbines, as well as in clean public transport, the development of smart energy grids, and energy storage systems.

Innovative thinking and environmentally friendly solutions are also crucial for the IKEA Group, a company with Swedish roots. Respect for natural resources is the driving force for innovation in IKEA: *We not only change the way we design products, but also their production, packaging, transport, and even their intended use. All this in order to effectively use the limited resources of our planet, and implement a circular economy*, stresses Anna Pawlak-Kuliga, CEO of IKEA Retail in Poland.

The company's concept is based on the idea of offering a wide range of home furnishings at affordable rates. All products are made according to the idea of democratic design. This concept involves creating interestingly designed, functional and high-quality home furnishings, made with care for the environment, and at the same time affordable.

In 2012, the IKEA Group adopted a global strategy for sustainable development (*People & Planet Positive*) in which it sets targets up to the year 2020. It covers every stage of the company's operations, from the choice of raw materials to the products offered. The company strives to minimize its environmental impact at every stage of the production chain. This can be seen especially in the selection of raw materials. For example, suppliers of wood do not obtain it from illegal sources, areas of social conflicts, or forests of high conservation value. In IKEA's 2015 global production, the share of wood from more sustainable sources, recycling, and FSC certified forests, was 50%. It is assumed that by 2020 it will reach 100%. Also, as of 2015, IKEA uses cotton from more sustainable sources in their products. This is the result of actions taken by the company more than a decade ago, which was to spread the idea of responsible cotton farming. Numerous partners joined the initiative, including WWF. Together they established the Better Cotton Initiative, which aims to improve cotton production on a global scale.

As part of the strategy, People & Planet Positive Group agreed to purchase 314 wind turbines in nine countries and install 700 000 solar panels on the roofs of their buildings. In Poland, IKEA has achieved energy independence in early 2016. All six IKEA Group wind farms in Poland will produce up to 473 GWh of wind energy annually, which together with the thermal energy produced from biomass will cover the entire demand of IKEA Industry shops and factories in the country. Wind energy of 473 GWh corresponds to the average annual consumption of electricity by 225 000 Polish households, and can reduce carbon dioxide emissions into the atmosphere by 449 000 tons – as much as 155 000 cars.

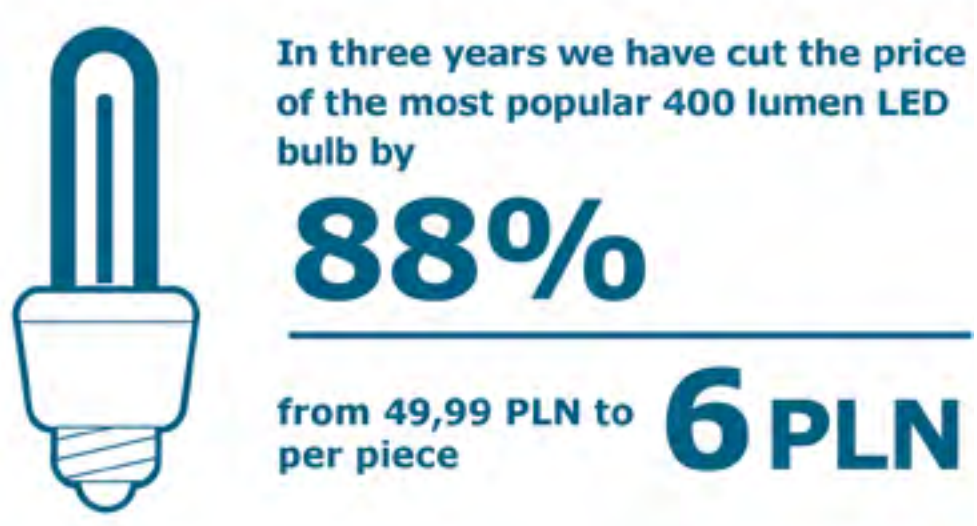
In Poland, IKEA also encourages its customers to act in accordance with sustainable development. Since 2015 only LED type of lighting is available. This technology is environmentally friendly due to the lack of harmful mercury and longer service life. LED light bulbs can shine up to 20 years, and consume 85 percent less energy than traditional light bulbs. IKEA, to better promote this technology to its consumers, over three years reduced the cost of light bulbs by 80%, so they can be accessible to a wider audience.

In 2017, IKEA in Poland plans to start selling photovoltaic panels for home use. Photovoltaic panels are already available in IKEA stores in the UK, the Netherlands and Switzerland. Poland is the next country where they will be included in the offer, alongside other affordable products that encourage more sustainable life at home.

I believe that these decisions will determine the future and direction of development in the coming decades. This is a great responsibility. Responsibility for the environment. It falls largely on the business that has all the tools and resources to make the world more sustainable, says Anna Pawlak-Kuliga.

In its actions, IKEA endeavours to minimize and eliminate the consequences of a potentially negative impact on the environment. It executes this goal at every level and stage of the company operations, involving in this process co-workers and business partners. This applies both to raw material extraction, production, transportation and distribution, and to the everyday workings of its shops. For more information about the pro-ecological innovations of IKEA, please check the report at: http://www.ikeawpolsce.pl/raport

Katarzyna Dulko-Gaszyna,
Sustainability Manager
IKEA Retail Poland



VELUX - innovation in caring for the environment and the good of the general public

The VELUX Group and sister companies in Poland belonging to the Danish VKR Holding, the largest producer and exporter of windows in Poland and their level of turnover is more than PLN 1.5 billion. They employ a total of over 3,500 people, mainly in four plants located in Gniezno (two factories), Namysłów and Wędkowy near Tczew. www.velux.pl

"One experiment is worth more than 1,000 expert views"
Eng. Villum Kann Rasmussen, inventor the roof window, founder of the VELUX company

The VELUX Group exists thanks to the creativity and innovation of its Danish founder, engineer Villum Kann Rasmussen, who invented the contemporary roof window and refined them his entire life. His innovation always had a social objective - a solution to the problem of lack of housing after the war by adapting attics and improving energy efficiency in fear of a fuel crisis. Today, such an approach to innovation also is the basis for the company's activities, which has set for itself the goal of creating products friendly for society in a sustainable manner.

For 75 years VELUX has been setting a trend in the development of the joinery industry around the world and in Poland. VELUX has come up with numerous inventions that have changed the face of modern homes and has improved the quality of life for those living there. VELUX's offer covers a wide range of roof windows and modular skylight systems as well as different types of interior and exterior shutters, blinds, sets for warm installation of windows and remote controls. In addition to the base operation of the company, as a model business it is engaged in a variety of initiatives that address global challenges in society. An important place in the company's strategy is care for the environment. This is reflected in the product creation approach as well as processes in manufacturing plants.

Thanks to ThermoTechnology™ in VELUX roof windows attics are energy efficient, comfortable and healthy.

