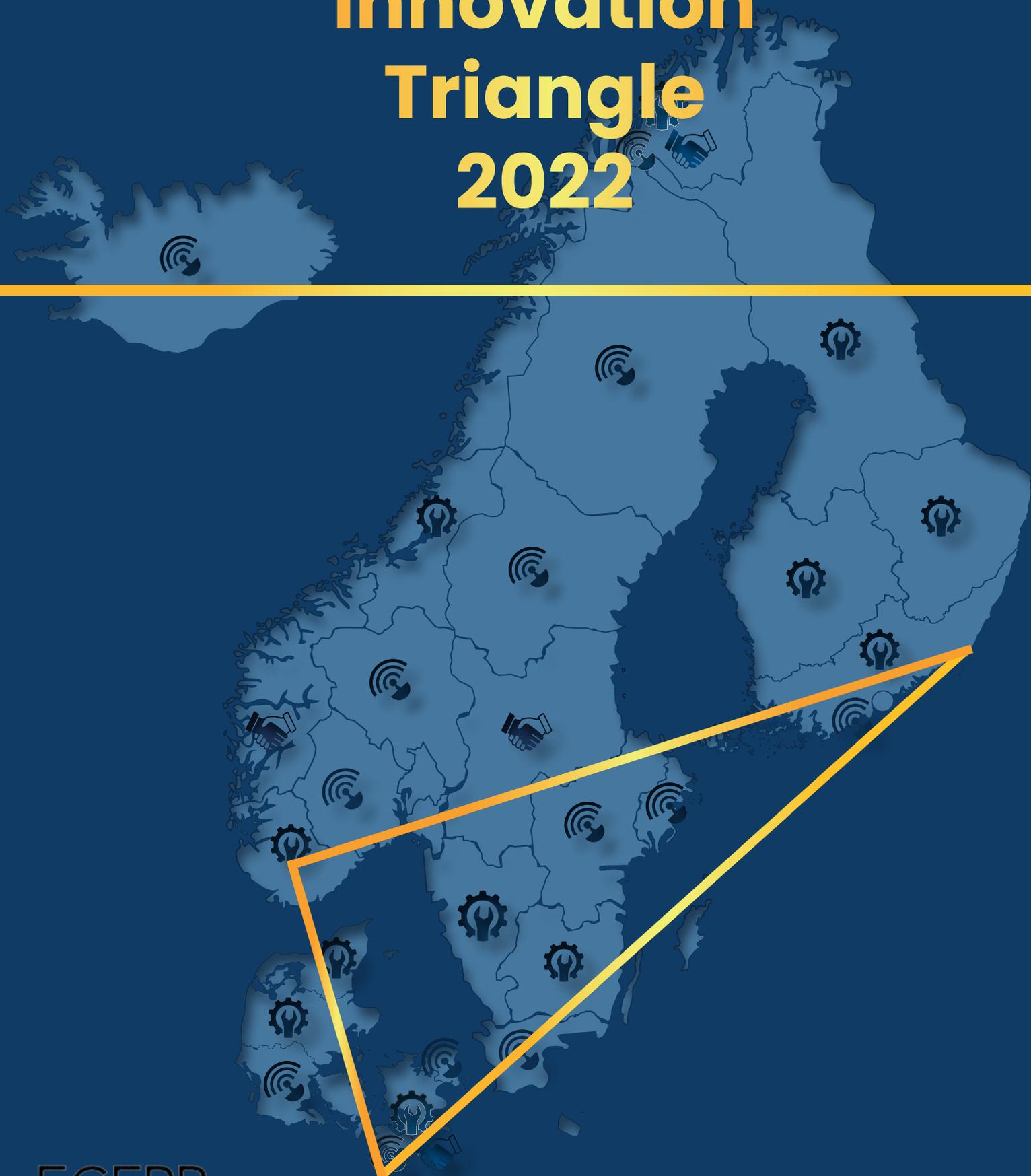


Nordic Innovation Triangle 2022

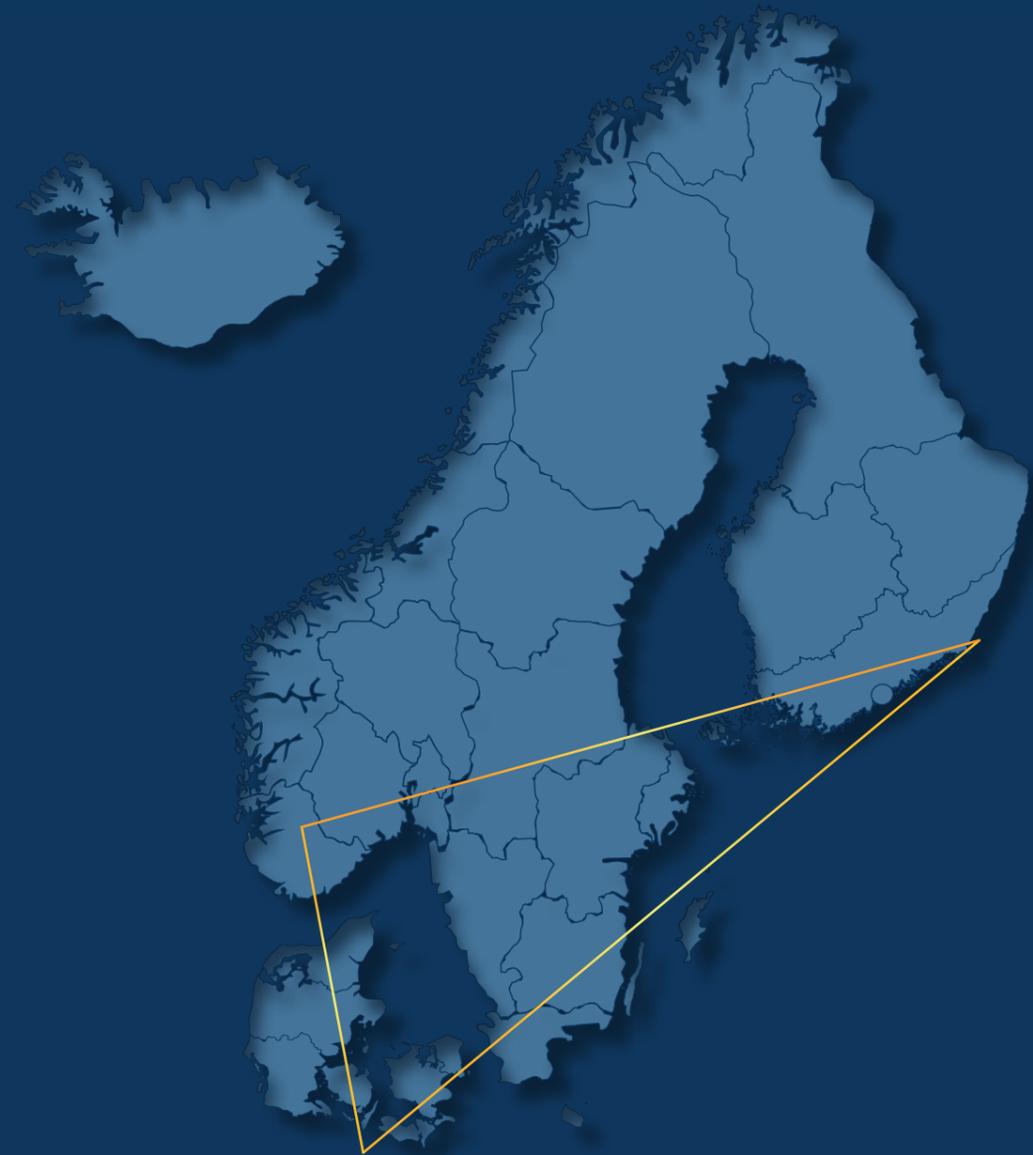


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Nordic Innovation Triangle 2022



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Summary

The Nordic Innovation Triangle is a new collaboration between the European Centre of Entrepreneurship and Policy Reform (ECEPR) and Dr. Saied Esmailzadeh, a leading Swedish entrepreneur and innovator. Previous studies such as the *European Innovation Scoreboard*, the *Global Innovation Index*, and the *Brain Business Jobs index* all point to the Nordic region being one of the most innovative regions in the world.¹ The Nordic Innovation Triangle expands our understanding of Nordic innovation by mapping the geography, sectoral distribution, and core innovative activities of novel innovation companies founded in the Nordic region during the past five years.

The capital regions of Oslo, Copenhagen, and Helsinki form a Nordic knowledge triangle, with the largest capital city of Stockholm in the middle. Several leading novel innovation companies are found in this knowledge triangle, for example, Stockholm-based VOI Technology, which has attracted 306 million euro in external public financing for renting electric scooters to urban commuters. Copenhagen has several strong actors in health, for example, SNIPR Biome, a discovery stage biotech company in the treatment of microbial diseases, which has attracted 51 million euro in external public financing. In Oslo, Adevinta, a digital marketplace that provides online classifieds services, has attracted 1.9 billion euro in external public financing. Helsinki is the seat of many different innovation companies, such as Yahaha, which has attracted 26 million euro in external financing, for developing a platform through which developers and game players can use the engine to develop their own games.

Bloomberg explained previously this year: “Sweden’s capital has bred more tech unicorns per capita than any other region in the world save for Silicon Valley.”² Among Nordic firms founded the past five years, Adevinta in Oslo is the one which has managed to attain a market valuation above 1 billion USD. There are however also five potential unicorns, companies with a valuation above 100 million USD, which may grow to become unicorns in the coming years.³

¹ European Commission (2021), Cornell SC Johnson College of Business, Insead & WIPO (2020), ECEPR & Nordic Capital (2021).

² Bloomberg (2021).

³ Market value of the companies is estimated as 1.5 times the external capital they have attracted. While not an exact measure, it gives an approximate understanding of valuation.

The potential unicorns are: VOI Technology in Stockholm, Essity, a global hygiene and health company also based in Stockholm, Cognite, based in the Norwegian city of Lysander, which develops an industrial internet-of-things data platform, Stockholm based H2 Green which develops fossil-free manufacturing of steel, and IQM in Finnish Espoo, which builds scalable hardware for universal quantum computers.

Many prominent novel Nordic innovation firms are founded outside of the capital regions. One example is the digital health provider Docly International, founded in Malmö, in south of Sweden, which has attracted nearly 16 million euro in external public finance, and West Swedish firm OnDosis located in Mölndal, which has attracted close to 13 million euro, for delivering individualized dosing of oral medicines as micro-units. In the Danish Midtjylland region, Risskov-based Draupnir Bio, which develops a new type of cholesterol-lowering medicine, has attracted 28 million in public external funding. Aarhus-based Stipe Therapeutics, which works on technology to harness the innate immune system to fight cancer, has attracted 20 million euro.

In the Vestlandet region of Norway, Molde-based Salmon Evolution has attracted 28 million euro for salmon growing technology, while Bergen-based imove, which offers mobility services and car subscriptions via a software as a service approach, has attracted 21 million euro. In southern Finland, Espoo-based IQM has attracted 71 million euro for building hardware for universal quantum computers, while in West Finland, Jyväskylä-based Logmore has attracted 4 million euro for improving logistics quality control by data loggers and a cloud platform.

Finland is the industrial innovation powerhouse of the Nordics. Norway has a mixed approach with strengths in manufacturing but also digital and service innovation. In Denmark and Sweden, most regions are focused on digital innovations, but there are also regions with a focus on industrial and service innovations. The Sjaelland region in Denmark, and the North Norway region, are mixed innovation regions—as the focus is divided amongst digital, industrial, and service innovation processes.

As shown in figure 1, software/IT, technology, platform, and health/education are the most common sectors for novel innovation firms in the Nordics. Nearly a quarter of the novel innovation firms are engaged in software/IT, making it the

most common sector for novel, innovative businesses. The least common sector is consumer goods, followed by transportation and marketplace/trade. In total, merely nine percent of novel Nordic innovation firms are found in these three sectors.

Figure 2 shows the prevalence of innovation among the different companies. Many companies combine different forms of core innovation, with 54 percent relying on business service innovations, 45 percent on software innovations, and 43 percent on digital infrastructure/platform innovation. Product technology (29 percent) and consumer services (23 percent) are also relatively common forms of innovation. Manufacturing technology is less common, with 15 percent of firms relying on this form of innovation, while material technology is even slightly less common, with 14 percent relying on this innovation. Digital meetings are the least common form of innovation, with only 9 percent of novel innovation firms relying on digital meetings as part of their core innovation.

However, less common material technology and manufacturing innovations have vital roles in the transformation to a more sustainable economic model. Examples include Göteborg-based Heart Aerospace, in Western Sweden, which makes regional electric airplanes and has attracted 32 million euro in external financing, and Blue World Technologies, in Aalborg, Nordjylland region of Denmark, which has attracted 6 million euro for using methanol fuel cells as an alternative to non-renewable fuels. In remotely located Mo i Rana, North Norway, FREYR has attracted 4 million euro in external public financing for developing a lithium battery facility and onshore wind park. Montinutra in Kuhmo, Lapland, and Oulu region of Finland, has attracted one million euro for producing bioactive products from forest industry side streams.



While the Nordic knowledge triangle, formed by the four capital cities, is an important global centre of innovation, much of Nordic innovation processes are happening elsewhere. The Nordic capital regions are digitally focused on the innovation activities of their businesses but taken together, the firms of the 26 Nordic regions have strengths across all innovative fields. The geographical and sectoral distribution of innovation is what makes the Nordics a truly strong innovation region, enabling transformative changes in business, environment, and health.

The Nordic Innovation Triangle finds that the Nordic region has strengths in many different innovative areas. Together, the 26 Nordic regions are the home to many new innovative companies focused on software as a service solutions, green technology solutions, innovative business, and consumer services, and novel medical technology. The companies work on solving some of the challenging issues of our time. For example, Rokote Laboratories in Helsinki, Finland, is developing a nasal spray vaccine against Covid-19, for which it has raised 9 million euro in external public financing.

While the Nordic knowledge triangle, formed by the four capital cities, is a major global centre of innovation, much of Nordic innovation processes are happening elsewhere. The Nordic capital regions are digitally focused on the innovation ac-

tivities of their businesses but taken together, the firms of the 26 Nordic regions have strengths across all innovative fields. The geographical and sectoral distribution of innovation makes the Nordics a powerful innovation region, enabling transformative changes in business, environment, and health.

Figure 1. Sector distribution of Nordic innovation firms founded past 5 years

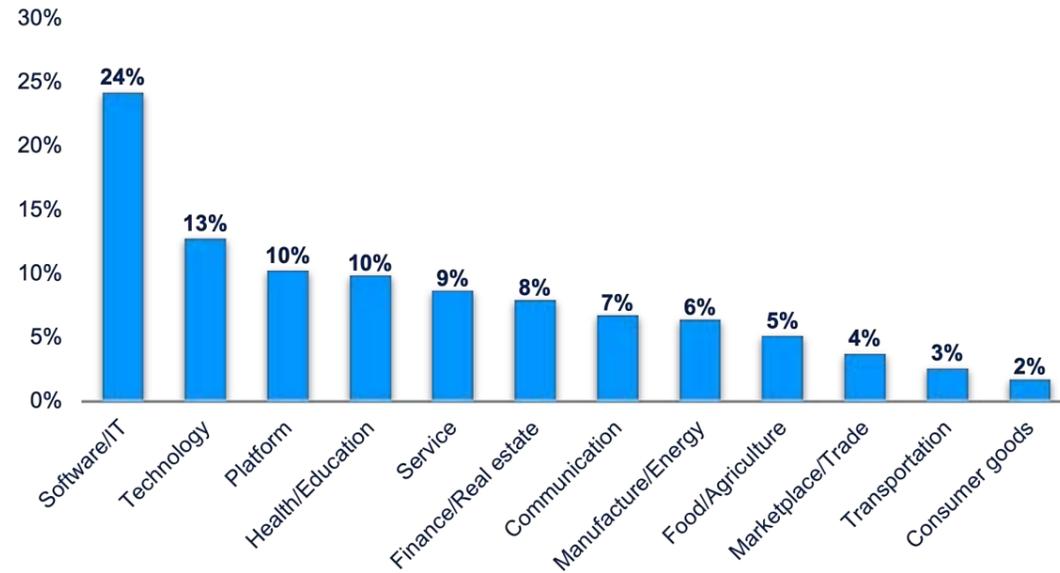
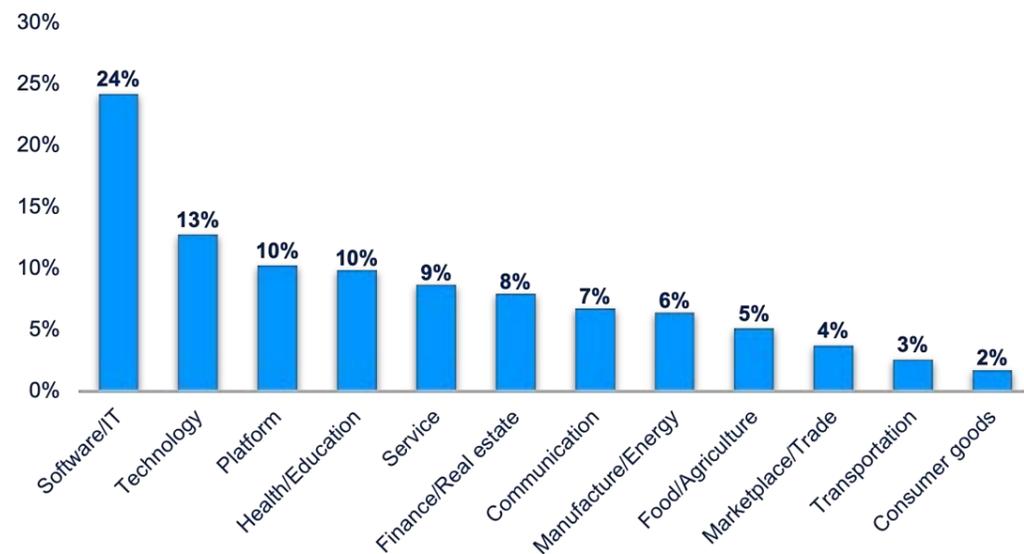


Figure 1. Sector distribution of Nordic innovation firms founded past 5 years



Understanding the Nordic innovation wonder

The Nordic Innovation Triangle is an exciting new project, which studies the new-found innovative companies that exist across the 26 regions of the Nordic countries. The aim is to better understand the geography of successful new enterprises, as well as the in-

novation processes that are shaping the future of the Nordic nations.