Sustainable products on the basis of a LCA analysis

VELUX products are not only innovative but also friendly for the environment throughout their entire life cycle. The company uses a Product Life Cycle (LCA) analysis in their production, which takes into account the product's impact on the climate and the environment, from the purchase of raw materials, production and use, up to their disposal. The results of the analysis are the basis for their development, and also the introduction of changes in the production process. A few years ago global pressure on energy efficiency forced the market to create windows with thicker and warmer frames, at the same time reducing the amount of light and heat coming through the windows. In the year 2013 the VELUX Group released on the market a product seemingly impossible to produce - a more energy efficient, New Generation window with a thinner frame and at the same a larger glass surface. This was possible due to a total change in production processes in all the production plants around the world (in Poland 80% of machines were exchanged) and application of unique ThermoTechnology™ technology to insulate the window's construction. The tremendous innovative and organizational efforts were met with great appreciation in the eyes of customers.

Our own climatic strategy is more ambitious than European objectives

An expression of concern for the environment is also the global climate strategy announced in 2009, which aims to reduce by the year 2020 our own CO_2 emissions by half as compared to the year 2007. The assumptions exceed EU objectives in this regard by 15%. Thanks to the good outcome of the strategy, the Group has already surpassed the EU's targets for 2015 by approximately 9 years. Polish VELUX factories, despite the significant increase of production, have over the past 5 years decreased CO_2 emission by 16%.

Energy management system on the basis of the ISO 50001 norm

At the beginning of 2016, the Polish production plants of the VELUX Group as the first in the joinery industry, pos-

Production of wood-polyurethane windows in the window factory in Namysłów.

itively passed the energy audit and received ISO 50001 certification. In practice, the implementation of the energy management system in VELUX factories means a constant and systematic focus on energy efficiency in all operational processes, machinery, equipment as well as permanently raising employee awareness through the training system, because their behaviour also has a significant impact on energy consumption indicators. During the first year after the implementation of the ISO, it is planned that there will be a power savings of approximately 10%, for example, by reducing the operating time of machines in standby mode and downtime as well as streamlining the control mechanisms of current consumption.

The wooden window factory in Gniezno heated by wood chips

The VELUX window factory in Gniezno uses biomass for energy production processes and also for heating the halls. The modern boiler is supplied with wood scraps, so-called wood chips, which are a natural waste in production processes. The boiler covers up to 85% of the annual demand for heat in the Gniezno factory, while delivering savings at around PLN 570 thousand per year. Also the working conditions improved in the plant due to better heating of the production area. The full use of raw material also affects a decrease in the quantity of production waste.

Recourses saving logistics solution CUBE

The innovation of the VELUX company is also reflected in the logistics process. Traditionally, windows are transported on pallets. VELUX company invented CUBE - a system for packaging and transporting windows without pallets. Thanks to this improvement, more windows are transported in one shipment than with using pallets. Fewer trips are needed, which translates into fuel savings, and also the reduction of CO_2 emissions. This has significant consequences for the environment, because yearly this reduces the total number of kilometres travelled by approximately 2.5 million. Savings are also related to used raw materials, because the system eliminates wooden pallets. Production plants gain additional storage space and a convenient high amount of storage, because with CUBE you can stack one on top of another.

The components in the production line of JUST IN TIME at the factory in Namysłów

This year's investment in the construction of a new warehouse and production hall has improved the production process, the reduction of CO_2 emissions, improved working conditions and lowered the storage cost of components. The process of supplying the assembly line with components in the Just-in-time system was launched. This required the reorganization of internal processes and also the automation of the monitoring level of components at each workstation. Thanks to the implemented innovation process specific savings could be obtained. The length of road transport has been reduced by the equivalent of approximately 14,000 km per year, which is roughly equivalent to 1/3 of the equator. Limitation of distances travelled translates directly into a reduction of resources in the form of the number of carriages and baskets associated with them, the type of equipment used, energy consumption and daily maintenance.

The involvement of employees in creating innovation - KAIZEN in practice

VELUX actively encourages its employees to get involved in submitting their ideas and improvements in the production process. The vast majority of employee proposals are implemented and the best are rewarded. Some are also being implemented in other VELUX factories around the world. Many of them bring very tangible financial and environmental benefits, and improve safety or the quality of the products. Faith in employee ideas is a manifestation of innovation in pure form. In addition, it builds a full sense of responsibility in ordinary employees for the processes occurring in the company. In 2015 in Poland, thanks to the ideas submitted by employees, 5539 production and environmental improvements were deployed.

VELUX window production facility in Gniezno.

Possibilities for financing innovation

Support of R&D in Poland

Tomasz Rysiak
Legal Advisor/Partner
MAGNUSSON

Increase of innovation of the Polish economy constitutes one of the main economic goals declared by the Polish government. The above mentioned goal is currently being realized by, *inter alia*, work on two acts aimed at making it easier to conduct research and development activity in Poland, i.e. a small act on innovation that primarily covers tax incentives and a large act on innovation, which as announced will regulate the remaining issues of conducting innovation activity (among others, facilitate contribution of capital in development of innovation).

At this moment, due to the necessity to adopt amendments to the tax regulations before the end of the calendar year, the government presented a bill of the small act on innovation, which was submitted to the Sejm (lower house of the Polish government) on 25th August 2016 and is scheduled to come into force on 1st January 2017. The proposed amendments cover mainly the extension of the already existing tax relief for research and development activity.

Currently applicable tax relief allows the taxpayer to additionally deduct from the taxable base the expenses incurred by the taxpayer on the research and development activities (such expenses may also be reported as the standard tax costs). As research and development activity in the meaning of the tax regulations is considered any activity of creative nature that covers scientific research and development works conducted systematically in order to create knowledge and use the knowledge to create new solutions. Currently applicable regulations provide for the following categories of eligible costs:

- salaries of the employees dealing with R&D activities;
- purchase of materials (including raw materials) for the purposes of R&D activities;
- purchase of opinions of experts, services of consultants, purchase of results of research of R&D entities;
- price for using R&D equipment;
- depreciation write-off from the value of the fixed assets and intangibles used in R&D activities.

The amount of expenses that may be additionally deducted by a taxpayer is capped at 30% with regard to the salaries of employees dealing with R&D activities, while the remaining expenses are capped at 20% (10% in case of enterprises other than small or medium). The entrepreneurs are entitled to use the R&D tax incentive within three years immediately following the year in which the entrepreneurs deducted or could deduct eligible costs.

Increase of attractiveness of the R&D tax incentive is planned to be achieved both by extending the category of expenses that may constitute eligible costs as well as increase of the value of the eligible costs that may be deducted. In particular, according to the planned amendments, micro-entrepreneurs, as well as small and medium entrepreneurs will be entitled to additional deduction from the tax base of 50% of all eligible costs. The remaining entrepreneurs will be entitled to deduct 50% of the wage costs and 30% of the remaining eligible costs. The statutory catalogue of the costs constituting the eligible costs subject to the tax relief for the research and development activity will be extended by

the costs of obtaining a patent. In addition, the possibility to include the eligible costs in tax settlements has also been extended to 6 years following the year in which the expense was made.

The new benefit, addressed primarily to start-ups, is the possibility to not only deduct the eligible costs from the tax base (what requires declaring income by the entrepreneur), but also ability to obtain an amount corresponding to 19% of the qualified costs. Such right will apply to entrepreneurs that show tax loss or income in an amount insufficient to include all eligible costs in tax settlements. Such support will be available to entrepreneurs during the first year of conducting business (subject to certain exceptions), while micro-entrepreneurs, as well as small and medium entrepreneurs will be entitled to such support also during the second year of conducting business. The obtained amount will have to be returned if the entrepreneur has been declared bankrupt or put into liquidation within 3 years of the end of a fiscal year, in which the entrepreneur submitted a tax declaration showing the right to receive a part of the eligible costs.