It is difficult, almost impossible, to be innovative on your own. The creation of new ideas and concepts happens in the interaction with our surroundings. Exactly how innovation takes place depends on the project, but something we know is that it is essential to be receptive towards the needs of the world around you and to understand the challenges that lie ahead. Innovation does not occur in a vacuum, but rather through cooperation with others.

We see this cooperation in our daily work with innovation since those individuals and those firms that push for innovation in a city such as Stockholm do so through networks with other innovators. Nordic countries have uniquely high levels of trust, which facilitates cooperation between innovators. While Stockholm is certainly smaller than innovation hubs such as London, New York, or Silicon Valley, it still is a globally important innovation region, with progress happening in many diverse fields.

Stockholm has during recent years given rise to globally successful enterprises in different sectors, such as fintech, environmental technology, and communication. In April 2021, Bloomberg wrote: “Sweden’s capital has bred more tech unicorns per capita than any other region in the world save for Silicon Valley.”⁴

⁴ Bloomberg (2021).

But to understand the true innovative strength of the Nordics, we must look at the whole region. To begin with, there is a Nordic knowledge triangle, formed by the capital cities of Oslo, Helsinki, and Copenhagen, with Stockholm in the centre. These four Nordic capital cities are all important innovation hubs, with much cooperation between them. In the same way that people cannot innovate on their own, the innovation regions that succeed are those that are linked together.

Stockholm alone is still a relatively small innovation region, even if it per capita has the second-highest rate of unicorn companies in the world. But Stockholm is linked through cooperation with the other 25 Nordic regions. Taken together these regions play an important role in global innovation. The high levels of trust that exist in the Nordics encourages cooperation, between companies across national and regional borders.

Innovation is about an idea that is made real and used. Forms of innovation may include a product feature, a service or methods making it possible to create a more sustainable way of life. My own background in going from material research to working as an entrepreneur and investor has taught me about the importance of collaborating with others and finding the solutions to hidden problems that exist in the market.

With the Nordic Innovation Triangle, we have built a methodology to better understand the innovative companies of each Nordic region, as well as the innovation solution that these companies rely on. We can see that all regions of the Nordic, even the regions in the North that are vast and rich with natural resources, but sparsely populated, play a key role in the innovation process.

Innovation is about making ideas happen and is often about solutions that ultimately benefit society. The Nordic region taken together is one of the most important innovation regions in the world, and particularly so when it comes to fostering the innovations needed for tackling the challenges of the future, such as reducing food waste and shifting towards more sustainable energy systems.

Our hope is that the Nordic Innovation Triangle, which is now published for the first year, can help in better understanding the successful new firms that exist across the Nordic region, the focus of these firms, and the innovation processes

that make their success possible. The index is informative for decision-makers in both the public and private sector, across the various regions that together make up the Nordics. It can also be an inspiration for other countries since a key challenge across the world is to encourage the jobs of the future to evolve not only in the capital city and other metropolitan centres, but also regionally.



The true Nordic success story is about fostering innovation throughout the country, not only in the leading cities.

- Dr. Saeid Esmailzadeh

The regional spread of innovation is perhaps the true innovative strength of the Nordics, in line with the idea that innovation happens through cooperation. It is difficult being innovative on your own, but when cooperating with innovators in different sectors, and in regions with diverse conditions and opportunities, it becomes possible to successfully implement novel ideas in reality — giving birth to companies that create jobs and prosperity and contribute to solving the problems of our time.

Much of the focus in global innovation has for the last decades been on how to replicate Silicon Valley, fostering urban regions with strong concentration of firm innovation. But we need a broader focus, including innovation activity not only in urban regions, but also regions with less population density and natural resource wealth. The true Nordic success story is about fostering innovation throughout the country, not only in the leading cities.

Dr. Saeid Esmailzadeh

Saeid Esmailzadeh migrated at a young age from Iran to Sweden. At the age of 28 he became the youngest associate professor at Stockholm University, after defending his doctoral thesis in crystal chemistry. Two years later, he serendipitously discovered silicate glass, with unusual material properties. Saeid Esmailzadeh and childhood friend Ashkan Pouya applied for a patent for the new glass material that became the basis for the material development company Diamorph AB. Together, the pair in 2004 created Serendipity Group. Serendipity Group has founded over 15 companies in medical technology products, biotechnology, advanced materials, clean technology, and information technology. In 2018, DiaMorph was sold for SEK 1.5 billion and in connection with this, Saeid Esmailzadeh founded his private, wholly owned holding company Dr. Saeid AB. Since then, Saeid has been building four investment companies aiming to facilitate entrepreneurship in Sweden.



Mapping innovations, in a changing world

We are the most privileged individuals throughout human history. For the first time since the dawn of humanity, thanks to the progresses made in science and technology, we can start dreaming of a world without famine and diseases. Already today we can make paralyzed people walk and blind people see. And yet, that is nothing compared to

the revolution in science and technology that awaits us in the near future. Genetic engineering, nanobots in our bloodstream, artificial intelligence, merging man and machine, brain to brain communication and much more. A revolution that will lead us into an era of radical transformation where we significantly can raise the basic standards of living for every person on this planet. In a world where we will be close to Gods, creating a world without poverty and illnesses. And maybe even one day mastering life and death - becoming immortal.

As a neuroscientist, the human brain has been my main area of interest, in particular the reward systems of the brain and neurodegenerative diseases. While many challenges remain, great strides progresses are being made in understanding the human brain. Within the coming decades, we will likely see significant advances in therapies for keeping our brains healthy as we grow older.

In the 20th century, one of the main innovation revolutions was the gradual improvement of the silicon chip. Computers have become progressively better at handling data. For a given cost, year after year it has become cheaper to buy data processing power. Our smartphones today have more calculating power than the computers that were used by NASA to put the first people on the moon.

Moore's law of computer power progression is however perhaps soon the old paradigm, because radical innovation is happening with the new quantum computers. While conventional computers store data as electrical signals, which can have either the state 0 or the state 1, quantum computers can use quantum states to perform calculations. Once this technology progresses further, we might see true development of artificial intelligence.

But how much of this development is happening in the Nordics? We know that the Nordic region is one of the most innovative parts of the world, but there is a need to better understand the creative power of Nordic innovation. This is what the Nordic Innovation Triangle achieves. This unique study, now published for the first year in collaboration with ECEPR director Dr. Nima Sanandaji, who has carried out the research, gives us insight into the innovation activities of new Nordic companies – across all 26 regions of the Nordics.

Here we can for example see that IQM in Finnish Espoo is one of the companies that push for the quantum revolution, by building scalable hardware for quantum computers. What is interesting about this map, is that it finds innovative new businesses in every sector of the economy, throughout the Nordics. Additionally, the project also looks at what forms of innovation activities that are in focus. So that we can see the different forms of digital, manufacturing, and service-based innovation activities taking place in new companies.

“To remain a world leading technological hub, the Nordics needs to be good not only in the technologies of today, but also in developing the technologies of the future.”

– Dr. Mouna Esmaeilzadeh

Nordic countries are today prosperous societies because they have high knowledge content in the economy. But this technological edge cannot be taken for granted, in a time when radical technological changes are coming in many different sectors. To remain a world leading technological hub, the Nordics needs to be good not only in the technologies of today, but also in developing the technologies of the future. Luckily, as this study shows, there are many innovation companies across Sweden, Denmark, Norway, Finland, and Iceland which focus on creating new solutions – by combining market innovations with technology innovations.

Innovations are the foundation for the jobs of the future, and for improving human well-being. If we can better understand Nordic innovation, we can better support its development. I am therefore happy to be part of this project, which adds to our understanding of Nordic innovation.

Dr. Mouna Esmaeilzadeh

Mouna Esmaeilzadeh is a medical doctor, neuroscientist, entrepreneur, and the Chairman of Esmaeilzadeh Holding. She defended her dissertation in 2011 in neuroscience at Karolinska Institutet, based on research on new possible ways of treating Huntington’s disease. Mouna is a regular guest on Swedish television, including on TV4’s Nyhetsmorgon. She is a thought leader within the future of health, and advocates the use of digitalization, artificial intelligence, and genetics in health care.

Introduction and methodology

International comparisons show that the Nordic region has a uniquely innovative business climate. One example is the European Innovation Scoreboard, published by the European Commission. The latest edition of this study, from 2021, finds that Sweden is the country with the highest performance of its innovation system, among EU member states. Finland and Denmark follow at second and third place respectively. These three Nordic countries are according to the index the innovation leaders of Europe, alongside Switzerland and Belgium. Iceland and Norway also have relatively strong innovation systems and fall in the strong innovators category.⁵

Another example is the Global Innovation Index, an international comparison of the institutional conditions for innovation, human capital, research, IT-infrastructure, and private sector innovative activities in different countries. The latest study, from 2020, finds that among high-income countries, Sweden is next to Switzerland the second most innovative economy, one step ahead of the United States. Denmark follows as the sixth most innovative high-income country, while Finland is ranked on seventh place.⁶ The Brain Business Jobs index, published in cooperation between European Centre of Entrepreneurship and Policy Reform (ECEPR) and venture capital firm Nordic Capital, similarly finds in the 2021 edition that Sweden next to Switzerland is the European economy with second highest share of working age population employed in highly knowledge-intensive sectors. Denmark follows at fifth place, Finland at eight, Norway at thirteenth and Iceland at sixteenth place, in the comparison of 31 European nations.⁷

There is good reason to explore Nordic innovation further, to increase our understanding of this highly innovative region. The Nordic Innovation Triangle is focused on understanding the regional patterns of innovation. The methodology of the index is based on utilizing Crunchbase to identify novel innovative firms, founded past five years, in the 26 different regions that make up the Nordic nations. For capital regions of the four large Nordic nations, the top 20 novel

⁵ European Commission (2021).

⁶ Cornell SC Johnson College of Business, Insead & WIPO (2020).

⁷ ECEPR & Nordic Capital (2021).

companies are studied, while for other regions ten or fifteen leading innovation companies are studied.

Identifying and studying innovation-driven companies is a complex task, as traditional company databases provide incomplete information on the subject. This report uses a new methodology, which relies on Crunchbase. Crunchbase is a leading international company database, which includes information about companies' founders and key people, investments, industry trends and innovations. Originally, Crunchbase was created as a tool for investors to find new promising startup companies to invest in, but the increased interest in the database has led to it being expanded to include mature and established companies. The information for Crunchbase is collected through four different channels: the listed companies, machine learning, a team of researchers who collect information, and the more than half a million active members of Crunchbase, who themselves contribute information about the companies.

The database has extensive information and is updated quickly. For example, information about changes in the companies is updated usually the same or the next day. Crunchbase is used primarily by investors and entrepreneurs, but also in academic research. For example, in 2017, Jean-Michel Dalle, Matthijs den Besten and Carlo Menoni published a study for the OECD on the possibilities of using Crunchbase for economic research and research in management. The authors noted that Crunchbase attracts interest from researchers in many fields, as it includes unique data on the startup ecosystem.⁸ Yuxian Eugene Liang and Soe-Tsyr Daphne Yuan rely on Crunchbase to study investments in companies, on the grounds that Crunchbase is the largest database with a profile for the included companies.⁹ Ross Brown and Augusto Rocha have used the database to study investors' actions during the uncertainty created by the covid-19 epidemic.¹⁰ A crucial advantage of Crunchbase is that it allows for mapping out novel innovation firms, and makes it easier to understand their innovative activities.

Data is gathered on the size of the companies, in terms of employment, what year they were founded, what city their head office is in, how much if any external public financing they have gathered (in euro), what sector they are active in and what their core innovation focuses are. Many of the novel innovation firms

⁸ Dalle, Den Besten & Menon (2017).

⁹ Liang & Yuan (2016).

¹⁰ Brown & Rocha (2016).

have 1–10 employees, which in this report is referred to as small firms in terms of employment. Those companies that have 11–50 or 51–100 employees are referred to as medium-sized firms, while those that have above 100 employees are referred to as large firms. This division between small, medium, and large size considers that all firms in this study are founded during the last five years (2017 to 2021), and that newly founded firms tend to be smaller in size of employment. For young companies, 11–50 employees can be considered medium-sized. Data was gathered during the first two weeks of August, 2021.

The companies are spread across twelve sectors: communication, consumer goods, finance/real Estate, food/agriculture, health/education, manufacture/energy, marketplace/trade, platform, service, software/IT, technology, and transportation. The core innovative activities of the companies are studied, based on their business model and activity. Eight different forms of core innovations, which fall into three broader groups, are studied for each company. The first group is service innovation and includes business services and consumer services innovation. The second group is digital innovation, and includes digital meetings, digital infrastructure/platform, and software. The third group is industrial innovation, and includes manufacturing technology, product technology, and material technology. Each company only belongs to one sector, but typically relies on a multitude of different innovations.

Some sectors and innovations are more common than others. For example, nearly a quarter of the novel Nordic innovation firms are in the field of software/IT, while only a few percentages are in sectors such as consumer goods and transportation. Similarly, while half of the novel Nordic innovation companies rely on business service innovation, only one in ten relies on digital meetings as a core innovation activity, while around one in seven companies relies on material technology innovations. The Nordic Innovation Triangle aims to increase the understanding of where different forms of innovations are taking place. The methodology is therefore based on calculating the relative importance of sectors and relative importance of innovations.

The first step is to calculate how prevalent different sectors are among the novel innovation companies of each region. After doing that, an average is calculated for the 26 Nordic regions. Finally, the result for each region is normalized by division with the Nordic average. Innovative focuses of the Nordic innovation

firms are on the same way first calculated for each region (what percentage of the firms rely on each innovation), then the average of all regions is calculated, and regional results are normalized to the average. A tree map hierarchy chart is created based on the normalized values, for sector division of the firms in each region and the innovative focuses of these firms. The charts show the relative focuses of regional innovation firms. If a region, for example, has two leading novel innovation companies in software/IT and one in consumer goods, it will be classified as a regionally important centre for consumer goods sector innovation in the Nordics (since this form of focus is not common among novel innovation firms) while it will be classified as a only moderately important region for software/IT (since many Nordic regions have high percentage of their novel innovation firms in this sector).

In the same way, tree map hierarchy charts are constructed for the relative importance of innovations. If two or more of the top three relative innovative strengths of a region fall under digital innovation (digital meetings, digital infrastructure/platform, or software), the region is designated as being a digitally focused innovation region. If two or more of the three relative innovative strengths are in industrial innovation (manufacturing technology, product technology, or material technology) it is designated as being an industrially focused innovation region. If two of the relative innovative strengths are in service innovation (business services or consumer services) it is designated as being a service focused innovation region. Lastly, those regions where the top three relative innovative strengths are a mix of service, industrial and digital innovation are designated as mixed innovation regions.



While the capital cities of Stockholm, Oslo, Copenhagen, and Helsinki form a Nordic Innovation Triangle, the contribution of the other 22 Nordic regions also needs to be accounted for. The Nordic region has innovative activities in novel companies spread over all major sectors of the economy, and with reliance on various innovative solutions.

This new way of mapping the sectors in which novel innovative firms are engaged in, and the core innovations that they rely on, gives a deeper understanding of the regional innovative patterns of the Nordics. While the capital cities of Stockholm, Oslo, Copenhagen, and Helsinki form a Nordic Innovation Triangle, the contribution of the other 22 Nordic regions also needs to be accounted for. The Nordic region has innovative activities in novel companies spread over all major sectors of the economy, and with reliance on various innovative solutions. One of the most important contributions of Nordic innovations to the global society is the field of environmental sustainability, and indeed many of the novel innovation firms that contribute to a greener future are based outside the capital regions. Our hope is that the Nordic Innovation Triangle will increase the understanding of, and interest in, the innovative activities of one of the most innovative regions of the world. While it is easy to solely focus on the capital regions, this index shows that innovation occurs through the interplay between densely populated capital regions and the cities in sparsely populated regions with an amplitude of natural resources. Indeed, much of the Nordic innovations paving the way for a more environmentally sustainable economy is formed by companies outside the capital regions. Fostering innovation in less densely populated regions matters for jobs and growth, as well as for the transformation into a more sustainable business ecology.

Stockholm region innovation map



Stockholm is the capital city of Sweden and an innovation centre of global importance. Relative to other Nordic regions, Stockholm has a high concentration of new innovative firms in marketplace/trade. Examples include Memmo, which provides a webpage for distributing personalised video messages from celebrities, and Vembla, a marketplace with a selection of groceries from local retailers delivered to customers. Communication is another strong innovative sector of Stockholm, with firms such as Scapin' which develops a social communications platform, and Koo!, which is an audio based social networking service. Another example is Essity, a global hygiene and health company.