Apart from the issues directly connected with the tax relief for the R&D activity, the government has also proposed provisions aimed at securing tax neutrality of the contribution in-kind to a company in the form of the so-called commercialized intellectual property (*inter alia*, patents, author's economic rights to software, know-how or licences). This is another amendment addressed primarily to start-ups that frequently develop their intellectual property within individual business activity of their founders. The currently binding regulations that may trigger taxation of contribution in-kind to a company frequently made it difficult to further develop innovative business via a company, which is more attractive for external investors.

In addition to the proposed tax-related amendments, the small act on innovation regulates matters higher education sector aimed at, among others, determining the issue of ownership of results of conducted scientific studies or facilitate commercialization of the results of the conducted scientific studies.

The issue that draws attention in the small act on innovation and in the public declarations made by the Polish government is the fact that the government focuses on tax incentives in an attempt to increase the level of innovations in the Polish economy. The policy of the European countries that are the most successful in the field of innovation and creation of technological start-ups shows that the tax reliefs do not necessary play a decisive role. For instance, in Sweden, the European capital of start-ups, the regulations on reliefs for the R&D activities have been binding since 2014 and provide for significantly lower support for entrepreneurs than the relief for R&D activity currently binding in Poland. In particular, Swedish entrepreneurs are allowed to decrease the social insurance contributions paid for employees between 25-64 years of age whose work is connected with the R&D activity (75% of the work time, not less than 15 hours per month). The maximum amount by which the social insurance contribution may be decreased is 10% of a net remuneration of an employee.

According to the data of the OECD, the Finnish entrepreneurs cannot expect more generous support from the Finnish tax system. The program providing support to the R&D activity consisting of the possibility to decrease the tax base twofold by remuneration of employees working within the R&D was working only from 2013 until 2014. At this moment, the main tax incentive is the possibility of accelerated depreciation of tangible assets connected with the R&D, whereas the main source of financing of the Finnish start-ups and innovation activity are direct subsidies.

Innovation and green growth as guiding principles - NEFCO

NEFCO is an international financial institution established by the five Nordic countries. NEFCO finances green growth investments primarily in Eastern Europe. In Poland, NEFCO offers loan and equity financing for Nordic companies. www.nefco.org

The cleantech industry is once again on the up. The international consultancy firm *Frost & Sullivan*'s assessment is that the combined value of the global cleantech market was 601 billion USD two years ago. According to *the global cleantech innovation index*, around USD 41 billion has been invested in share capital in cleantech start-ups over the last five years. The same index placed Finland, Denmark and Sweden on the global top ten list of countries that have the best working environment for founding, running and developing cleantech companies.

According to Cleantech Group and the WWF, the global cleantech market value will increase to USD 2.1 trillion before the year 2020. Green growth is no longer a marginal business of only a few entrepreneurs and enthusiasts. In Finland alone, the cleantech industry involves over 200 companies with a combined turnover of EUR 26 billion. Over a third of all national research and development initiatives are currently made in the cleantech industry in Finland. The Nordic cleantech cluster already creates terms and conditions for corporate life in a number of sectors throughout the Nordic countries. The countries best at producing clean, environmentally friendly technology which reduces the consumption of raw materials, natural resources and energy will also be able to hold their own with the international competition.

From left CEO Thorleif Leifsen, Vardar, CEO Johannes Rauboti, Sogn og Fjordane Energi AS and former CEO at Vardar and Senior Investment Manager Amund Beitnes, NEFCO. Photo: 4Energia.

The largest wind farm in the Baltic countries was opened in Šilute in September. Photo: Amund Beitnes, NEFCO

At Nordic Environment Finance Corporation (NEFCO), we have noticed this development trend in many different ways. We receive an increasing number of applications and queries from companies selling environmental innovations, looking for new market outlets for their cleantech products and services. As a consequence, we have been involved in the financing of alternative low-sulphur marine fuels, projects that rely on pyrolysis in agriculture, as well as streamlined reuse of raw materials in the industry, and investments that utilise waste heat from manufacturing, just to give some current examples.

There is a deep-rooted preparedness to test new environmental technology in the countries where we operate. We have invested in a long line of different biogas projects directly linked to livestock farming, or at landfill sites in a number of eastern European countries. We have also been involved in several communal energy-efficiency projects where LED lights are used in street lighting or renewing the production and distribution of heat thanks to upgraded pumping stations fitted with frequency converters. A number of cooperation partners have chosen to invest in solar thermal collectors and PV panels installed onto communal buildings. Even if NEFCO as a rule does not finance research & development projects, we are dependent on new environmental technology to be able to maximise the emission reductions that are of interest to our owners - the Nordic countries.

There must be dramatic levels of investment, primarily in the energy sector, if we are to mitigate climate

change and support a successive shift over to renewable energy. Investments in wind power at present are gaining traction in Poland's neighbouring countries. In September this year, the largest wind farm in the Baltic region was opened in Šilute, Lithuania - which was partly financed by NEFCO. In Latvia we have been involved in financing the expansion of biogas and upgraded small-scale hydroelectric plants, and in Estonia, we have made significant investment in energy efficiency, wind power and biogas. The time is also ripe for investment in solar power on a larger scale. According to a research team at Oxford University, the price of solar cells will reduce by around 10% per year, which paves the way for key investment in solar energy. The research report *How predictable is technological progress?* states that around 20% of the world's energy needs could be provided using solar energy. Reinventions can change the world, as pricing structures become rearranged and profitability calculations appear in a new light. NEFCO is a valuable cooperation partner to include in these equations.

Mikael Sjövall
Communications Manager at NEFCO

SEB invests in innovative technology solutions

SEB's history in Poland started in 1990 with the opening of the SEB representative office in Warsaw. In its past more than 20 years of presence on the Polish market SEB has represented the unique combination of the Scandinavian way of doing business and local expertise. www.sebgroup.com

During 2016, SEB has invested in two startup fintech companies: Tink, which focuses on financial planning, and Coinify, which develops solutions for block-chain payments. *We focus on high-tech companies with innovative solutions which may be relevant for our customers and for us as a bank*, says David Sonnek, Head of SEB's Venture Capital unit.

SEB Venture Capital has been active since the mid-1990s. The mission is to make investments in high-tech startup companies that need venture capital. The aim is to generate returns for the bank while taking social responsibility by supporting the emergence of new promising growth.

It is in line with our origins as a corporate bank. SEB has since its inception in 1856 been the entrepreneurs' bank and supported growth of Swedish innovation companies, many of which today are world leaders, says David Sonnek.

Venture Capital started with an investment capital of 250 million, which has been gradually expanded and now totals two billion Swedish kronor. All-in-all, the unit has invested in about 110 companies, of which 85 have been guided all the way to a sale. The portfolio currently consists of 25 active investments.

The main focus in recent years has been on investments in promising companies with cutting edge technology and life science in focus. However, in line with how SEB is increasing its digital transition, Venture Capital has been given a clear direction to focus on Fintech.