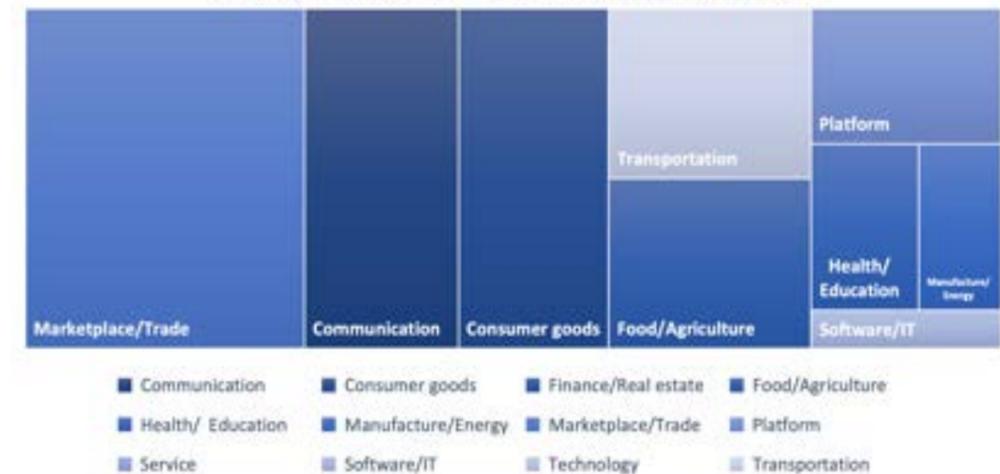
Firms in Stockholm rely heavily, compared to other Nordic regions, on digital meetings as an innovation. One example is Teemyco, an online platform for digital professional meetings, and another is Heja, an app for handling communication between coaches, managers, parents and players. Consumer service innovations is another strength of Stockholm's novel innovative firms, for example, through VOI Technology which offers urban commuters the service of transport with electric scooters and Grace Health, which offers digital health to women. Digital infrastructure/platform innovations are also relatively common among the novel innovation firms of Stockholm, for example, Depict.ai which is developing a

product recommendation engine for e-commerce stores. Overall, Stockholm is an industrially focused innovation region, similar to the other Nordic capital regions.

Table 1 shows the top 20 novel innovation firms of Stockholm, founded the past five years, while table 2 shows the innovation focus of the firms and table 3 gives

a brief description of the firms and their innovative focuses. Overall, the capital region of Sweden has a wide range of sectors in which new innovative firms engage in and a large variation in the innovations which the firms rely on. Many of the novel innovative firms have attracted large amounts of public capital, including VOI Technology and Essity which have attracted investments of more than hundred million euro each. About half the novel innovation firms are smaller, in terms of how many they employ, while the other half are medium-sized.

Stockholm, relative importance of sectors among innovation firms founded past 5 years



Stockholm, relative importance of innovations among innovation firms founded past 5 years

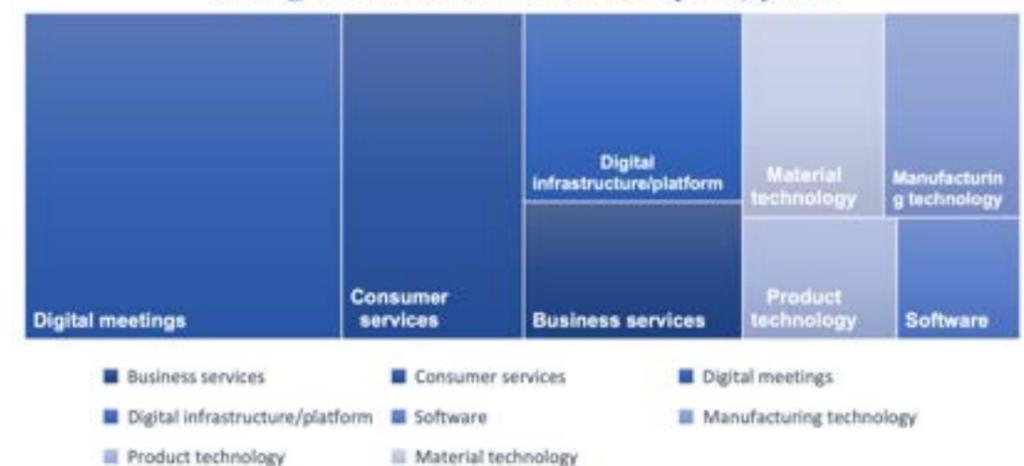


Table 1. Novel innovative firms in Stockholm region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
VOI Technology	251–500	2018	Stockholm	Transportation	306
Essity	10001+	2017	Stockholm	Consumer goods	258
Scapin'	1–10	2021	Stockholm	Communication	2.5
Vembla	11–50	2019	Stockholm	Marketplace/ Trade	2.3
Memmo	51–100	2019	Stockholm	Marketplace/ Trade	18.1
Curb Food	1–10	2020	Stockholm	Food/Agriculture	20
Depict.ai	1–10	2019	Stockholm	Platform	2.5
Mindler	11–50	2018	Stockholm	Health/Education	11.4
Material Exchange	11–50	2017	Stockholm	Platform	2.4
PlateHero	1–10	2020	Stockholm	Marketplace/ Trade	0.3
Koo!	1–10	2018	Stockholm	Communication	0.1
Grace Health	11–50	2017	Stockholm	Health/Education	2.1
Heja	11–50	2018	Stockholm	Communication	5.8
Teemyco	101–250	2019	Stockholm	Communication	3.6
Volta Greentech	1–10	2018	Stockholm	Food/Agriculture	3.7
Embark Studios	51–100	2018	Stockholm	Software/IT	35.3
Sesamy	1–10	2021	Stockholm	Marketplace/ Trade	4.4
H2 Green Steel	11–50	2020	Stockholm	Manufacture/ Energy	90.3
Yabie	51–100	2017	Stockholm	Platform	32.3
Turbotic'	11–50	2020	Stockholm	Software/IT	5.2

Table 2. Innovative focus of novel innovative firms in the Stockholm region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/ platform	Software	Manufacturing technology	Product technology	Material technology
VOI Technology		X					X	
Essity						X	X	X
Scapin'			X	X				
Vembla	X	X		X				
Memmo	X	X	X	X				
Curb Food	X	X		X				
Depict.ai	X			X	X			
Mindler	X	X	X					
Material Exchange	X		X	X				X
PlateHero	X	X		X				
Koo!		X		X	X			
Grace Health		X	X					
Heja	X	X	X	X	X			
Teemyco	X		X	X				
Volta Greentech						X	X	
Embark Studios					X			
Sesamy	X	X		X				
H2 Green Steel						X	X	X
Yabie	X			X				
Turbotic	X			X	X			

Table 3. Descriptions of novel innovative firms in Stockholm region

Name	Description
VOI Technology	VOI Technology owns and manages electric scooters for urban commuters.
Essity	Essity is a global hygiene and health company.
Scapin'	Scapin' develops a social communications platform.
Vembla	Vembla is a marketplace with a selection of groceries from local retailers delivered to customers.
Memmo	memmo.me provides a webpage for offering and distributing personalised video messages from celebrities.
Curb Food	Curb Food is a delivery-first dark kitchen provider.
Depict.ai	Depict.ai is developing a product recommendation engine for e-commerce stores.
Mindler	Therapy sessions online.
Material Exchange	Online database which allows designers, material vendors etc. to collaborate.
PlateHero	A food marketplace that enables users and home cooks to share, sell, buy or donate food in their community.
Koo!	Audio based social networking service that let users record and listen to 1 minute audio clips called Koos.
Grace Health	Digital health clinic for women.
Heja	App for handling communication between coaches, managers, parents and players.
Teemyco	Online-based platform that connects employees online and enables them to conduct meetings online.
Volta Greentech	Providing farmers with seaweed-based feed supplement to reduce methane emissions produced by cattle.
Embark Studios	A games studio, on a mission to blur the line between playing and making.
Sesamy	Provides single purchases and consumption of digital content.
H2 Green Steel	A steel producer based on a fossil-free manufacturing process.
Yabie	POS & payment platform to help customers simplify sales.
Turbotic	Enterprise automation and AI through autonomous enterprise system.

West Sweden region innovation map



West Sweden is where Sweden's second-largest city, Gothenburg, is located. It is a region with a strong manufacturing tradition, which is reflected in manufacturing/energy being a relatively strong innovation sector. Examples of novel innovation firms include Heart Aerospace, which manufactures regional electric airplanes, and Celcibus, which specializes in materials for clean energy solutions. Gothenburg is also an important centre for logistics, which explains why Western Sweden also has relative strengths in transportation. Adnavem is an innovation firm that provides automation of international freight through a SaaS (software as a service) enabled logistics platform. Western Sweden also has strength in finance/real estate, through Cappy which develops a fintech payment platform, and Juni, a banking app and platform for e-commerce and online marketing.

Relative to other Nordic regions, Western Sweden has innovative strengths in manufacturing technology, material technology, and product technology. It is a heavily industrially focused innovation region. Several local firms combine innovations in all three fields. One example is Liquid Wind, which converts carbon dioxide and wind energy to liquid fuel, while another is Mycorena, which develops fungi-based vegan protein. These companies exemplify how Western Sweden's innovative strengths are important in the transition towards a more environmentally sustainable economy.

Table 4 shows the top 15 novel innovation firms of Western Sweden formed during the last five years, while table 5 shows the innovation focus of the firms, and table 6 gives a brief description of the firms and their innovative focuses. All 15 firms have attracted external public financing, with Heart Aerospace, Juni,

Hiber, and OnDosis having attracted more than ten million euro each. The typical leading innovation firm of Western Sweden is a small enterprise with few employees, but there are also several medium-sized ones, including Annotell, which develops safety perception for autonomous mobility.

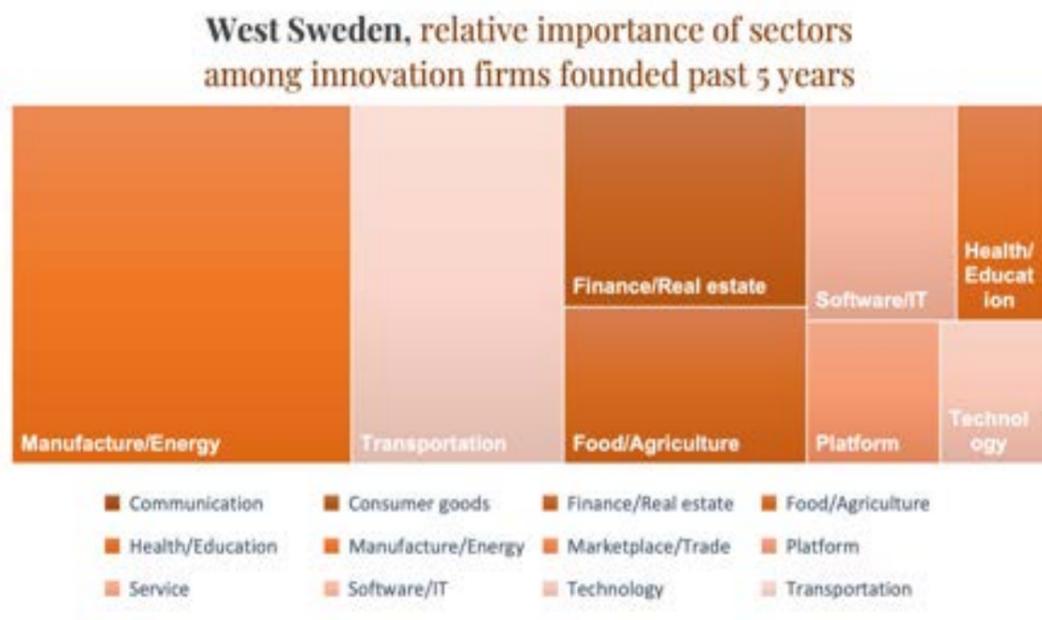
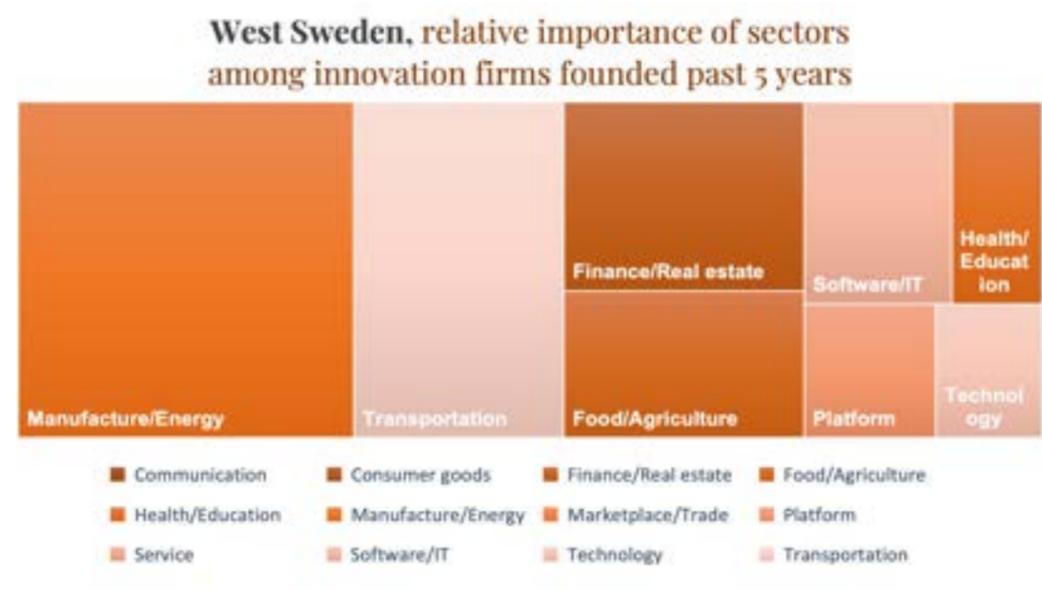


Table 4. Novel innovative firms in West Sweden region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Heart Aerospace	1-10	2018	Göteborg	Manufacture/Energy	32.1
Juni	1-10	2020	Göteborg	Finance/Real estate	20.6
Hiber	11-50	2017	Göteborg	Software/IT	16.8
Annotell	51-100	2018	Göteborg	Platform	7
Mycorena	1-10	2017	Göteborg	Food/Agriculture	1.8
OnDosis	11-50	2017	Mölnadal	Health/Education	12.6
Insert Coin	11-50	2017	Göteborg	Software/IT	2.5
Adnavem	11-50	2017	Göteborg	Transportation	3.4
Cappy	1-10	2020	Göteborg	Finance/Real estate	0.6
Substly	1-10	2018	Göteborg	Software/IT	0.3
Celcibus	1-10	2019	Göteborg	Manufacture/Energy	0.4
Liquid Wind	1-10	2017	Göteborg	Manufacture/Energy	0.9
EmbeDL	1-10	2018	Göteborg	Software/IT	1.1
Profundus Imaging	1-10	2019	Göteborg	Technology	0.8
Freemelt	1-10	2017	Mölnadal	Manufacture/Energy	1.4

Table 5. Innovative focus of novel innovative firms in West Sweden region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Heart Aerospace						X	X	X
Juni	X			X	X			
Hiber		X	X	X	X			
Annotell	X			X				
Mycorena						X	X	X
OnDosis						X	X	X
Insert Coin	X			X	X			
Adnavem	X			X	X			
Cappy	X			X	X			
Substly	X				X			
Celcibus						X	X	X
Liquid Wind						X	X	X
EmbeDL					X			
Profundus Imaging						X	X	
Freemelt						X	X	X

Table 6. Descriptions of novel innovative firms in West Sweden region

Name	Description
Heart Aerospace	A Swedish startup making electric regional airplanes.
Juni	Develops a banking app and platform for e-commerce and online marketing entrepreneurs.
Hiber	A social gaming platform that allows gamers to create, play together and share their content.
Annotell	Data platform used to make safe perception for autonomous mobility possible.
Mycorena	Production of fungi-based, next-generation vegan protein.
OnDosis	Delivers individualized dosing of oral medicines formulated as micro units.
Insert Coin	A cloud-based API for gamifying digital products, with the aim of increasing user retention and engagement.
Adnavem	Provides automation of international freight through SaaS enabled logistics platform.
Cappy	Fintech payment platform.
Substly	A software that provides subscription-based services for managing and benchmarking.
Celcibus	Innovation company with expertise in materials for clean energy solutions.
Liquid Wind	Converts carbon dioxide (CO2) and wind energy to liquid fuel.
EmbeDL	A software company based in Gothenburg.
Profundus Imaging	Producer of an innovative camera used for earlier diagnosis of retina-related diseases.
Freemelt	A Mölndal based 3D-printing company.

South Sweden region innovation map



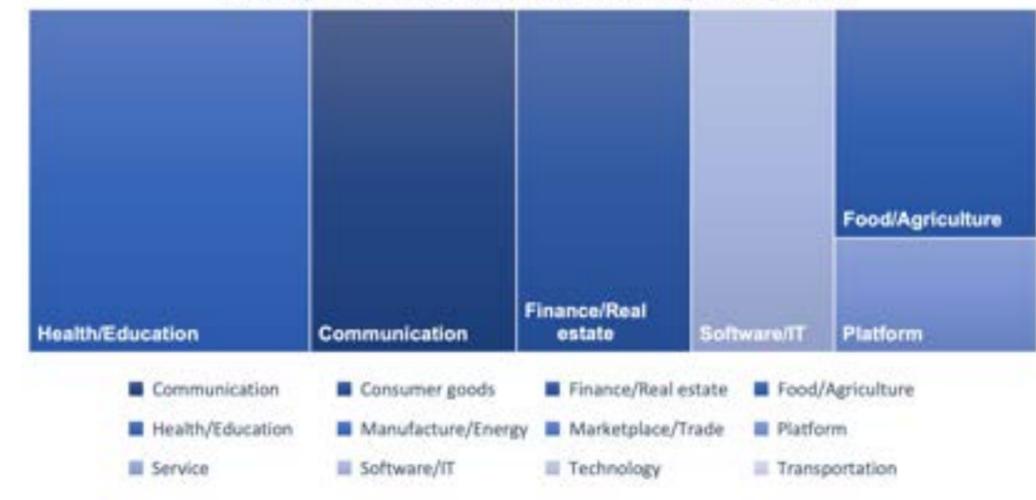
South Sweden is where Sweden's third-largest city, Malmö, is located. The region also has several other important innovative centres, such as the university city of Lund, as well as Helsingborg and Hässleholm. The novel innovation firms of Southern Sweden are, relative to other Nordic regions, mainly focused on the sectors of health/education, communication, and finance/real estate. Examples of innovative firms include Mathquizily, focused on personalized math tests, and Kind, a health communication technology developer. Malmö based Panion develops a community-building tool that helps organizations facilitate more social interactions amongst its members, while Meme.com, which is based in Hälsingborg, is a platform dedicated to meme markets and trend exploration.

The innovation firms of Southern Sweden are compared to other Nordic regions strongly focused on innovation in digital meetings, consumer services, and software development. The innovative focus of Southern Sweden's novel innovation firms is, therefore, like that of the capital region of Stockholm focused on digital innovation, and quite different from Western Sweden, which is more industrially focused. A key advantage of Southern Sweden is the proximity to the Danish capital region of Copenhagen, which is connected to Malmö by the Öresund Bridge, and the innovation focus of Southern Sweden is indeed also similar to that of the Copenhagen region.

Table 7 shows the top 15 novel innovation firms of Southern Sweden formed during the last five years, while table 8 shows the innovation focus of the firms, and table 9 gives a brief description of the firms and their innovative focuses. All

except one of the top 15 novel innovation firms of the Southern Sweden region have attracted external public financing. Docly International, a developer, and provider of digital health, stand out by having attracted more than ten million euro in investments. While some of the novel innovation firms are smaller in terms of employment, there are also several which are medium-sized.

South Sweden, relative importance of sectors among innovation firms founded past 5 years



South Sweden, relative importance of sectors among innovation firms founded past 5 years



Table 7. Novel innovative firms in South Sweden region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Panion	1–10	2018	Malmö	Communication	0.5
Meme.com	1–10	2021	Hälsingborg	Communication	4.3
Debricked	11–50	2018	Malmö	Software/IT	4
Mathquizily	1–10	2020	Hässleholm	Health/Education	
Kind	11–50	2018	Malmö	Health/Education	3.1
Occtoo	11–50	2019	Malmö	Platform	2
Sproud	11–50	2018	Malmö	Food/Agriculture	5.7
Donna	1–10	2018	Malmö	Software/IT	2.2
Healo	11–50	2017	Lund	Health/Education	1.7
Docly International	51–100	2018	Malmö	Health/Education	15.8
Coherence	1–10	2018	Malmö	Software/IT	2.2
Norban	11–50	2019	Malmö	Finance/Real estate	1.8
Plexian	11–50	2017	Malmö	Finance/Real estate	2.8
Sanctify Financial Technologies	11–50	2018	Lund	Software/IT	0.8
Medarca	1–10	2019	Malmö	Software/IT	1

Table 8. Innovative focus of novel innovative firms in South Sweden region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Panion	X	X	X	X	X			
Meme.com	X			X				
Debricked	X			X	X			
Mathquizily	X	X			X			
Kind	X	X	X	X	X			
Occtoo	X			X				
Sproud						X	X	X
Donna	X				X			
Healo	X	X	X	X	X			
Docly International	X	X	X	X	X			
Coherence	X			X	X			
Norban		X						
Plexian	X	X		X	X			
Sanctify Financial Technologies					X			
Medarca					X			

Table 9. Descriptions of novel innovative firms in South Sweden region

Name	Description
Panion	A community-building tool that helps organizations facilitate more social interactions amongst its members.
Meme.com	A platform dedicated to meme markets and trend exploration.
Debricked	Provides a SaaS-product that allows companies to develop software using open source.
Mathquizily	Personalized math tests.
Kind	Health communication technology – send messages, share knowledge and prepare clients.
Occtoo	Experience data platform built to understand and improve customer experience.
Sproud	A maker of a range of plant-based milk through a proprietary blend of protein from yellow split peas.
Donna	AI-Powered legal drafting tool for lawyers.
Healo	Digital health therapy, and compliance, system.
Docly International	Developer and provider of digital health.
Coherence	Developing framework for game developers.
Norban	A real estate company helping people sell their homes by themselves.
Plexian	Fintech company that builds mobile wallets and digital loyalty programs.
Sanctify Financial Technologies	Develops software for financial- and sustainability analysis, with AI technology.
Medarca	Develops software for drug management solution for elderly.

East Middle Sweden region innovation map



In the East Middle Sweden region, novel innovation firms can be found spread over medium-sized cities such as Uppsala, Örebro, Linköping, and Norrköping. Transportation, manufacture/energy, and marketplace/trade are the sectors that are relatively important for the novel innovative firms of this part of Sweden. Examples of novel innovation firms include Ozon Rides, an e-scooters share riding company in Uppsala, Ligna Energy, which is a Norrköping based developer of bio-based batteries and energy storage solutions, and Housecar in Uppsala which operates a marketplace for renting motorhomes.

Firm innovations are, relative to other Nordic regions, particularly focused on material technology, manufacturing technology, and consumer services in the East Middle Sweden region. This is similar to the innovative focus of the West Sweden region. Overall, East Middle Sweden is an industrially focused innovation region.

Table 10 shows the top 15 novel innovation firms of East Middle Sweden formed during the last five years, while table 11 shows the innovation focus of the firms, and table 12 gives a brief description of the firms and their innovative focuses. All the top 10 novel innovation firms of the East Middle Sweden region have attracted external public financing, typically below or about one million euro. ROI Media, which rents websites to small businesses, stand out by having attracted above eight million euro in external financing. Half of the novel innovation firms are smaller in terms of employees, while the other half are medium-sized.

East Middle Sweden, relative importance of sectors among innovation firms founded past 5 years



East Middle Sweden, relative importance of sectors among innovation firms founded past 5 years



Table 10. Novel innovative firms in East Middle Sweden region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Graphmatech	11-50	2017	Norrköping	Technology	1.7
Ligna Energy	1-10	2017	Norrköping	Manufacture/ Energy	1.7
CloudBackend	1-10	2018	Linköping	Platform	1.7
ROI Media	11-50	2017	Bromma	Software/IT	8.4
Peafowl Solar Power	1-10	2018	Uppsala	Manufacture /Energy	0.5
Ozon Rides	11-50	2018	Uppsala	Transportation	0.2
Housecar	1-10	2018	Uppsala	Marketplace/ Trade	0.5
XIOS/3	1-10	2018	Linköping	Software/IT	0.3
Youcal	11-50	2017	Örebro	Platform	0.9
Prevet	11-50	2017	Uppsala	Software/IT	0.3

Table 11. Innovative focus of novel innovative firms in East Middle Sweden region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/ platform	Software	Manufacturing technology	Product technology	Material technology
Graphmatech						X		X
Ligna Energy						X	X	X
CloudBackend	X			X	X			
ROI Media	X			X				
Peafowl Solar Power						X	X	X
Ozon Rides		X					X	
Housecar		X		X				
XIOS/3					X			
Youcal	X	X		X	X			
Prevet	X	X	X	X	X			

Table 12. Descriptions of novel innovative firms in East Middle Sweden region

Name	Description
Graphmatech	A Swedish materials technology startup company.
Ligna Energy	Developer of bio-based batteries and energy storage solutions.
CloudBackend	Develops database platform as a service (dbPaaS).
ROI Media	Rents websites to small businesses.
Peafowl Solar Power	Develops transparent and affordable solar cells.
Ozon Rides	E-scooters share riding company.
Housecar	Operates a marketplace for renting motorhomes.
XIOS/3	Enables standardization of open source components into reusable building blocks.
Youcal	PaaS service-industry platform with payments, escrow and zero-day settlement.
Prevet	Developing a digital tool for communication between pet owners and veterinarians.

Småland and the islands region innovation map

The Småland and the islands region has novel innovation firms spread out across several cities, such as Jönköping, Växjö, Kalmar, and Bodafors. This Swedish region, where IKEA's founder Ingvar Kamprad originated from, has, relative to other Nordic regions, focus on transportation, health/education, and food/agriculture among novel innovation firms. Examples of such firms include Tenancy Hungary, an automobile leasing agency in Bodafors, Migränhjälpen in Jönköping, which provides digital health services for migraine, and Cerve also in Jönköping, which is building an ordering platform for the foodservice industry.

Several novel innovation firms of the Småland and island region are active in the software/IT sector. This is also the most common sector among innovation firms across the Nordics. Firm innovations of the region are relative to other parts of the Nordics particularly focused on digital meetings, software, and business services. Overall, Småland and island is a region with a digital innovation focus.

Table 13 shows the top 15 novel innovation firms of Småland and öarna region, formed during the last five years, while table 14 shows the innovation focus of the firms and table 15 gives a brief description of the firms

and their innovative focuses. The novel innovation firms of this region are all smaller in terms of employees. While some have attracted external public financing, most have not. Migränhjälpen stand out by having attracted above one and a half million euro in external financing.

Småland and islands, relative importance of sectors among innovation firms founded past 5 years



Småland and islands, relative importance of innovations among innovation firms founded past 5 years

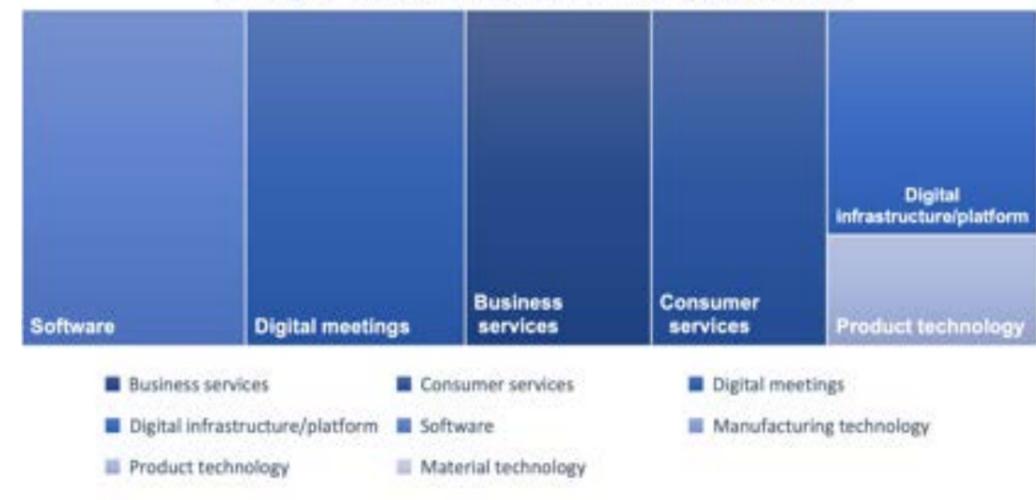


Table 13. Novel innovative firms in Småland and the islands region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Cerve	1-10	2019	Jönköping	Food/Agriculture	0.7
Migränhjälpen	1-10	2019	Jönköping	Health/Education	1.6
Alertix	1-10	2017	Kalmar	Health/Education	0.4
Adgrabber	1-10	2018	Jönköping	Communication	0.8
Tenancy Hungary	1-10	2017	Bodafors	Transportation	
PersiFund	1-10	2021	Jönköping	Finance/Real estate	
Colix Systems	1-10	2017	Växjö	Software/IT	
Neonic	1-10	2018	Jönköping	Software/IT	
Jemlo Software	1-10	2018	Växjö	Software/IT	
Iconova Utveckling	1-10	2019	Åryd	Software/IT	

Table 14. Innovative focus of novel innovative firms in Småland and the islands region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Cerve	X			X	X			
Migränhjälpen		X	X					
Alertix							X	
Adgrabber	X							
Tenancy Hungary	X	X						
PersiFund	X			X	X			
Colix Systems				X	X			
Neonic	X							
Jemlo Software					X			
Iconova Utveckling					X			

Table 15. Descriptions of novel innovative firms in Småland and the islands region

Name	Description
Cerve	Cerve is building an ordering platform for the foodservice industry.
Migränhjälpen	Providing digital health services for migraine.
Alertix	Commercializes discoveries from Swedish veterinary medical biotech research.
Adgrabber	Helps clients procure both marketing and media purchases.
Tenancy Hungary	An automobile leasing offerings agency that specializes in the rental contracting services.
PersiFund	Fintech company building a new solution for the refund process for each purchase.
Colix Systems	Develops and sells modern web-based systems.
Neonic	IT consulting company.
Jemlo Software	Software development company.
Iconova Utveckling	An information technology company that primarily specializes in computer programming.

North Middle Sweden region innovation map



North Middle Sweden is a region where novel innovation firms are found in several cities, including Gävle, Karlstad, Falun, Borlänge, and Arvika. Compared to other Nordic regions, the novel innovation firms of North Middle Sweden are particularly concentrated in services, platform and manufacture/energy. Platform is a relatively new sector, based on creating digital platforms which offer a service. An example is Zynapp in Karlstad, a personal platform for collecting and sharing digital assets. MyVi Datasamordning in Borlänge is an example of a local innovative service firm, which is a technology consulting firm, providing sales support and other services. Altris in Gävle operates in the field of manufacture/energy, where it develops a new sodium-ion battery cathode material that is made of sustainable materials.

Firm innovations of the North Middle Sweden region are relative to other Nordic regions, particularly strong in digital meetings, consumer services, and business services. It is the only Swedish region where consumer, as well as business services, are among the top three most important innovations, relative to the Nordic average. The Middle Norrland region to the north has a similar focus among its novel innovation firms, but instead of consumer services, it is strong in software innovation. Overall, North Middle Sweden is a service-focused innovation region.

Table 16 shows the top 15 novel innovation firms of North Middle Sweden formed during the last five years, while table 17 shows the innovation focus of the firms, and table 18 gives a brief description of the firms and their innovative focuses.

Most of the novel innovation firms of this region are smaller in terms of how many people they employ. The exceptions are Zynapp in Karlstad and Westra Security Group in Arvika, a physical and IT security firm. Zynapp and Westra are medium-sized employers. The novel innovation firms of North Middle Sweden typically do not have external public financing. Zynapp stand out by having attracted six million euro in investments, while Altris has attracted close to two million euro.

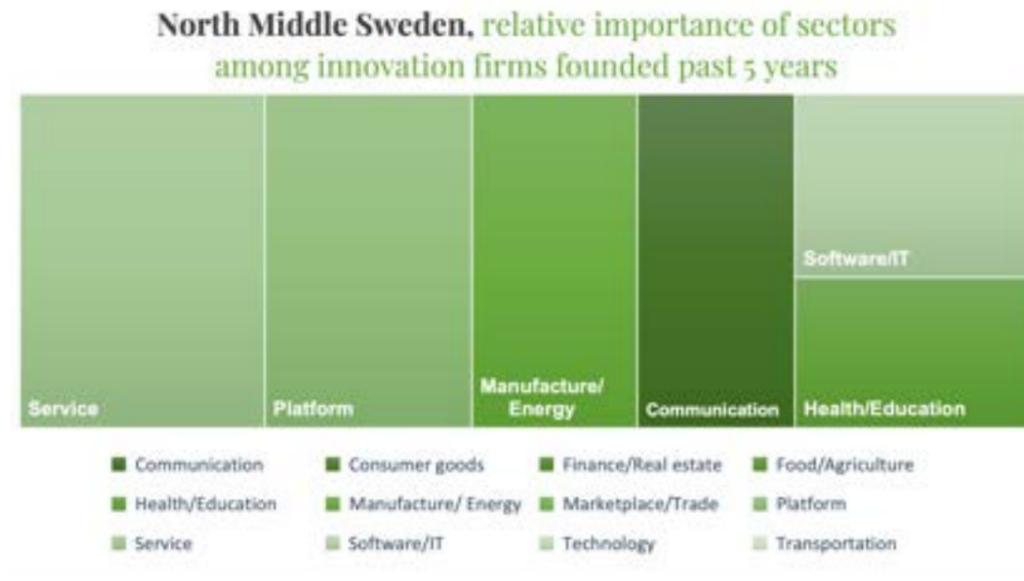


Table 16. Novel innovative firms in North Middle Sweden region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Altris	1-10	2017	Gävle	Manufacture/ Energy	1.8
Preactlys	1-10	2019	Karlstad	Software/IT	0.2
Zynapp	11-50	2018	Karlstad	Platform	6
Coderr	1-10	2017	Falun	Software/IT	
Axessa	1-10	2017	Falun	Software/IT	
MyVi Datasamordning	1-10	2017	Borlänge	Service	
Webbo	1-10	2018	Gävle	Communication	
Westra Security Group	11-50	2019	Arvika	Service	
Digital Division	1-10	2018	Karlstad	Health/Education	
TP Digital	1-10	2017	Gävle	Platform	

Table 17. Innovative focus of novel innovative firms in North Middle Sweden region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Altris						X	X	X
Preactlys	X		X	X	X			
Zynapp		X		X	X			
Coderr	X	X		X	X			
Axessa	X			X				
MyVi	X							
Webbo	X							
Westra Security Group	X			X	X		X	
Digital Division	X	X	X					
TP Digital	X	X		X				

Table 18. Descriptions of novel innovative firms in North Middle Sweden region

Name	Description
Altris	Develops a new sodium-ion battery cathode material that is made of sustainable materials.
Preactlys	Develops HR SaaS tools helping other companies setting up a digital work environment.
Zynapp	Personal platform for collecting and sharing digital assets.
Coderr	Has developed a cloud-based service for automatic check for malfunctioning in applications.
Axessa	A cloud service provider.
MyVi Datasamordning	Technology consulting firm, providing sales support and other services.
Webbo	Provides service-oriented web agency and digital marketing.
Westra Security Group	IT security, physical security and monitoring and management.
Digital Division	Digital agency that holds courses and lectures in digital marketing.
TP Digital	Digital distribution, offers music aggregator, distributor, publisher and YouTube network.