By investing in exciting new fintech companies, we can build knowledge, find interesting partnerships and identify new and interesting ideas that can be further developed within SEB. We want to get closer to innovative SMEs and get inspired by them, while giving them the opportunity to learn more about the bank. It is rewarding for both parties.

Which markets does SEB monitor?

We want to work closely with companies and therefore we focus on the Nordic countries, Germany and the Baltic States, countries where we have extensive operations.

What about investments in Poland?

Yes, it is conceivable if we find the right company. But it would likely have to be performed in partnership with a local operator.

What is your view of the innovation climate in Poland?

I feel that there are many smart programmers and mathematicians, but not as many high-tech companies yet. However, it is on time.

New investments

In 2016, Venture Capital made two fintech investments. Before the summer, SEB entered into a strategic partnership and became an owner of Tink, a Swedish company that has developed an app that helps users get a better overview of their income and expenditures. The cooperation means that SEB will be able to integrate this tool in its telephone app.

In August, SEB made an investment in Coinify, a Danish company that has developed a platform for blockchain payments. The new technology, which was originally developed for the crypto-currency Bitcoin, has great potential to improve the efficiency of payment flows by removing the need for intermediaries.

Framework for digitization

Venture Capital comes under SEB's strategy function and is one of the entities that make up the bank's framework for research and development.

Included in this is also the Innovation Lab, which supports and encourages internal innovation ideas. In the lab, employees get the opportunity to, in a creative environment and alongside their daily work demands, develop their innovation and present to senior management.

Within the strategy function, there is also an internal consulting organisation named SEB Way, which supported by the method of Rapid Process Development helps business units to digitise and simplify processes.

Another key feature is Digital Banking, where SEB has gathered all expertise in usability and digital interfaces. The unit focuses on creating an attractive and seamless customer experience across all channels.

All these units work closely with the bank's IT organisation where, among other things, there is a skill group, Emerging Technologies, which monitors technology development.

Most important is to tear down the walls between business and IT. A bank is increasingly an IT company and, therefore business and IT must merge into one. We see this clearly in fintech companies. They are very good at being fully integrated, says David Sonnek.

Innovative solutions of the Scandinavian companies in Poland

In this part of the publication we present several examples of innovations implemented by the Scandinavian companies present on the Polish market. Those companies operate in different sectors of economy, they offer their products and services to individual customers and to business.

Innovations implemented by the Scandinavian companies are noticeable at different stages of the company's activity - starting with production processes and the introduction of modern technologies, through logistics and other organizational processes, ending with a unique offer for customers. Innovations are often an effect of business partnerships and are possible thanks to creation of the tailor-made solutions for customers, as in examples provided by Ericsson or Cybercom. Companies from the rapidly developing business service sector are also sharing a few examples of innovative solutions. One of the common elements of presented practices is the constant strive to reduce the effect on environment and the focus on energy efficiency - both in the production processes as well as in relation to the products that companies offer. This is well illustrated in the previously mentioned examples provided by IKEA, VELUX but also Skanska or Stena Recycling.

Scandinavian companies present in Poland are also supporting innovativeness through R&D centers established in our country. Such units are functioning with the production facilities of Volvo in Wrocław, Electrolux in Żarów, DGS in Mierzyn or Konsgberg Automotive in Pruszków. Demant Technology Centre was opened in September 2016 in Warsaw by the Danish holding William Demant Group.

Innovations are created by people and people are the end users in the innovation process. The process of creating innovation is itself very fascinating and there are many ways of building the culture of innovativeness. Innovations are very important in the workplace - through some solutions the other ones are being created. The solutions and ideas presented in the report are only a few ones from the whole spectrum of innovations developed by the Scandinavian companies, often in cooperation with other entities, including the Polish companies. We strongly believe that they will serve as an inspiration for further developments.

Photo: Magdalena Jarzyńska

Are you ready for the future? Atlas Copco Polska - we create new possibilities

Atlas Copco is an international industrial group and a world-leading provider of sustainable productivity solutions. The Group serves customers with innovative compressors, vacuum solutions and air treatment systems, construction and mining equipment, power tools and assembly systems. The company was founded in 1873, is based in Stockholm, Sweden, and has a global reach spanning more than 180 countries. In 2015. www.atlascopco.pl

Innovation is one of the most important goals at Atlas Copco. Thanks to the innovative approach, the company is able to compete on the market, by providing products and services that ensure sustainable development. **Atlas Copco develops products and services focused on productivity, energy efficiency, safety and ergonomics.**

Atlas Copco expanded its offer by introducing a new generation of variable speed drive VSD+ technology. A VSD compressor automatically adjusts the rotational speed of the engine and of the compressor element to the demand for compressed air (traditional fixed-speed compressors only have two states: loaded and relieved).

In comparison with traditional compressors, GA series allows **saving up to 50% energy** (in comparison with fixed-speed compressors).

Atlas Copco GA VSD+ compressors offer many innovative solutions, such as an IPM (Permanent Magnet) engine, new compressor element, and inlet valve. Free Air Delivery (FAD) and Specific Energy Requirement (SER) parameters have improved by even 9%. This means that using GA VSD+ compressors (in comparison with GA VSD), **the clients will obtain up to 9% more air** consuming up to 9% less energy.

Moreover, GA VSD+ compressors allow for a significant saving of installation space and low noise level: 67dB. Therefore, they can be installed directly on-site, and not in a compressor rooms. They allow remote monitoring (Smartlink) and can be equipped with an energy recovery system.

For our clients, this translates into a proven and high-quality product ensuring high performance and significant energy savings, said Bert Derom, Vice-President of Atlas Copco Industrial Air division marketing department.

In the beginning of 2016, a new revolutionary hammer called RTEX appeared among Atlas Copco products. The tool turns upside down everything we knew about jackhammers. It weighs only 25 kg and is as effective as much heavier hammers. It uses much less air though – only 18 litres per second. This is an extraordinary achievement and will be appreciated by everyone who has to work with big, heavy and bulky hammers. The new hammer generates lower vibrations than hammers weighing over 30 kg, which allows safe all-day work. All that without the necessity of using shock-absorbing handles.

At present, Atlas Copco is running a new innovative project in Poland. It consists of building a Service Center for mining machines in Polkowice, at the Legnica Special Economic Zone. *The decision to construct the new Service Centre for Mining and Rock Excavation Business Area in Polkowice, Poland has proved the long-term strategy of Atlas Copco business in Central Region of Europe. The intention is to meet the actual and future customer's needs, which are more demanding as for a quality of services and products delivered, especially to world leading companies. Investment makes our brand and business position stronger in Poland, presenting the company mission for sustainable profitable growth with respect to our core values: innovation, commitment and interaction. It is built as for LEED requirements, following the environmental care awareness. We invest in competence of our employees, modern workshop tools and equipment as well as in achieving the expected high energy efficiency of facilities. We plan to accomplish the construction by end of 1st quarter 2017. That has been another one development phase of Atlas Copco business in our country since 20 years.* - says Andrzej Mielko, Country Manager Poland for Mining & Rock Excavation.

Innovative Cybercom concept for Hiab

Cybercom Poland is part of an international organization with its headquarters in Sweden. Locally, we employ over 250 engineers in Łódź, Warsaw and Bydgoszcz. We use agile work processes in areas such as the Software House, IoT, Security, Automotive and Telecom R&D. We change the world by delivering intelligent solutions to our clients around the globe. We respect our business partners and follow principles such as Trust, Passion and Innovation. Working solutions, we designed and executed for Hiab, Intel and Skanska prove our success in the IoT sector. We are constantly expanding out horizons and looking for partners we can support on their quest to digital excellence. www.cybercom.pl

Innovativeness is one of Cybercom's Core Values. That's why we created a number of Innovation Labs across the world (including one in Poland), which constantly research and develop new innovative projects. Many such ventures can be found in our portfolio, including modern cutting-edge applications and IoT development. We strive to be a partner and advisor to our clients rather than just a resource. Thanks to this relationship model we are able to be influencers and develop brilliant solutions together. We believe in creating prototypes and constantly improving them with our clients until we reach perfection. During software development we use agile work processes which allow for flexibility and always being up to date with newest technologies. Our Innovation Labs is a space where creative developers, Product Owners and Cybercom Poland partners can experiment with the latest technological solutions. The principle is simple. We are looking for innovative projects, which have the characteristics of start-ups, and together we obtain their financing. Often our customers, who want to design PoC (Proof of Concept) attend our Innovation Lab and we can do something in some special, experimental environment together. Utilize that approach, few noncommercial and commercial digital solutions were born and promoted by Cybercom Poland.

One of our most innovative projects was a recent cooperation with a Scandinavian company called HIAB – the world's leading provider of on-road load handling equipment and part of the Cargotec Corporation.

Cybercom was selected as a strategic connectivity partner in 2013 and the partnership started with a cross-segment workshop in 2013, where Cybercom Advisory consultants supported and moderated HIABs team in business innovation and creating a connectivity roadmap. When a number of business ideas needed to be validated with HIABs customers, Cybercom implemented and operated a solution for a pilot fleet of connected cranes. When the decision to start commercialization was taken, Cybercom was awarded the trust to lead the full project from start including working with the service design and validate suppliers of IoT platforms. This work also included Cybercom Advisory Service leading cross functional workshops to build future customer value and a connectivity strategy for HIAB.

In 2016 HIAB commercially launched their first generation of connected cranes services, associated with a commitment to the market that "all HIAB products will be connected by 2018".

With the introduction of connected services at Bauma2016 exhibition, HIAB gained a first-mover position, clearly ahead of their competitors. HIAB will lead their customers into the future where digitalization, urbanization and sustainability are major forces. Cybercom Poland as the main partner in this project, has become one of the few technology companies in Europe, which might boast of a commercial solution in IoT.

Electrolux - company based on innovations

Electrolux is a global leader in household appliances and appliances for professional use, selling more than 60 million products to customers in more than 150 markets every year. The company focuses on innovations that are thoughtfully designed, based on extensive consumer insight, to meet the real needs of consumers and professionals. www.electrolux.pl

Electrolux is a company with a strong innovation culture. Back in 1908 Axel Wenner-Gren, the founder of Electrolux, had a vision of how to make the vacuum cleaner lighter, more user-friendly and affordable. Since that time innovation is a key success factor which gives Electrolux leading position on a very competitive home appliance market.

To ensure the quality of created innovations, the whole process begins with in-depth consumer understanding. Based on researches Electrolux identified 4 territories where innovations are meaningful for people: culinary enjoyment, healthy well-being, sustainable homes and effortless living. All of them are analyzed and honed into focus areas where Electrolux is developing solutions that facilitate the everyday lives of the consumers. Understanding that being innovative means constant development, Electrolux aims at accelerating innovations by 30% and increasing innovation within focus area by 75% on yearly basis. To do so company encourages employees to participate in the innovation process. During iJam event organized every year, employees get together in an online forum to brainstorm around a particular theme for over a 72-hour period. This year more than 7200 employees took part in iJam and generated over 1100 ideas. The winning ideas are taken to development teams composed of specialists in marketing, design and R&D fields to be transformed into new products. Before a new product is launched, it is presented to consumers and only if at least 70% of the them expresses a preference for a new product over similar alternatives

available on the market, decision to begin production is made. Such an approach brought, for example, several new solutions into dishwashing segment. Satellite spray arm with 5 spray levels allows to achieve outstanding results no matter how the dishes are stored inside the dishwasher. Special Glass Basket with soft grips helps placing wine glasses easily and safely. Lately Electrolux introduced another breakthrough solution - ComfortLift Dishwasher, the first dishwasher ever with lower rack that can be raised waist height. Everybody with any back problem will immediately understand the importance of this innovation, which will greatly support users in loading and unloading dishwasher. ComfortLift dishwashers are currently being launched in Polish market. In dishwashing innovation processes an important role is played by research and development team from dishwasher laboratory located in Żarów factory in Poland.

One of the most successful product innovations created by Electrolux was an introduction of steam to home ovens. This cooking technique known and highly valued in the best restaurants and hotels, was previously available only in the professional appliances. By bringing steam into home ovens, Electrolux opened completely new cooking possibilities for the consumers, giving them an effective tool that enhances taste and reduces the risk of failure, which were the two biggest issues expressed by people during researches. Electrolux CombiSteam Deluxe ovens and CombiSteam Pro ovens offer all of the functionalities expected from a top-of-the-range ovens, plus three programs that use different combinations of steam and hot air: CrispSteam (25% steam) for roasting poultry or meat, SoftSteam (50% steam) for creating a crisp crust on breads and cakes and for reheating foods, PureSteam (100% steam) for dishes like rice or vegetables for maximum retention of the nutrients, vitamins and minerals as well as natural color and taste. Since this revolutionary technique in

the home cooking was launched, Electrolux introduced several other innovations to make steam ovens even more user friendly and intuitive. To enhance cooking possibilities SousVide function was added, the interior of the oven was enlarged and a full-colour touch screen display with Varioguide cook book was installed, just to name a few.

New cooking solutions offered by steam ovens demanded new communication models to bring expertise and experience directly to the consumers. Electrolux invited the top chefs to share their knowledge, secrets and culinary tricks. During various events with life cooking performance such as Bake for Someone or Beach Project, the consumers could check how the new cooking techniques work. In September 2016, Electrolux decided to make next step and launched Electrolux Taste Center in Warsaw. This is over 200 square meter area, equipped with Electrolux appliances where the customers, business partners and media representatives are invited to find out more about Electrolux products, discover new culinary techniques and experience taste journeys guided by top chefs. To fully use Electrolux Taste Center potential company started also co-operation with culinary celebrity Anna Starmach and began production of "Steam-Powered Life" film series.

Skanska – innovative workplaces

SKANSKA

Skanska is one of the world's leading development and construction companies. For the last 40 years of presence in Poland we have designed and built in accordance with the principles of sustainable development. In Poland, Skanska operates as a general constructor in various segments of the market. We are also developing innovative and green office space as well as Scandinavian residential buildings. www.skanska.pl

The innovative workplace is an intelligent space that meets the needs of its users.