Middle Norrland region innovation map

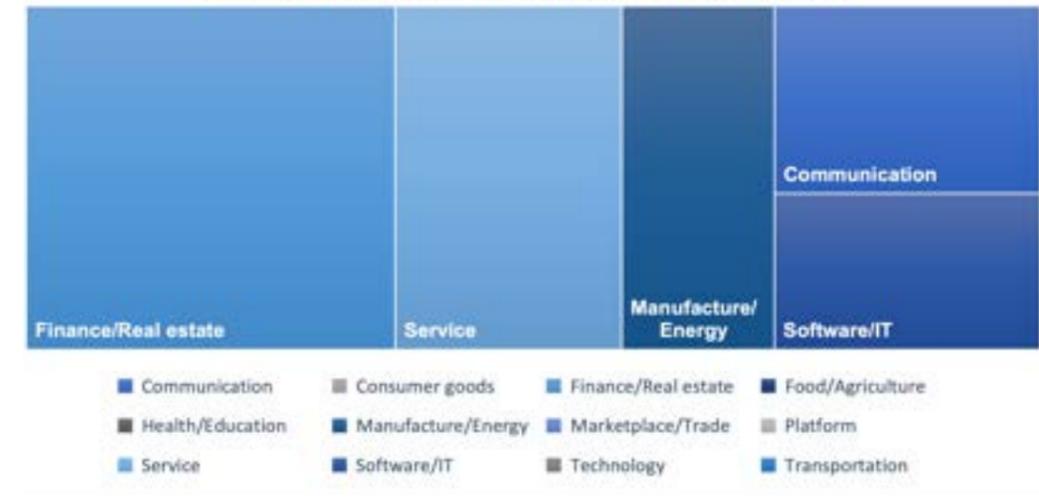
In the Middle Norrland region of Sweden, novel innovation firms can be found in cities such as Östersund, Sundsvall, Sollefteå, Örnsköldsvik, Näsåker, and Åre. In comparison with other Nordic regions, the novel innovation firms of this region are particularly focused on the sectors of finance/real estate, service, and manufacture/energy. Examples include Qredit in Sollefteå, a developer of fintech and blockchain, and PodRide in Östersund, which has developed a four-wheel e-bike, that looks like a car, for all-weather transport. There are also software development firms, such as Sundsvall-based Indivd Ai, which has developed a patent-pending AI solution for mapping the patterns of store visitors.

Firm innovations of this region are particularly focused on software, digital meetings and business services. This is in fact the same three focuses that can be found in the Småland and the islands region, also in Sweden. Overall, Middle Norrland is, like the Upper Norrland region, a digitally focused innovation region.

Table 19 shows the top 15 novel innovation firms of the Middle Norrland region, formed during the past five years, while table 20 shows the innovation focus of the firms, and table 21 gives a brief description of the firms and their innovative focuses. The novel innovation firms of this region

are all smaller in terms of employees. The exception is Streamify in Östersund, a larger communications company focused on enabling users to broadcast live and earn money by charging the viewer to do live shopping. Novel innovation firms in the Middle Norrland region typically do not have external public financing. Carcare Systems, a developer of an automated process tool within the automotive market in Östersund, however, stand out by having attracted nearly one million euro in external financing.

Middle Norrland, relative importance of sectors among innovation firms founded past 5 years



Middle Norrland, relative importance of sectors among innovation firms founded past 5 years

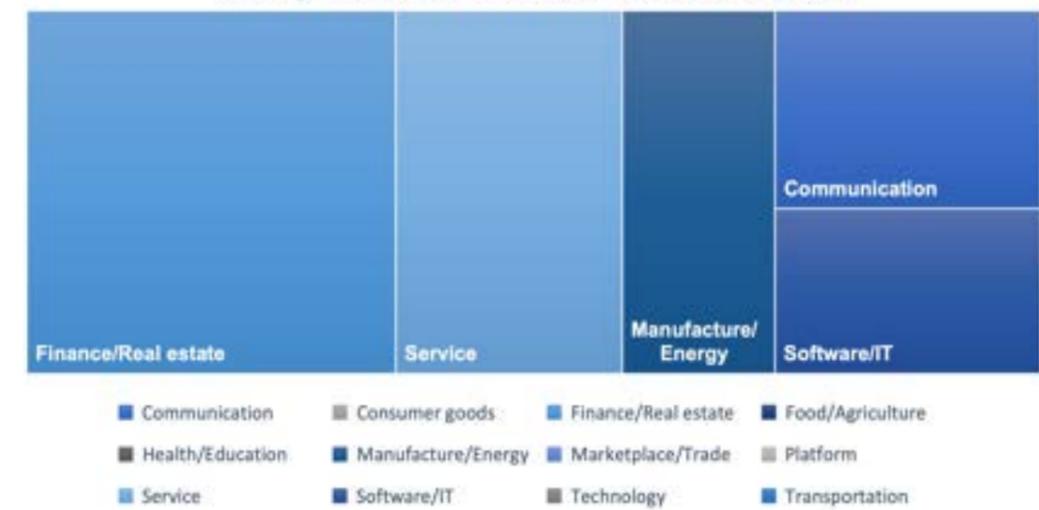


Table 19. Novel innovative firms in Middle Norrland region, founded within past 5 years

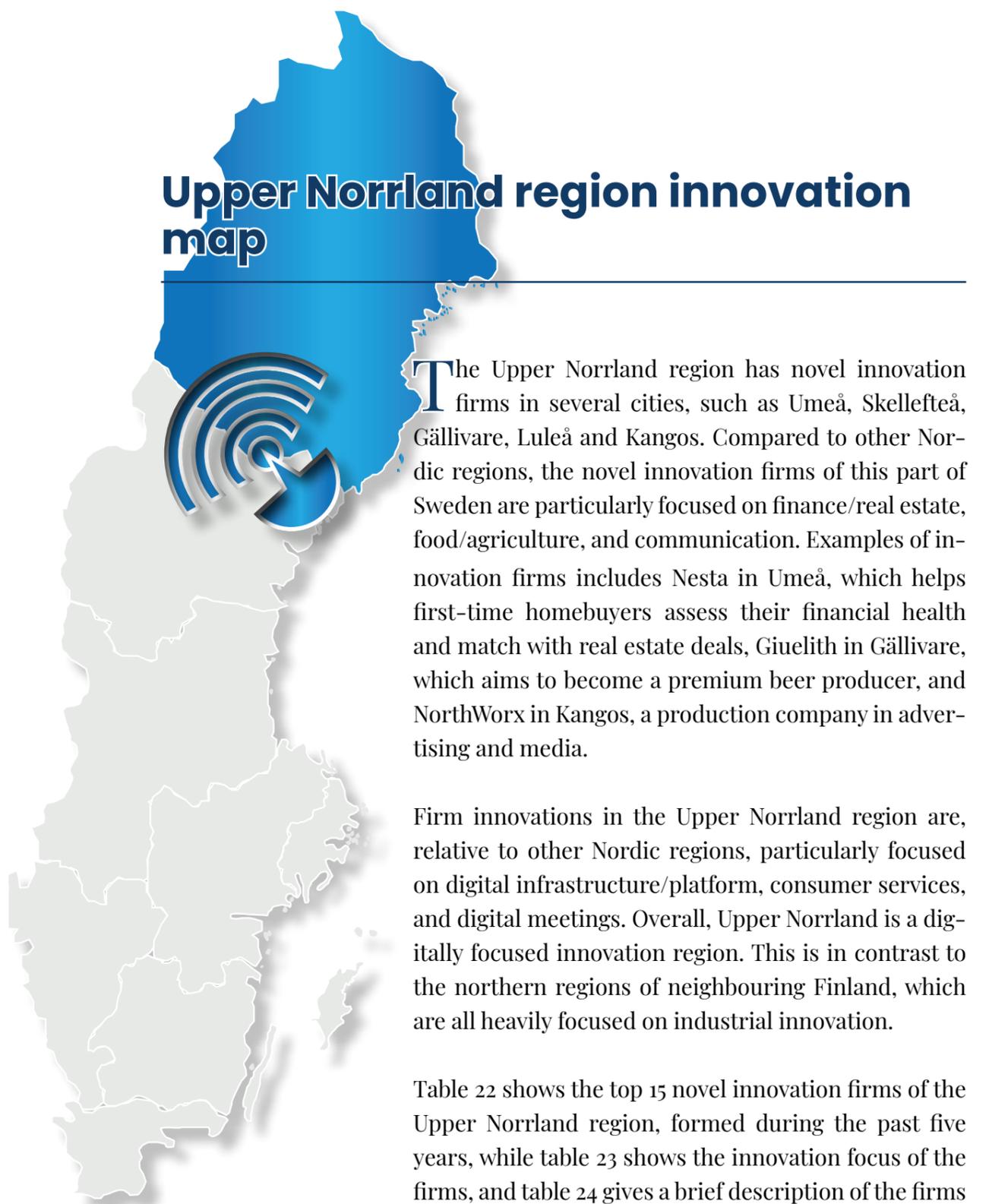
Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Carcare Systems Europe	1-10	2019	Östersund	Software/IT	0.9
Indivd Ai	1-10	2018	Sundsvall	Software/IT	0.3
Qredit	1-10	2020	Sollefteå	Finance/Real estate	
Streamify	101-250	2017	Östersund	Communication	
Berglund & Näsström Revision	1-10	2020	Örnsköldsvik	Service	
2 economists	1-10	2020	Örnsköldsvik	Service	
PodRide	1-10	2017	Östersund	Manufacture/Energy	
Willems Ventures	1-10	2020	Näsåker	Finance/Real estate	0.4
E14 Invest	1-10	2017	Åre	Finance/Real estate	
Gradin IT	1-10	2018	Sundsvall	Software/IT	

Table 20. Innovative focus of novel innovative firms in Middle Norrland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Carcare Systems Europe					X		X	
Indivd Ai					X			
Qredit					X			
Streamify	X	X	X	X	X			
Berglund & Näsström Revision	X							
2 economists	X							
PodRide						X	X	X
Willems Ventures	X							
E14 Invest	X							
Gradin IT				X	X			

Table 21. Descriptions of novel innovative firms in Middle Norrland region	
Name	Description
Carcare Systems Europe	A developer of an automated process tool within the automotive market.
Indivd Ai	A patent-pending AI solution, for mapping the behavior of store visitors.
Qredit	Developer of fintech and blockchain.
Streamify	Enables users to broadcast live and earn money by charging the viewer to do liveshopping.
Berglund & Näsström Revision	A local auditing company.
2 economists	A local auditing company.
PodRide	PodRide is an all weather, four wheel e-bike, that looks like a car.
Willems Ventures	A company that creates opportunities for investors.
E14 Invest	A co-investment company that invests in scalable growth companies.
Gradin IT	A software development and bid data architecture company, focused on cloud services.

Upper Norrland region innovation map



The Upper Norrland region has novel innovation firms in several cities, such as Umeå, Skellefteå, Gällivare, Luleå and Kangos. Compared to other Nordic regions, the novel innovation firms of this part of Sweden are particularly focused on finance/real estate, food/agriculture, and communication. Examples of innovation firms includes Nesta in Umeå, which helps first-time homebuyers assess their financial health and match with real estate deals, Giuelith in Gällivare, which aims to become a premium beer producer, and NorthWorx in Kangos, a production company in advertising and media.

Firm innovations in the Upper Norrland region are, relative to other Nordic regions, particularly focused on digital infrastructure/platform, consumer services, and digital meetings. Overall, Upper Norrland is a digitally focused innovation region. This is in contrast to the northern regions of neighbouring Finland, which are all heavily focused on industrial innovation.

Table 22 shows the top 15 novel innovation firms of the Upper Norrland region, formed during the past five years, while table 23 shows the innovation focus of the firms, and table 24 gives a brief description of the firms and their innovative focuses. The novel innovation firms of the region are typically smaller in size and do not have significant external public financing. Hashmonster in Luleå, a cloud mining company, is however medium-sized. Mobilaris Industrial Solutions in Luleå, which offers industrial solution services to mining and civil engineering firms, is also more prominent in terms of employees compared to the average novel innovation firm of the Upper Norrland region.

Upper Norrland, relative importance of sectors among innovation firms founded past 5 years



Upper Norrland, relative importance of sectors among innovation firms founded past 5 years



Table 22. Novel innovative firms in Upper Norrland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Nesta	1-10	2017	Umeå	Finance/Real estate	
Vorto Gaming	1-10	2020	Skellefteå	Platform	
C-Phrase	1-10	2018	Umeå	Software/IT	
NorthWorx	1-10	2018	Kangos	Communication	0.3
Giuelith	1-10	2018	Gällivare	Food/Agriculture	
Hashmonster	101-250	2018	Luleå	Software/IT	
Mobilaris Industrial Solutions	11-50	2017	Luleå	Service	
Loogup	1-10	2017	Umeå	Finance/Real estate	
Memotus	1-10	2018	Umeå	Health/Education	
Mowida	1-10	2017	Umeå	Finance/Real estate	

Table 23. Innovative focus of novel innovative firms in Upper Norrland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Nesta		X		X				
Vorto Gaming				X	X			
C-Phrase					X			
NorthWorx	X							
Giuelith							X	
Hashmonster				X	X			
Mobilaris Industrial Solutions	X							
Loogup	X	X		X	X			
Memotus		X	X	X				
Mowida				X				

Table 24. Descriptions of novel innovative firms in Upper Norrland region

Name	Description
Nest	Helps first-time homebuyers assess their financial health and match with real estate deals in the market.
Vorto Gaming	A hub for blockchain-enabled play-to-earn games.
C-Phrase	Offers C-Phrase, a system for natural language querying and updates of databases.
NorthWorx	A production company in advertising and media with the roots in Norrland.
Giuelith	Aims to become a premium beer producer.
Hashmonster	A cloud mining company.
Mobilaris Industrial Solutions	Offers services to industries such as mining and civil engineering, focus on industrial solutions.
Loogup	An artificial intelligence real estate platform.
Memotus	Offers service to athletes who have injuries and want advice from doctors and physiotherapists.
Mowida	Develops a digital platform for owners of small properties.

Copenhagen region innovation map



Copenhagen is the Danish capital region, closely connected to Sweden's third-largest city Malmö by the Öresund bridge. Copenhagen is a leading European innovation centre. Relative to other Nordic regions, the novel innovation firms of the region are particularly focused on the platform sector. Platform is a relatively new business sector, where the key concept is to set up online platforms to facilitate a particular service. One

example of such innovative firms in Copenhagen is HelloFlow, which allows companies to create a fully digital client onboarding setup without writing code, while another is Worksome, an enterprise platform that connects companies with independent workers.

Copenhagen also is the home of Noie, a consumer goods company that offers cosmetics and skincare products. Few Nordic novel innovation firms are engaged in the consumer goods sector, and Copenhagen stand out as having particular focus on this sector. Another strength of Copenhagen is in the health sector, for example, ADCendo, a biotech company dedicated to developing new anti-cancer drugs.

The innovative strengths of Copenhagen's novel innovation firms are, relative to other Nordic regions, digital meetings, digital infrastructure/platform, and business services. This is quite like the innovative strengths of other Nordic capital regions. Overall, Copenhagen is a digitally focused innovation region – the same as the other Nordic capital regions.

Table 25 shows the top 20 novel innovation firms of Copenhagen formed during the past five years, while table 26 shows the innovation focus of the firms, and table 27 gives a brief description of the firms and their innovative focuses. All the

top 20 innovation firms have attracted external public financing, with ADCendo, and SNIPR Biome, a discovery stage biotech company, standing out by having attracted over 50 million euro in financing. The firms are mixed in size of employment, with some being small and others medium-sized.