To reach that effect we work in a very diverse team, with different competences and ways of thinking. We start with a creative workshop (so called Project Compass), where we search for ideas and create a vision of the office building and its surroundings. We always focus on business challenges of our clients and on personal challenges of the office end-users. We follow the user-centered Design Thinking method. This approach allows us to create a unique strategy for every project and work out innovations tailored to the profile of the office end-user.

One of the solutions that we have developed through this approach is Activity-Based Parking. This innovation answers the challenge of insufficient number of spaces in parking garages. When we focused on car commuters, we noticed that a large number of parking spaces remain unused, even though every single one has individually assigned owners. The reason is an ever increasing mobility of office users: at any given time somebody is on a business trip, somebody is on holiday, yet somebody else is working remotely from home.

Activity Based Parking is an innovation based on the growing trend of the Internet of Things (IoT), which allows multiple devices to communicate. The system we are implementing will be managing parking spaces and car traffic so as to allow as many people as possible to use the parking lot. First, the system, integrated with the building management system, will inform us about the parking situation at the office even before we leave home. Then, the car garage gate will open automatically when it recognizes our license plate. The system will assign us to a parking space for the day, smoothly directing the incoming office users as they come. The collected data on the use of resources is an added value – the tenants of a building equipped with the system will be able to monitor and analyze their real needs and actual use of the parking spaces.

It is only natural than an innovative office space should be built innovatively. We do this with building information modeling (BIM). A perfect example is the Green2Day office building project in Wrocław – the construction site is jam-packed with a range of innovative solutions, such as:

- **BIM 360** – system of applications for coordination and exchange of design information and applications for

Mobile construction site

communications management during construction. These two environments are complemented with engineering and data analysis applications. Using all of these environments, we can really talk about advanced use of BIM

- **QR codes** – placed on construction materials give quick access to the whole data base (drawings, graphs, data sheets). We use them to manage materials efficiently and to monitor construction progress.
- **SMART kiosk** – a large multimedia station with access to the project BIM, which everyone can use at any time. This is where daily operations meetings are held and ongoing works are discussed.
- **Tablets on construction site** – we eliminate paper by giving engineers access multidisciplinary design information. This speeds up the site communication process significantly, allows them to check if works are being done correctly and anticipate any conflicts.
- **Cloud-based knowledge** – all data stored in the cloud are updated online and accessible to everyone at the same time. Different elements are flagged in the model: pending issues, H&S issues, number of building elements installed, to name a few.

The combination of these innovations on the construction allows for quick analysis of the situation and facilitates decision-making and risk management. It is no secret that this innovative way of working also raises the engagement of employees, who not only can learn new solutions, but also can implement innovative solutions and feel they contribute to the success of the whole team.

Bjerg Arkitektur – sustainable Danish architecture

Bjerg Arkitektur designs new and renovates existing public buildings adjusting them to the highest standards of passive houses. These types of Projects, improving energy efficiency and comfort of buildings, especially schools and kindergartens, community centers, social houses as well as elderly homes or municipal offices represent up to 80% of all our projects. www.bjerg.nu/pl/

Innovation to us at Bjerg Arkitektur is the constant and wilful pursuit of progression. The determined will to constantly question every step we take, whether they are taken because we need to continue, or because we want to move ahead. Innovation to us is reinventing our internal processes, using methods and tools that would normally look strangely out of place, and externally change the way we do things, because we as architects need to adapt to the need of the world around us. We design and build innovative ultra-low energy buildings/ low carbon building solutions with long lifetime, utilizing greatly the suns passive energy as heating, with a fantastic indoor climate, to the same price as normal buildings, not just because we can, but because we need to. A combination of passivhouse strategy and energy efficient heating systems combined with small solar energy production has shown that it is possible to make real + houses (PASIVHOUSE PREMIUM). We do large scale innovative refurbishments to previously unimaginative ultra-low energy standards, by far surpassing normal new build energy standards, and we do it cheaper than normal maintenance. We work with innovative green and sustainable architectural design, because the determined will to do better than we did yesterday, hereby fulfilling our responsibility to our clients, the site, our children and the world we leave behind us, is at the very core of our studio.

One of our flagships projects is the one done in cooperation with the local authorities of Hjorring. The authorities and the management of the local technical school – EUC Nord, once introduced to concept of passive houses during a study tour to Frankfurt have taken the strategic decision to implement passive house as building standard for all public buildings in the municipality. The refurbishment of the EUC Nord school was a part of the project. After 5 year of monitoring and measuring the building (2011-2015) it turned out that the results are even better than presumptions. The Passivhouse school performs better than presumptions: 7,7 kWh/m^2/ year for heat in 2015 and heating load is only 10% of a normal building! All due to the innovative approach to its design.

Like Hjorring municipality authorities were inspired by a study visit to Frankfurt a couple of years ago, the Lublin local authorities got inspired by the visit to Hjorring in the spring 2016. Lublin is interested in the passive standard for the public buildings, in particular kindergardens. Bjerg Arkitektur is now working on 2 demo projects in Lublin. Bjerg Arkitektur, together with Dansk Passive Hus Centre, is analyzing the potential for adjusting one of the existing kindergartens in Lublin into the passive house standards. The second project is dedicated to the adjustment of the existing project for Waterworks Customer Service Center to the passive standards. The results for the above projects/ analysis will be known by the end of 2016.

Danfoss Heat Pumps – technology for maximum annual efficiency

Danfoss engineers technologies that enable the world of tomorrow to do more with less. We meet the growing need for infrastructure, food supply, energy efficiency and climate-friendly solutions. Our products and services are used in areas such as refrigeration, air conditioning, heating, motor control and mobile machinery. Today Danfoss is a world-leader, employing 23,400 employees and serving customers in more than 100 countries. Danfoss in Poland has 4 factories: in Grodzisk Mazowiecki, Tuchom, Wroclaw and Bielany Wroclawskie. Total employment in Poland is on the level of 1400 people. www.danfoss.com

One example of the use of heat pump technology is industrial application at the Klose furniture factory in Czersk in the Polish region of Pomerania, where heat is recovered using air source heat pumps installed next to the air compressor room. Warm waste air from the compressor room is directed to heat pumps where water replaces air as a heat-carrying medium, is heated up and then transferred to drying chambers at the paint shop. The process line used for drying painted furniture employs 9 Danfoss air source heat pumps with a total power of 158 kW. Previously, in the, summer, the plant had to use a 1.5 MW boiler the efficiency of which was decreased because it operated only under a partial load in this season of the year. Even though waste products were used, it was necessary to buy fuel for winter to keep the boiler running. At the moment, the plant shuts down the boiler house in spring and saves its own fuel. The employed DHP-AQ air source heat pumps operate in very favorable conditions as air temperature in the compressor room reaches 40°C. Heat is supplied to water heaters installed in spray booths and production lines at the furniture factory while a fully automated system maintains a constant temperature of 30 – 45°C in the booths. Typically, in the wintertime when temperatures drop below zero, efficiency of heat pumps decreases. Thanks to the innovative solution whereby waste heat from the production plant is delivered directly to the heat exchanger in the Danfoss pump, DHP-AQ 18 can operate with a high and constant efficiency all over the year. Savings achieved with this investment mean that its payback time is as short as 1,5 year. There is another similar plant waiting for a similar modernization. Implementation of the solution is supervised by ECO Synergia, which is the authorized installer of Danfoss heat pumps and other systems in Poland. The company devised the idea of the first innovative solution where waste heat is used to ensure optimum operating conditions for Danfoss heat pumps employed to supply heat necessary for manufacturing processes at a customer's plant.