Copenhagen, relative importance of sectors among innovation firms founded past 5 years



Copenhagen, relative importance of sectors among innovation firms founded past 5 years



Table 25. Novel innovative firms in Copenhagen region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
HelloFlow	11-50	2020	Copenhagen	Platform	2.8
Dreamdata	1-10	2017	Copenhagen	Platform	46.4
Worksome	11-50	2017	Copenhagen	Platform	16
Superb	51-100	2017	Copenhagen	Food/Agriculture	13.5
Noie	11-50	2018	Copenhagen	Consumer goods	10.1
Butter	11-50	2020	Copenhagen	Platform	2.7
Podimo	101-250	2019	Copenhagen	Platform	31.2
GamerzClass	11-50	2019	Copenhagen	Platform	3.6
ADCendo	1-10	2017	Copenhagen	Health/Education	53.4
Layerise	1-10	2019	Copenhagen	Software/IT	4
Monta	11-50	2020	Copenhagen	Platform	5
Responsibly	1-10	2021	Copenhagen	Platform	1.7
Abzu	11-50	2018	Copenhagen	Software/IT	8
Good Monday	1-10	2018	Copenhagen	Platform	5.3
Nordsense	11-50	2017	Copenhagen	Platform	10.6
WasteHero	11-50	2017	Copenhagen	Technology	2.3
Dreamdata	11-50	2018	Copenhagen	Platform	4.1
Female Invest	1-10	2019	Copenhagen	Health/Education	1.3
SNIPR Biome	11-50	2017	Copenhagen	Health/Education	50.8
Likvido	11-50	2018	Copenhagen	Platform	3.2

Table 26. Innovative focus of novel innovative firms in Copenhagen region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
HelloFlow	X			X	X			
Dreamdata	X			X				
Worksome	X		X	X				
Superb	X			X				
Noie							X	
Butter	X		X	X				
Podimo	X	X	X	X	X			
GamerzClass	X	X	X	X	X			
ADCendo							X	
Layerise	X	X			X			
Monta	X	X		X			X	
Responsibly	X			X				
Abzu					X			
Good Monday	X			X	X			
Nordsense	X			X	X			
WasteHero	X			X	X		X	
Dreamdata	X			X				
Female Invest		X		X	X			
SNIPR Biome							X	
Likvido	X			X				

Table 27. Descriptions of novel innovative firms in Copenhagen region

Name	Description
HelloFlow	Allows companies to create a fully digital client onboarding setup without writing code.
Dreamdata	A business to business revenue attribution platform.
Worksome	Enterprise platform that connects companies with independent workers.
Superb	Superb introduces Guest Experience Management, an all-in-one platform for restaurateurs.
Noie	A consumer goods company that offers cosmetics and skincare products.
Butter	A video platform for business meetings and workshops.
Podimo	An open podcast platform that offers a subscription service for creators.
GamerzClass	Video gaming platform, offers personalized recommendations to viewers and subscription revenue to creators.
ADCendo	A biotech company dedicated to developing new types of anti-cancer drugs.
Layerise	A product assistant interactive, for teaching customers how to use new products.
Monta	Forecasts the availability of renewable energy and manages your charging to reduce CO2 emission.
Responsibly	Provides a one-stop-shop for supplier data across a wide variety of data providers
Abzu	Developed the AI Qlattice, which accelerates analysis through transparent models.
Good Monday	The Good Monday platform allows access to a personal dashboard for office management.
Nordsense	A SaaS-based smart waste management platform that helps with the waste collection processes.
WasteHero	WasteHero devices monitor activity, bin fullness and temperature, to identify waste generation patterns.
Dreamdata	A business to business revenue attribution platform.
Female Invest	A subscription-based e-learning platform focused on educating women about finance.
SNIPR Biome	A discovery stage biotech company intended to revolutionize the treatment of microbial diseases.
Likvido	Automates accounts payables and receivables for small companies.



The Sjælland region of Denmark has innovation firms spread across several cities, such as Nykøbing Falster, Roskilde, Vesterborg, Korsør and Viby. Relative to other Nordic regions, the novel innovation firms of Sjælland are particularly focused on communication, service, and marketplace/trade. Examples include Mailforge in Korsør, which offers an e-mail marketing platform; AmaZix in Roskilde which offers consultancy for blockchain businesses;

and Watertrade, also in Roskilde, which has developed an online trading platform for CO2 bottles in the Nordic market.

Compared to other Nordic regions, the innovations of novel innovation firms in the Sjælland region are particularly focused on business services, digital infrastructure/platform, and software. This is quite like the Copenhagen capital region, except that Sjælland's innovation firms has more focus on software innovation while Copenhagen has more focus on digital meetings. Overall, Sjælland is a mixed innovation region.

Table 28 shows the top 15 novel innovation firms of the Sjælland region, formed during the past five years, while table 29 shows the innovation focus of the firms, and table 30 gives a brief description of the firms and their innovative focuses. The typical innovation firm in the region is smaller in size and has received no or limited external public financing. The exception is AmaZix in Roskilde, which

is a medium-sized firm. SSO Holding Koge in Koge, which offers consulting solutions to businesses, and Nord Advertising Digital in Viby, which offers small businesses online marketing, are also somewhat larger.

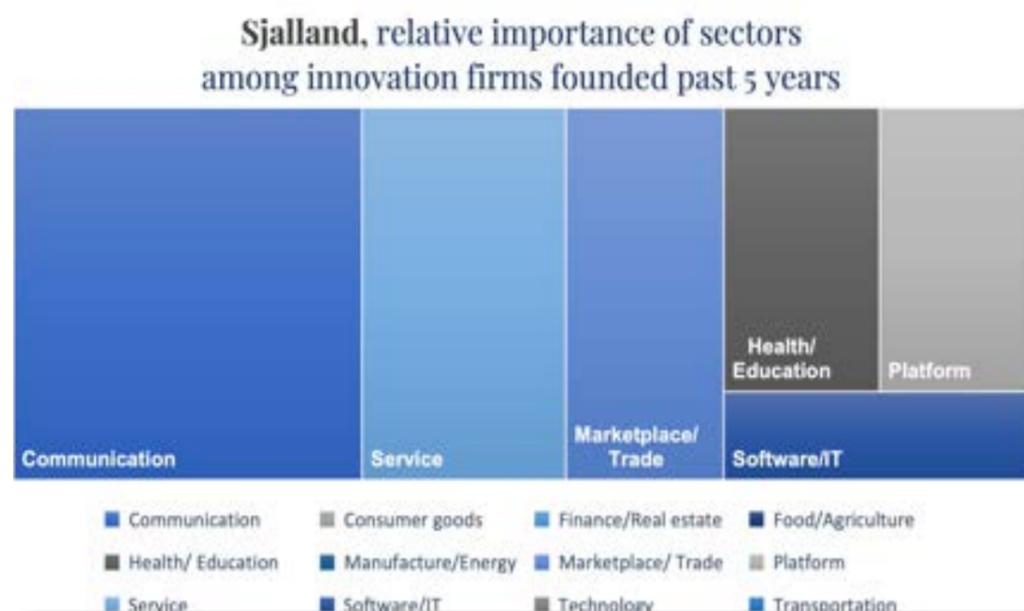
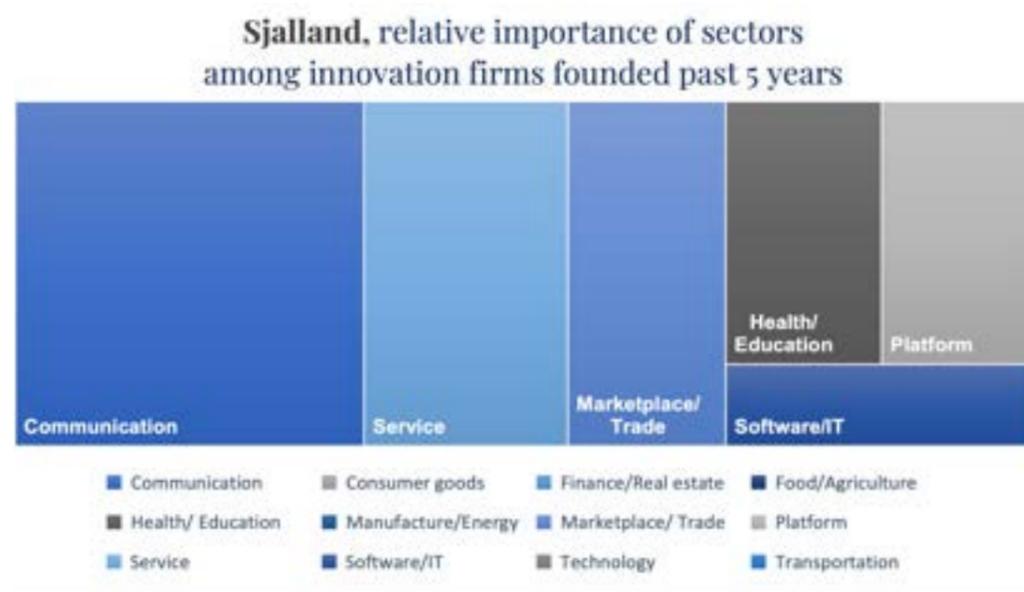


Table 28. Novel innovative firms in Sjælland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Cxweb	1-10	2017	Nykobing	Software/IT	0.2
GraffitiTagr.com	1-10	2019	Roskilde	Platform	
OmniView Speculum	1-10	2017	Karrebaksminde	Health/Education	0.3
BioLib	1-10	2019	Vesterborg	Health/Education	
AmaZix	51-100	2017	Roskilde	Service	
Fenerum	1-10	2019	Viby	Software/IT	
Watertrade	1-10	2019	Roskilde	Marketplace/Trade	
Mailforge	1-10	2017	Korsor	Communication	
SoMeCentral	1-10	2017	Slagelse	Communication	
BunkerTrust	1-10	2017	Roskilde	Platform	
Be More Agile	1-10	2018	Havdrup	Service	
SSO Holding Koge	11-50	2018	Koge	Service	
Nord Advertising Digital	11-50	2017	Viby	Communication	
SEO Danmark	1-10	2019	Gadstrup	Software/IT	
Onlinestrategen	1-10	2017	Koge	Communication	

Table 29. Innovative focus of novel innovative firms in Sjælland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Cxweb	X				X			
GraffitiTagr.com	X	X		X				
OmniView Speculum							X	
BioLib				X	X			
AmaZix	X							
Fenerum	X			X	X			
Watertrade	X			X				
Mailforge	X			X				
SoMeCentral	X			X	X			
BunkerTrust	X			X				
Be More Agile	X							
SSO Holding Koge	X							
Nord Advertising Digital	X			X	X			
SEO Danmark	X				X			
Onlinestrategen	X							

Table 30. Descriptions of novel innovative firms in Sjælland region

Name	Description
Cxweb	Develops software for understanding energy output of buildings, and helps companies reduce output.
GraffitiTagr.com	Platform for gathering information on illegal graffiti, for prevention and removal of graffiti.
OmniView Speculum	A medical tool that gives an unobstructed view and access and leaves your hands free to perform the suturing.
BioLib	Offers a library of biological data.
AmaZix	Offers consultancy for blockchain businesses.
Fenerum	An individual solution for SaaS clients who are looking for the optimal solution to manage their invoicing.
Watertrade	Online trading platform for Co2 bottles in the Nordic market.
Mailforge	E-mail marketing platform, with pop-ups and embedded forms.
SoMeCentral	SoMeCentral can be used to collect photos and videos from your co-workers in a secure and structured way.
BunkerTrust	A rating platform that increases awareness of the bunker market and the marine industry.
Be More Agile	A management consultancy that offers services such as training, consulting and leadership coaching.
SSO Holding Koge	Digital consulting solutions are offered to businesses.
Nord Advertising Digital	Services SMEs through online marketing, SEO, Google AdWords, social media, and mobile-friendly websites.
SEO Danmark	Web development, search engine optimization and other IT services offered to businesses.
Onlinestrategen	Produces adwords and video for businesses.

South Denmark region innovation map

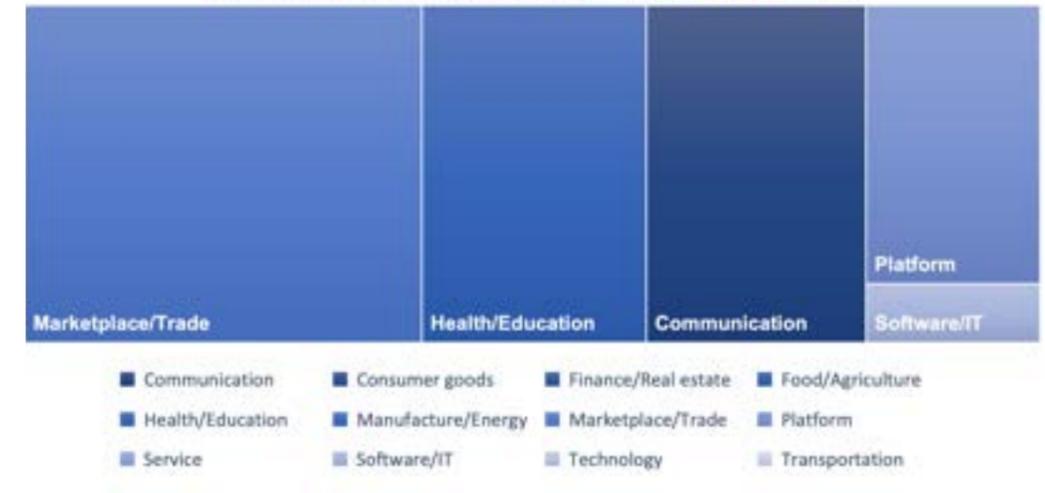


The South Denmark region has novel innovation companies in cities such as Odense, the third-largest city in the country, and also Kobenhoved, Ullerslev, Kolding and Højbjerg. Compared to other Nordic regions, the novel innovation firms of the South Denmark region are particularly focused on the sectors of marketplace/trade, health/education, and communication. Examples of innovation companies include Kolding-based Justlearn.com, a marketplace for language teachers and students, Cerabriu in Kobenhoved, which develops machine learning in medical imaging, and Accordium in Ullerslev, which helps companies speak with more prospects by adding personalised videos to their sales outreach.

The innovations of the novel innovation firms of the South Denmark region are, compared to other Nordic regions, particularly focused on digital meetings, product technology, and digital infrastructure/platform. The focus fields are like Copenhagen's, except that South Denmark is stronger in product technology while Copenhagen is more focused on business services. Overall, South Denmark is a digitally focused innovation region.

Table 31 shows the top 10 novel innovation firms of the South Denmark region, formed during the past five years, while table 32 shows the innovation focus of the firms, and table 33 gives a brief description of the firms and their innovative focuses. Most innovation firms in the region have attracted external public financing. Particle3D in Odense, which develops 3D printed bone implants for use in reconstruction of human bone, stand out by having attracted nearly five million euro in external capital. Cerabriu also has received substantial financing, close to four million euro. Most of the novel innovation firms of the South Denmark region are medium-sized, while others are smaller in terms of how many people they employ.

South Denmark, relative importance of sectors among innovation firms founded past 5 years



South Denmark, relative importance of sectors among innovation firms founded past 5 years

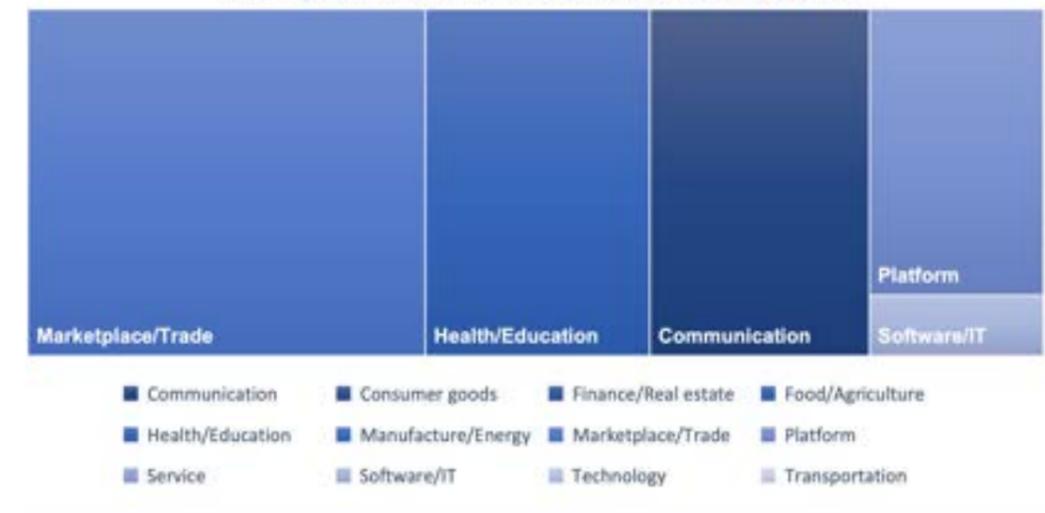


Table 31. Novel innovative firms in South Denmark region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Cerabriu	11–50	2018	Kobenhoved	Health/Education	3.6
Scandion Oncology	1–10	2017	Kobenhoved	Health/Education	1.4
Accordium	11–50	2017	Ullerslev	Communication	0.9
Unicontrol	11–50	2018	Odense	Software/IT	0.8
Particle3D	1–10	2017	Odense	Health/Education	4.5
Justlearn.com	11–50	2017	Kolding	Marketplace/Trade	0.1
JumpStory	11–50	2018	Hojbjerg	Communication	0.8
Tryp.com	1–10	2021	Odense	Platform	
HJAELP	1–10	2020	Logumkloster	Marketplace/Trade	
The Capital Platform	11–50	2018	Brenderup	Platform	0.2

Table 32. Innovative focus of novel innovative firms in South Denmark region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Cerabriu					X		X	
Scandion Oncology							X	
Accordium	X							
Unicontrol					X		X	
Particle3D							X	X
Justlearn.com	X	X	X	X				
JumpStory	X			X	X			
Tryp.com	X	X		X	X			
HJAELP			X	X	X			
The Capital Platform	X			X				

Table 33. Descriptions of novel innovative firms in South Denmark region

Name	Description
Cerabriu	Develops machine learning in medical imaging that improves workflow efficiency and quality in radiology.
Scandion Oncology	Develops drugs that specifically target chemotherapy resistance mechanisms.
Accordium	Helps B2B companies speak with more prospects by adding personalised videos to their sales outreach.
Unicontrol	A developer of a 3D machine control system for excavators.
Particle3D	Biomedical company developing 3D printed bone implants for use in reconstruction of human bone.
Justlearn.com	Marketplace for language teachers and students.
JumpStory	Allows marketers to access visuals and videos in one click, to simplify communication work.
Tryp.com	An AI platform that enables multi-destination traveling.
HJAELP	Developing a marketplace for digital work.
The Capital Platform	Publishing platform for professionals in business, finance, and tech.

Midtjylland region innovation map



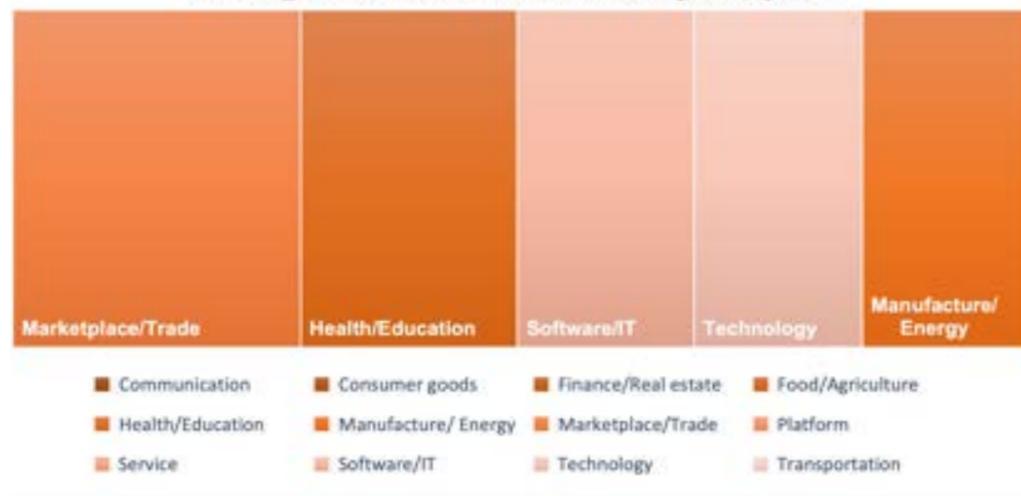
The Midtjylland region of Denmark has many innovation firms in Aarhus, the second-largest city of Denmark and an important innovation centre. Novel innovation firms are also found in Risskov, Herning, and Åbyhøj. The novel innovation firms of the Midtjylland region are, compared to other Nordic regions, particularly concentrated in the sectors marketplace/trade, health/education, and software/IT.

Examples of innovation companies includes Aarhus based InCommodities, a trading company focused on renewable energy solutions, Draupnir Bio in Risskov which is developing a new type of cholesterol-lowering medicine, and Bright Star Studios in Aarhus which is a video games development studio.

Compared to other regions of the Nordics, the novel innovation firms of Midtjylland are particularly focused on innovations in product technology, material technology and software. The innovation focus is like that of the Nordjylland region, except that Nordjylland has innovation firms also focused on manufacturing technology, while Midtjylland has innovation firms focused on software. Overall, Midtjylland is an industrially focused innovation region.

Table 34 shows the top 10 novel innovation firms of the Midtjylland region, formed during the past five years, while table 35 shows the innovation focus of the firms, and table 36 gives a brief description of the firms and their innovative focuses. Some of the novel innovation firms of the Midtjylland region have attracted external public financing, while others have not. STipe Therapeutics in Aarhus, which focuses on harnessing the innate immune system to battle cancer, has attracted 20 million euro in external financing. Draupnir Bio has attracted even more, 28 million euro. Half of the novel innovation firms of the Midtjylland region are smaller in terms of employment, while the other half are medium-sized.

Midtjylland, relative importance of sectors among innovation firms founded past 5 years



Midtjylland, relative importance of sectors among innovation firms founded past 5 years



Table 34. Novel innovative firms in Midtjylland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Bright Star Studios	11-50	2018	Aarhus	Software/IT	2.3
Reflectly	1-10	2017	Aarhus	Software/IT	0.7
Draupnir Bio	11-50	2017	Risskov	Health/Education	28
Everfuel	1-10	2019	Herning	Manufacture/Energy	6
Cellugy	11-50	2018	Århus	Technology	2.4
Capturi	11-50	2019	Åbyhøj	Software/IT	1.6
STipe Therapeutics	1-10	2020	Aarhus	Health/Education	20
Tabtimize	1-10	2019	Aarhus	Software/IT	0.1
InCommodities	51-100	2017	Aarhus	Marketplace/Trade	
Cue	1-10	2019	Aarhus	Technology	

Table 35. Innovative focus of novel innovative firms in Midtjylland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Bright Star Studios					X			
Reflectly		X			X			
Draupnir Bio							X	
Everfuel							X	X
Cellugy							X	X
Capturi	X	X		X	X			
STipe Therapeutics							X	
Tabtimize					X			
InCommodities	X							
Cue					X		X	

Table 36. Descriptions of novel innovative firms in Midtjylland region

Name	Description
Bright Star Studios	Video games development studio working on next generation MMO experiences.
Reflectly	Develops an AI mindfulness companion app.
Draupnir Bio	Developing a new type of cholesterol-lowering medicine which prevents blood clots in the heart.
Everfuel	A green fuel company.
Cellugy	A biotechnology startup, aims to replace single-use plastics with 100% natural bio-cellulose.
Capturi	Uses AI and speech analytics to improve customer interactions.
STipe Therapeutics	Focuses on harnessing the innate immune system to battle cancer.
Tabtimize	Link building tool that simplifies all processes in building contextually relevant backlinks.
InCommodities	Trading company focused on renewable energy solutions.
Cue	Enables individuals living with hearing impairments to react to technologies at home through smartphone.

Nordjylland region innovation map



The novel innovation firms of the Nordjylland region are mainly found in Aalborg, Denmark's fourth-largest city, and Vodskov and Norresundby. Compared to other Nordic regions, the novel innovation firms are particularly focused in the sectors of consumer goods, manufacture/energy, and software.

Examples of innovation companies include Evvermento in Aalborg, which designs and produces nature posters in collaboration with animal welfare NGOs, and Global Equestrian Group in Vodskov, which has a range of sporting brands, focused on horse riding. Both firms are in consumer goods, a relatively uncommon sector for innovation firms across the Nordics. The

presence of these two companies makes Nordjylland a uniquely strong region for product goods innovation, compared to the rest of the Nordics. Blue World Technologies in Aalborg is a fuel cell manufacturer, focused on methanol fuel cells as an alternative to non-renewable fuels. Hexastate, also in Aalborg, helps manufacturing companies avoid expensive breakdowns in their production by developing IoT (internet of things) solutions.

In comparison to other Nordic regions, the novel innovation firms of Nordjylland have particular focus on innovations in product technology, material technology, and manufacturing technology. This is like that of the Midtjylland region, except that Midtjylland is not focused on manufacturing technology innovation but instead software innovation.

Table 37 shows the top 10 novel innovation firms of the Nordjylland region, formed during the past five years, while table 38 shows the innovation focus of the firms, and table 39 gives a brief description of the firms and their innovative focuses. Most of the novel innovation firms of the Nordjylland region have not attracted significant external public financing. DigiShares in Aalborg, a platform

for the tokenization of real estate and other assets, has attracted close to one million in external capital. Blue World Technologies stand out by having attracted above six million euro in external capital. Some of the novel innovation firms are smaller in terms of employment, while around half are medium-sized.

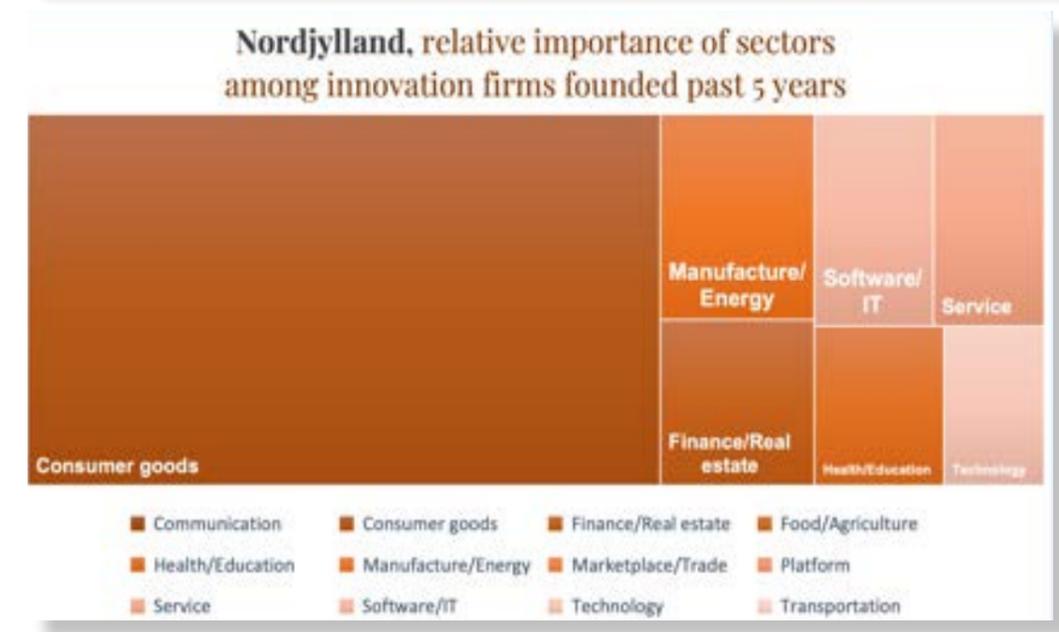
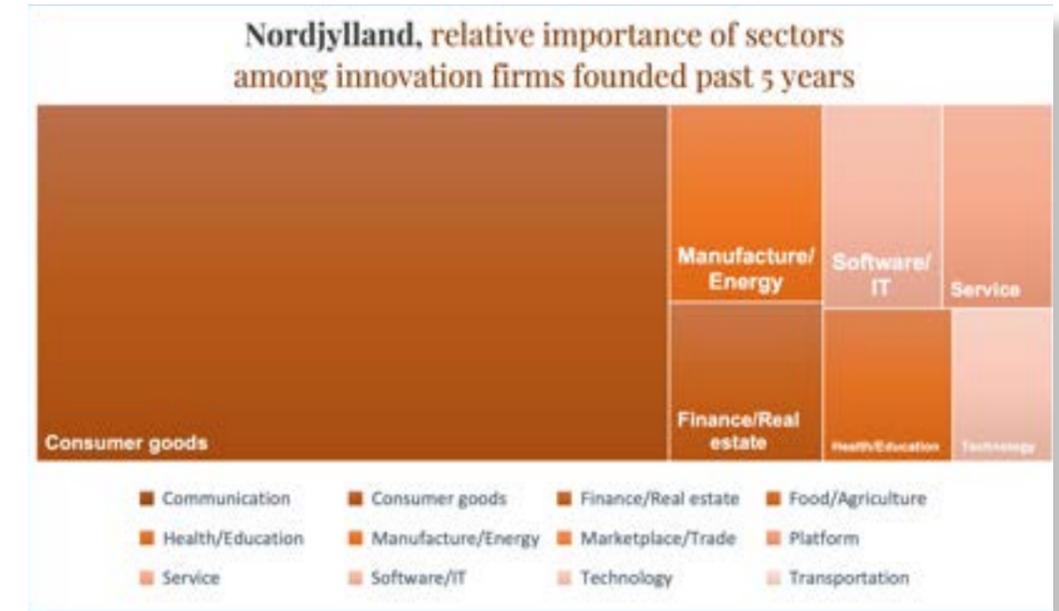


Table 37. Novel innovative firms in Nordjylland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
DigiShares	11-50	2018	Aalborg	Finance/Real estate	0.9
Robotto	11-50	2019	Aalborg	Technology	0.5
Blue World Technologies	11-50	2018	Aalborg	Manufacture/Energy	6.4
DIGURA	11-50	2018	Aalborg	Service	0.5
Hexastate	1-10	2018	Aalborg	Software/IT	
2N Pharma	1-10	2019	Aalborg	Health/Education	
Evermento	1-10	2020	Aalborg	Consumer goods	
Global Equestrian Group	51-100	2021	Vodskov	Consumer goods	
Broad	1-10	2020	Norresundby	Software/IT	
Acadal	1-10	2018	Aalborg	Software/IT	

Table 38. Innovative focus of novel innovative firms in Nordjylland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
DigiShares	X			X				
Robotto					X		X	
Blue World Technologies						X	X	X
DIGURA		X	X	X				
Hexastate	X			X	X	X		
2N Pharma							X	
Evermento							X	
Global Equestrian Group							X	X
Broad	X				X			
Acadal					X			

Table 39. Descriptions of novel innovative firms in Nordjylland region

Name	Description
DigiShares	White-label platform for tokenization of real estate and other assets.
Robotto	Integrating drones with AI and computer vision technologies.
Blue World Technologies	A fuel cell manufacturer especially in methanol fuel cells as an alternative to non-renewable fuels.
DIGURA	Developing a legal technology system, offering tenants digital legal assistance
Hexastate	Helps manufacturing companies avoid expensive breakdowns in their production by developing IoT.
2N Pharma	Develops novel therapeutic drug candidates to aid treatment of Amyotrophic Lateral Sclerosis, ALS.
Evermento	Designs and produces nature posters, in collaboration with animal welfare NGO's.
Global Equestrian Group	A range of sporting brands, focused on horse riding.
Broad	A software development and media accelerator, working with private sector clients.
Acadal	Produces software product, aimed at helping companies solve challenges such as digital transformation.

Oslo and Akershus region innovation map



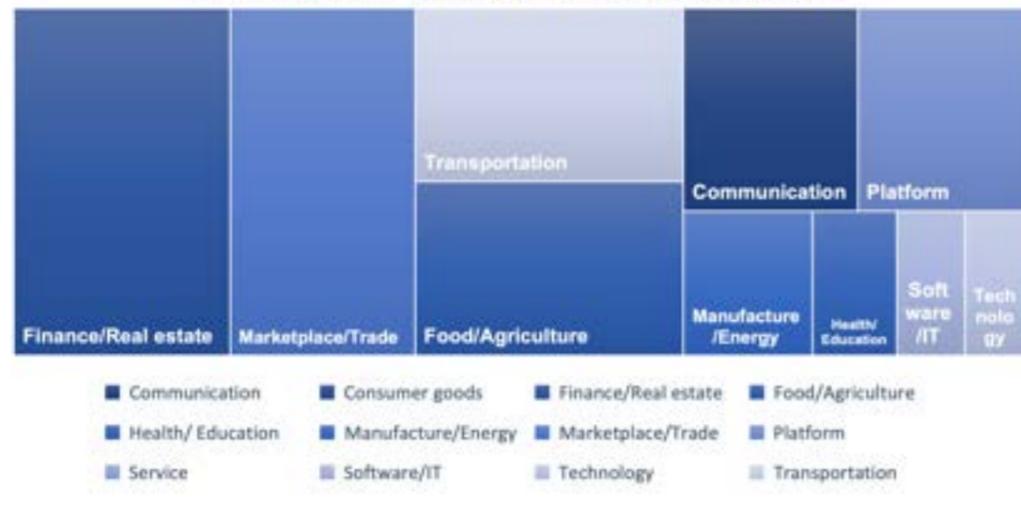
Oslo and Akershus is the capital region of Norway, with many leading innovation firms in the capital city of Oslo. Like the Swedish capital region of Stockholm, Oslo has novel innovation firms in many different sectors; however, the sector focus is quite different. The novel innovation firms of Oslo are mainly focused on finance/real estate, marketplace/trade, and transportation. These focus areas are different from the capital regions of the other three Nordic nations, where innovative firms are mainly concentrated on consumer and business services, digital infrastructure/platforms, and digital meetings.

Examples of innovation firms include Adevinta, a digital marketplace that provides online classifieds services, and Tillit, a fintech startup building something akin to buy now, pay later for business-to-business purchases. Urban Sharing has developed a platform for managing and optimizing transport fleet operations. Transport is a relatively uncommon sector for Nordic innovation firms, and the presence of Urban Sharing gives Oslo a particular strength in this area. The novel innovation firms of the Oslo and Akershus region are, relative to the average Nordic region, focused on innovations in digital meetings, software, and digital infrastructure/platform. Oslo and Akershus is in this regard unique, as no other Nordic region has all three major innovations focused on digitalization.

Table 40 shows the top 10 novel innovation firms of the Oslo and Akershus region, formed during the past five years, while table 41 shows the innovation focus of the firms, and table 32 gives a brief description of the firms and their innovative focuses. All of the top 20 novel innovative firms of the Oslo and Akershus region have attracted external public financing. Adevinta stand out by having attracted some two billion euro and is one of the most successful novel Nordic

innovation companies. The typical novel innovation company of the Norwegian capital region however has received around one million euro in financing. Cognite in Lysander, which develops an industrial internet-of-things data platform, also stand out by having attracted close to two hundred million euro in external public capital. While some of the Oslo and Akershus innovation firms are small in size, others are medium-sized. Cognite, Adevinta and Neonomics, which develops interconnectivity solutions for fintech actors, stand out by being large employers even though they are novel companies.