DSV ISS – incentive based pricing model with mutual benefits for group companies

DSV ISS is one of the leading TSL (Transport, Shipping, Logistics) companies in the world. Our headquarters is located in Denmark. DSV divisions include: DSV ISS, DSV Road, DSV Air & Sea, DSV Solutions. DSV ISS, the youngest member of the group, provides services in the following areas: Finance, Master Data Management, Claims Handling, Customs, Operational Shared Services, Global Account Support, Global Commercial Organization and is located in Warsaw. www.pl.dsv.com

Business process outsourcing is a kind of tool for improving company efficiency and reducing the costs. There are too many possibilities to fall into the trap of doing nothing or desire to achieve too much cost reduction. Along with the process' transfer from entity X to Z, there is a need to set a pricing mechanism that benefits both companies. Cost calculation for providing the service (Business Case) by entity Z is based on the total operational cost of the same service, delivered formerly by entity X. Then the cost of the outsourced service is offered as fixed term, full time employee (FTE) or transaction based pricing model.

DSV International Shared Services based the pricing on the results which customers get from using this model. For example when you outsource a call center, customer gets the expertise, save money on the equipment required to answer the flood of incoming calls and pay for the number of qualified clerks or for each resolved phone call. The second solution is when you pay for the unit and effectively transfer operating risk from the customer to supplier, because the customer pays only for

the resolved calls, not for the stand by service (number of employed resources).

Shared Services usually don't focus on a transaction based pricing model, which accurately predict a customer's consumption in order to provide with the benefits for both parties. It gives an unique opportunity that customer and supplier are working toward common objectives as it brings ability to learn from mistakes and indicates the link between the processed volume and cost of production, for example: decreased number of executed manual payments implicates lower customer's fee and reduced risk of fraud attempts. Unit Pricing model consists of service catalogue and a price list, where price reflects a real processing time and cost. Incentive prices help to improve the quality of customer's data. Price for the low value added data is high as it means more work for supplier (the lower volume, the cheaper it is). Activities not included in the catalogue are priced by working hour as a cost driver. Implementation of this model leads to the situation where customer receives fair value price for received service, adequate to its volume and time-consumption.

Sebastian Surewicz
Accounting Services Director, DSV

Ericsson Connected Venue

What **Ericsson** offers to the networking society are the most effective solutions which allow all of us to live, study and work more freely and to be a part of well-balanced communities all around the world. We are present in more than 180 countries in which we employ over 115 000 workers. We have been operating in Poland since 1904. www.ericsson.com

Innovation is key in the ICT market, of which Ericsson is a major part. We apply the knowledge and experience of more than 25 000 workers from our research and development labs (among them we have over 2 000 engineers from the newly acquired Ericpol) to build our competitive strength and to take advantage of other mobile service providers, media service providers, the industry, and other trades. For over a year, Ericsson has been a business partner of Legia Warszawa, developing unique benefits for their internet services platform.

Legia Warszawa, apart of achieving their athletic goals, aims to be the most advanced football club business-wise. Wanting to deliver stable wireless internet connection for over 30 000 fans who come to the stadium, Legia reached for Ericsson's latest innovation - SCaaS (Small Cell as a Service) - as the first football club in Europe.

This Swedish company created a WiFi network, which is capable of handling the internet traffic of an average city. Stadium is packed with multiple types of devices like aggregate switches, WiFi controllers, routers, and "Ericsson WiFi Manager" System. More than 10 km of cable was used, mostly optical fiber type.

Wireless network, that has been functioning on the stadium since 2015, allows to fully use Legia's internet services platform which is the main element of the collaboration with Ericsson.

The platform offers a range of services, enhancing one's visit to the stadium. To this date, a few has been introduced, like voting for the MOTM (Man Of The Match) award, or ordering snacks directly to one's seat. All that is needed, is Legia's dedicated smartphone app. Soon accessing Legia's Fan Store and buying tickets will also become available.

Legia's stadium has become the role model for other large facilities in Europe, such as other stadiums, airports, or shopping centers, where SCaaS can prove really useful.

Innovation is one of our core values and has been incorporated into our DNA since Ericsson was founded 140 years ago. Ericsson has been the innovation leader at every major change in the communications industry with fixed line telephony, digital exchanges, 2G, 3G, 4G and now 5G. We even invented Bluetooth and the language Erlang. We hold 39,000 patents and we have invested USD 12 billion in research and development in the last three years. We ask our employees to innovate every day.

40% of the world's mobile traffic passes through Ericsson equipment, we managed 1 billion mobile phone subscribers and support 2.5 billion mobile subscribers worldwide. This technology and services leadership provides global insights which we share in our mobility report and consumer lab surveys.

Poland is no exception and we have demonstrated innovation with our partnership with Legia Warsaw being Europe's first Connected Stadium and being the first to show LTE Broadcast in Poland together with Polkomtel at the 2014 World Volleyball championships.

With the recent acquisition of Ericpol then we start the next chapter in innovation as there are now 2200 software engineers working in our Radio development hub in Krakow and Łódz. These engineers are providing the innovation that is part of Ericsson Radio Systems that are sold worldwide. Innovation is key to our continued success and we intend to remain innovation leaders in the future.

Martin Mellor, Country Manager, Ericsson

We have decided to pick Ericsson as a partner for the Connected Venue project mostly because we as the biggest football club in the region need to pick our partners in a way that we are one hundred percent sure that they know what they are doing. And Ericsson gave us this feeling that Ericsson knows the technology, has a certain experience and will do the project with us very fast.

Wiktor Cegła, Marketing Director, Legia Warszawa

HUB logistics – added value services as innovative business accelerator

HUB logistics is an innovative logistics service company who's services go well beyond traditional logistics management and warehouse operation outsourcing. We believe that transformation leverages strategic thought, and provide deep analysis, process redesign, change management and technology, which can be integrated into supply chain activities and processes. www.hublogistics.pl

HUB logistics innovation is the "added value" we provide in every project we undertake. We offer full service for our customers and take care of materials, resource, information, financing and IT-systems. We stand out from the crowd because our service is always totally tailored to each customers needs. Our customers benefit from our flexible, developing and money saving co-operation model. Each of our projects are different and innovative as we create new solutions and processes.

Here's an example of a case for a client: They were struggling with problems in every field of their activities: badly scheduled production, lack of efficient management of the new warehouse and also some HR challenges caused by wrong planning, wrong production schedules, bad relationships with suppliers and poor employees approach (who often had undefined roles). They thought that solving all their problems would require hiring many agencies specialized in different fields of business. That would be expensive and would result in extended lead time. Instead they turned to HUB logistics and we provided them with a full service solution package: we went though all the processes and both prepared and re-planed all necessary operations. Our analysis was evaluated and updated in collaboration with a client in order to have a smooth start of the operations. The following improvements have been done:

- relocation of production lines and places on site
- implementation of faster processes for production lines
- forklift's service within defined paths automation
- Warehouse Management System introduction.

HUB stayed in charge of the Clients production logistics taking care of receiving deliveries, stocking, pre-assembling, deliveries to the manufacturing lines and preparing outgoing products to be dispatched. Continuous improvement and strive to excellence were our goals at all times. Our Client's production chain started to work properly and products per hour indicator is now better than ever. All those changes were made with cost efficient approach, which resulted in:

- Cost per product reduction by 30% after first quarter of cooperation while employment rate went down by 11% with number of processes being limited by 22%.
- Overall quality of employees' work, as well as quality of customer service and - satisfaction rised significantly.

Our LEAN know-how, Plan For Every Part, close cooperation with the customer and true customer understanding blended together with HUB solutions and our 25 years of experience guaranteed the success.

Stena Recycling - Stena Multisort system

Stena Recycling is a leader in comprehensive solutions in the fields of waste management, recycling and environmental services on the Polish and Scandinavian markets. We process and recycle 500,000 tonnes of waste from business and industry each year in 13 locations in Poland, obtaining from it new raw materials. The CARE philosophy which is caring about Customers, Employees, Business, Environment and Society, has been a guide for us for more than 75 years of international business activity. www.stenarecycling.pl

Every day Stena Recycling strives to exceed customer's expectations by searching for innovative solutions which reduce the costs of waste production and disposal. We strive to reduce negative environmental impacts while ensuring the needs of our customers. The Stena MultiSort System is one of our innovations for office administrators. The main problem which building managers have to face is lack of space designated for waste segregation. Standard containers are not aesthetic and do not fit modern interiors. At Stena Recycling, we have aimed to meet the requirements for waste management at buildings with "green building certification", as well as to save valuable office space. The most popular solutions by Stena MultiSort allow for waste segregation into 3, 6 or 11 fractions stored in stylish and space-saving cabinets. Our solution saves approx. 60% of the space designed for the segregation as compared with conventional containers designed to store only one fraction. A large number of fractions and installation of cabinets in places where specific waste is generated recovers up to 75% of waste generated by office workers on daily basis. We have ensured that the operation of the system would be as simple as possible for its users. Proper sorting control is facilitated by dedicated personnel who reduce by 10-20% the involvement time of the cleaning service. It was quite a challenge to invent a solution that fits all spaces, even ones that are often designed with attention to detail. Concerned about the visual aspects we have introduced the possibility to adapt the colours of the cabinets to the interior or the company's visual identification. The Stena MultiSort solution has become a renowned system to facilitate sorting in places with limited space as demonstrated by the growing popularity of this solution as well as the opinions of our business partners who have decided to apply it in their office spaces.

Unicall - online reporting system

Unicall is a BPO and contact centre company with Scandinavian roots offering a range of services encompassing customer helplines, helpdesk, customer service, telesales, lead generation, data profiling, appointment scheduling and back office activities. Our offices are located in Poland, Slovakia, Lithuania, Latvia, Hungary and the Czech Republic. www.unicall.pl

In the early stages of company operation, we took a decision to implement high degree of key processes automation and use unified solutions in all of our European sites. The aim was to allow managers and operational teams to focus their primary tasks - quality assurance and ensuring compliance with key performance indicators for each of our clients.

Our solution consists of two primary elements: Aheeva contact centre system, which is used to handle incoming and outgoing calls and custom-made reporting and a campaign management system developed and integrated by Unicall IT Department. The campaign management system is made of a several components: (1) statistics reporting module; (2) database management module, which permits the user to obtain a detailed insight into data structure and allows for flexible management of several data files under one campaign; (3) call listening module allowing for immediate access and export of selected recordings; (4) quality assurance, which encompasses 100% of calls ending in transactions or sales leads; (5) self-grading module, which allows for rapid identification of problematic situations and has positive influence on customer experience.

In addition to having access to their own projects, each senior manager can view reports for other campaigns in any country. This cross-country knowledge transfer facilitates learning curve and reduces project setup time. Additionally, being true to our principle of transparent cooperation, the reporting system is available to our clients thus granting them immediate access to their statistics. The automation significantly reduces probability of errors as all data is extracted directly from the system and secondly, it is an additional quality monitoring tool because our clients see "raw" data shortly after it is collected.

By implementing the system and adjacent processes we have reached all the quality goals set before the implementation and saved funds that were allocated to investments in the infrastructure and our employees. As an additional benefit, we have had a capability for running decentralised projects and processes in any of our European locations.

Volvo – innovative solutions for sustainable public transport

Volvo Group is one of the world's leading manufacturers of trucks, buses and construction machines. In Poland the company includes the biggest bus factory in Europe situated in Wroclaw, the sales organizations of buses, trucks and machines as well as global business service centres in IT, finance and HR sectors. The company employs over 3000 people and is a leading employer honoured with such titles as e.g. Top Employer 2016. www.volvogroup.pl

Volvo Buses offers complete solutions for electrified bus traffic. The product range includes a hybrid bus Volvo 7900 Hybrid (available also in articulated version), an electric hybrid Volvo 7900 Electric and the newest model – a fully electric bus Volvo 7900 Electric.

With its comprehensive range of electrified buses, Volvo continues to lead the drive for cleaner, quieter and more energy-efficient public transport. Electrified buses, produced in the Volvo Polish factory in Wroclaw, attract much attention from many cities, both in Europe and worldwide. Volvo Buses has so far sold more than 2700 electrified vehicles worldwide.

Volvo, with its innovative solutions within electromobility, offers new possibilities for cities to transition public transport in a sustainable direction, promoting safer traffic and a healthier environment with less noise and better air quality.

The fully electric Volvo 7900 Electric represents a new way of developing public transport. It is an ecological, silent and emission free vehicle which allows to build routes in the most sensitive areas, like an old town or a hospital vicinity and to place bus stops where people really need them, even inside the buildings. This marks a major milestone in the development of new solutions for electrified buses. Quiet and entirely exhaust-free bus operation in traffic and at bus stops contributes both to a better urban environment and reduced climate impact and thus creates new opportunities to transition to sustainable public transport. In July 2016 two Volvo 7900 Electric buses were tested on the streets of Wrocław.

The Scandinavian-Polish Chamber of Commerce (SPCC) is one of the biggest bilateral chambers in Poland. Currently, it has around 400 members. SPCC is an association established by and for business people having links to Scandinavia or interest in this region. The main office is located in Warsaw and the Chamber is active in Poznań, Tricity, Kraków, Szczecin and Wrocław. SPCC offers its members a wide range of activities, such as networking business mixers, seminars, thematic branch committees, conferences and breakfast meetings with renowned personalities from the world of politics and economy. Membership in SPCC offers not only networking opportunities with an elite group of high-performing managers of Nordic companies, but is also a way of finding inspiration for everyone who would like to expand their own business.

SPCC Patrons:

ARPI Group Outsourcing Solutions · Atlas Copco · DNB · Danske Bank · ELTEL Networks · ERICSSON · GREENCARRIER · Handelsbanken · Kinnarps · onninen · BGK Bank Polski · Radisson Blu · SEB · VOLVO