Oslo and Akershus, relative importance of sectors among innovation firms founded past 5 years



Oslo and Akershus, relative importance of sectors among innovation firms founded past 5 years



Table 40. Novel innovative firms in Oslo and Akershus region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Adevinta	1001+	2019	Oslo	Marketplace/Trade	1 900
Cognite	251-500	2017	Lysaker	Manufacture/Energy	191
Whereby	51-100	2017	Oslo	Communication	10
Tillit	1-10	2020	Oslo	Finance/Real estate	2.5
PortalOne	11-50	2018	Oslo	Software/IT	13.1
Dune Analytics	1-10	2018	Oslo	Platform	1.7
CHOOSE	11-50	2017	Oslo	Software/IT	4.2
Vev	11-50	2017	Oslo	Platform	6.1
Empower	11-50	2018	Oslo	Technology	1.8
ZTL Payment Solution	11-50	2018	Oslo	Finance/Real estate	9.6
TotalCtrl	11-50	2017	Oslo	Food/Agriculture	1.9
Neonomics	251-500	2017	Oslo	Finance/Real estate	1.7
Plaace	1-10	2020	Oslo	Finance/Real estate	1.2
ClexBio	1-10	2020	Oslo	Health/Education	1.9
ordr.no	1-10	2019	Oslo	Finance/Real estate	10
Urban Sharing	11-50	2018	Oslo	Transportation	8.9
Savvie	1-10	2020	Oslo	Food/Agriculture	0.8
VIBBIO	1-10	2017	Oslo	Communication	1.8
Scalando	11-50	2020	Oslo	Platform	0.6
Norwegian Block Exchange	11-50	2018	Oslo	Marketplace/Trade	5.7

Table 41. Innovative focus of novel innovative firms in Oslo and Akershus region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Adevinta	X			X				
Cognite	X			X	X	X		
Whereby	X	X	X	X				
Tillit	X			X	X			
PortalOne					X			
Dune Analytics		X		X	X			
CHOOSE					X			
Vev	X			X				
Empower	X	X		X	X	X	X	X
ZTL Payment Solution	X			X	X			
TotalCtrl	X	X			X			
Neonomics	X			X	X			
Plaace	X		X	X	X			
ClexBio		X						X
ordr.no	X	X		X	X			
Urban Sharing	X		X	X	X			
Savvie	X			X	X			
VIBBIO	X				X			
Scalando	X		X	X	X			
Norwegian Block Exchange	X	X		X	X			

Table 42. Descriptions of novel innovative firms in Oslo and Akershus region

Name	Description
Adevinta	Adevinta is a digital marketplace that provides online classified services.
Cognite	Develops an industrial IoT data platform that enables digital transformation of heavy-asset industries.
Whereby	A collaboration tool for easy video meetings, without downloads and logins.
Tillit	A fintech startup that is building something akin to buy now, pay later for B2B purchases.
PortalOne	A gaming startup, focused on visuals and interactivity.
Dune Analytics	A community-driven analytics platform that provides data tools for the Ethereum network.
CHOOSE	Builds digital tools for climate action in everyday life and business.
Vev	An all-in-one design platform for professionals to create and launch web experiences.
Empower	Blockchain-powered tracking that digitize waste streams, links to material recycling.
ZTL Payment Solution	A B2B payment platform providing clients with customized payment solutions.
TotalCtrl	Software for preventing food waste.
Neonomics	Interconnectivity solutions for fintech actors.
Plaace	Helps property owners choose and connect with digital concepts.
ClexBio	Organ transplant company.
ordr.no	Allows guests to order and pay for food without using cards, payment machines or apps.
Urban Sharing	Platform for managing and optimizing transport fleet operations.
Savvie	Mobile app for food-businesses to optimize operations and reduce food waste.
VIBBIO	A video maker for the workplace.
Scalando	Platform uniting different business services.
Norwegian Block Exchange	A cryptocurrency exchange, custodian and payment system.

Hedmark and Oppland region innovation map



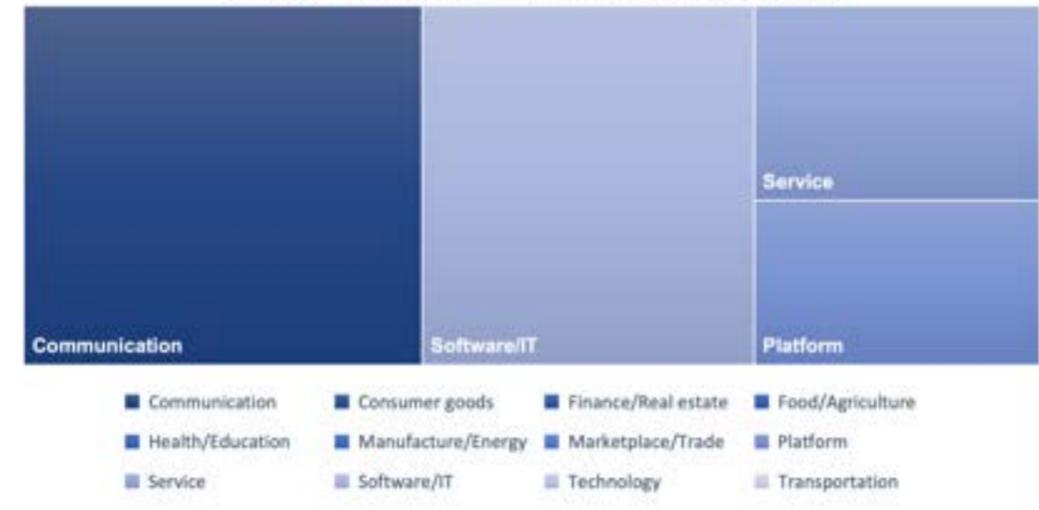
The novel innovation companies of the Norwegian Hedmark and Oppland region are found in cities such as Hamar, Brumunddal, Ringsaker, Hov, and Lillehammer. Compared to the average Nordic region, the innovation firms of the Hedmark and Oppland region are particularly focused on the sectors of communication, software/IT and service.

Example of local innovation companies includes Trollbinde in Dombås, a communication agency, Iagon in Hamar which works with machine learning, blockchain and big data, as well as Cydef in Brumunddal which works with IT security and security testing.

The innovative focuses of the novel innovation firms of the Hedmark and Oppland region, relative to the average Nordic region, is on business services, digital infrastructure/platform as well as on software. This is like the Norwegian capital region, except that while Oslo and Akershus has its focus on digital meetings, Hedmark and Oppland has focused on business services. Overall, Hedmark and Oppland is a digitally focused innovation region.

Table 43 shows the top 10 novel innovation firms of the Hedmark and Oppland region, formed during the past five years, while table 44 shows the innovation focus of the firms, and table 45 gives a brief description of the firms and their innovative focuses. The typical novel innovation firm of the Hedmark and Oppland region is small, in terms of employment, while myOnvent, a Ringsaker based online events platform, stand out by being medium-sized. The leading novel innovation firms of the region do not have extensive external public capital investments and instead rely on their own capital.

Hedmark and Oppland, relative importance of sectors among innovation firms founded past 5 years



Hedmark and Oppland, relative importance of sectors among innovation firms founded past 5 years

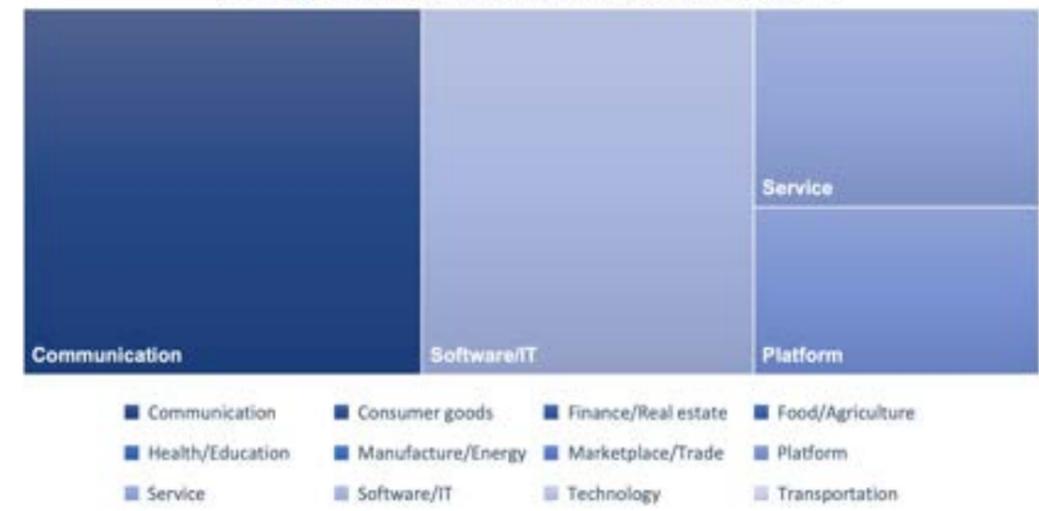


Table 43. Novel innovative firms in Hedmark and Oppland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Iagon	1–10	2017	Hamar	Software/IT	
Cydef	1–10	2017	Brumunddal	Service	
myOnvent	11–50	2020	Ringsaker	Platform	
Nordic Blocks	1–10	2018	Hov	Software/IT	
Offcenit	1–10	2017	Lillehammer	Software/IT	
Successive Technologies Norge	1–10	2017	Magnor	Software/IT	
Gjerdalen Data	1–10	2018	Dokka	Software/IT	
Trollbinde	1–10	2017	Dombås	Communication	
Privatokonomi.net	1–10	2018	Hamar	Communication	
Ipleet	1–10	2017	Elverum	Software/IT	

Table 44. Innovative focus of novel innovative firms in Hedmark and Oppland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Iagon	X			X	X			
Cydef	X				X			
myOnvent	X	X	X	X				
Nordic Blocks	X			X				
Offcenit	X				X			
Successive Technologies Norge	X				X			
Gjerdalen Data	X			X	X			
Trollbinde	X							
Privatokonomi.net		X		X				
Ipleet	X							

Table 45. Descriptions of novel innovative firms in Hedmark and Oppland region

Name	Description
Iagon	Machine learning, blockchain, big data, distributed systems and cloud computing services.
Cydef	IT security, security testing, incident handling, security compliance and risk management.
myOnvent	An online events platform, with the goal of making events more accessible.
Nordic Blocks	Data center with energy supply that is generated from renewable sources.
Offcenit	IT consultancy that provides website design, SEO, mobile and web applications.
Successive Technologies Norge	Web development, app development, SaaS/ERP development and other IT services.
Gjerdalen Data	IT solution firm that offers cloud computing, cyber security, software and other IT services.
Trollbinde	Communication agency with focus on combining images, text, web and graphical design.
Privatokonomi.net	Financial news portal in Norway.
Ipleet	IT company that deals with wireless, cybersecurity, SNMP management, etc.

Sor-Ostlandet region innovation map



In the Sor-Ostlandet region of Norway, novel innovation firms can be found in cities such as Drammen, Horten, Kongsberg, and Fredrikstad. Compared to the other Nordic regions, the innovation companies of Sor-Ostlandet are particularly focused on the sectors of transportation, finance/real estate, and food/agriculture.

Examples of innovation companies include Kongsberg based Applied Autonomy, which offers the transport sector fleet management and cloud computing, Fhird in Fredrikstad which specializes in land mortgage loans, and Tidbit also in Fredrikstad which develops restaurants management system for pre-orders and takeaways.

The novel innovation firms of Sor-Ostland have, relative to other Nordic regions, particular focus on innovations in manufacturing technology, material technology, and business services. This is like the Agder and Rogland region, except that the Agder and Rogaland region has an even greater industrial focus among innovation firms, with product technology also being prevalent there. The differences between the two regions are small, and together with Trondelag, they form the industrial regions of Norway.

Table 46 shows the top 10 novel innovation firms of the Sor-Ostlandet region, formed during the past five years, while table 47 shows the innovation focus of the firms and table 48 gives a brief description of the firms and their innovative focuses. The typical novel innovation firm of the Hedmark and Oppland region is small, in terms of employment, while myOnvent stands out by being medium-sized. The leading novel innovation firms of the region do not have

extensive external public capital investments, instead relying on own investments. The typical innovation company in the Sor-Ostlandet region does not have significant external public financing, relying on own financing solutions. The typical novel innovation company is also smaller in size, with FMC Kongsberg Subsea being an exception, as it is a very significant employer.

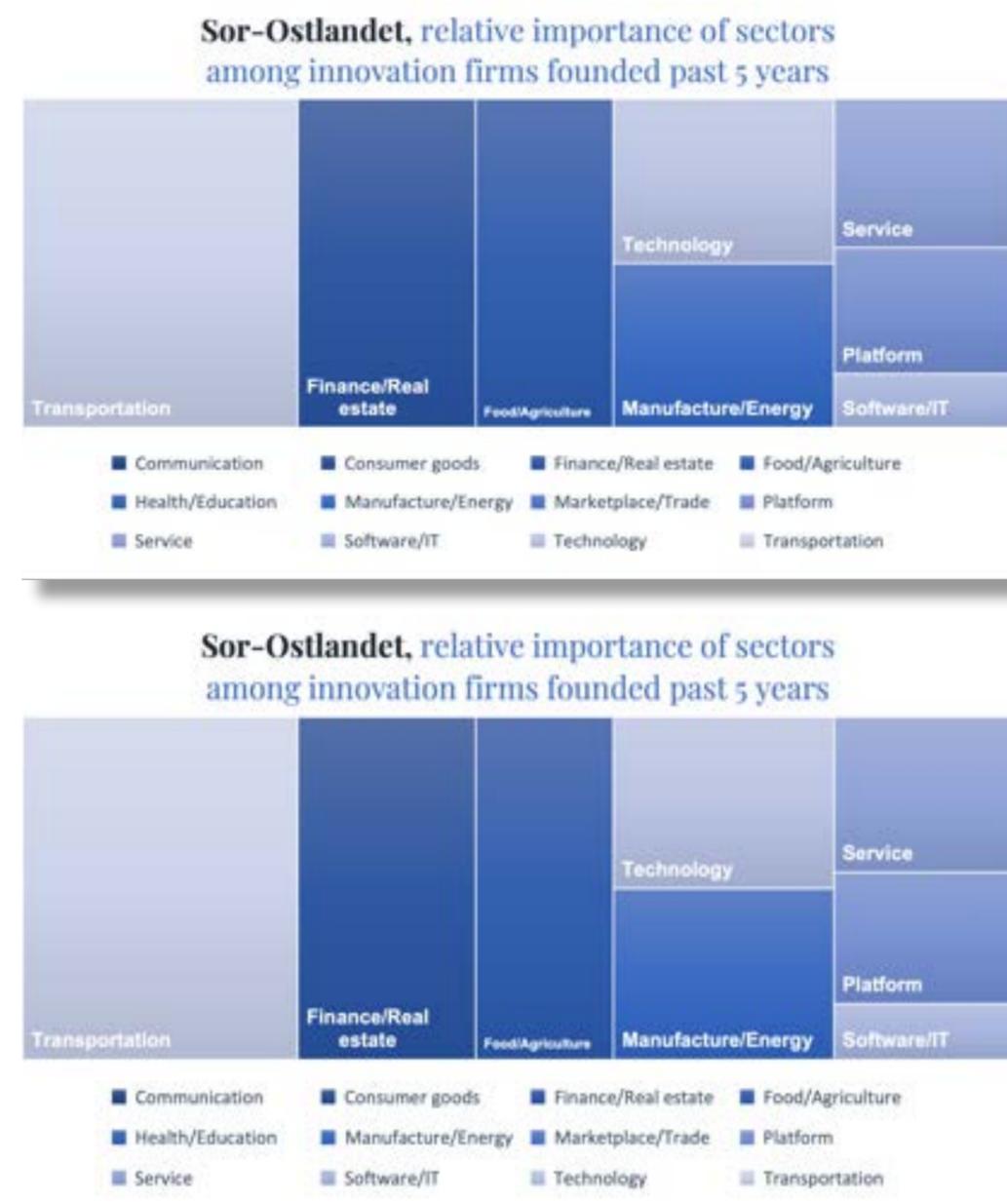


Table 46. Novel innovative firms in Sor-Ostlandet region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
BitWave	1-10	2017	Drammen	Technology	
Gen2 Energy	11-50	2019	Horten	Manufacture/Energy	
Applied Autonomy	1-10	2017	Kongsberg	Transportation	
BullToken	1-10	2017	Skien	Finance/Real estate	
FMC Kongsberg Subsea	10 001+	2017	Kongsberg	Technology	
LCA	1-10	2017	Kråkeroy	Software/IT	
Tudu	1-10	2017	Honefoss	Service	
Tidbit	1-10	2018	Fredrikstad	Food/Agriculture	
Dolittle	11-50	2018	Sandefjord	Platform	
Fhird	1-10	2017	Fredrikstad	Finance/Real estate	

Table 47. Innovative focus of novel innovative firms in Sor-Ostlandet region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
BitWave	X				X	X	X	
Gen2 Energy						X	X	X
Applied Autonomy	X			X				
BullToken	X	X						
FMC Kongsberg Subsea					X	X	X	X
LCA	X			X				
Tudu	X							
Tidbit	X	X		X				
Dolittle	X			X				
Fhird	X	X						

Table 48. Descriptions of novel innovative firms in Sor-Ostlandet region

Name	Description
BitWave	Develops prototypes to production, in the audio industry, and also develops software.
Gen2 Energy	Gen2 Energy creates, runs, and manages a green hydrogen supply chain.
Applied Autonomy	Offers transport, logistics, fleet management and cloud computing.
BullToken	Investment management firm.
FMC Kongsberg Subsea	Designs and engineers subsea and metering systems.
LCA	Provides cloud-based services in environmental documentation.
Tudu	Provides industry-specific modules that help to manage HR, GDPR and HSE for smaller businesses.
Tidbit	Restaurants management system for pre-orders and takeaways.
Dolittle	Platform as a Service that helps build business applications.
Fhird	Finance company, specialized in land mortgage loans.

Agder and Rogaland region innovation map



The Agder and Rogaland region of Norway has novel innovation firms mainly in Stavanger, Norway's third-largest city, but also in cities such as Mandal, Kvinesdal, and Sandnes. Compared to other Nordic regions, the novel innovation firms of Agder and Rogaland are particularly focused on the sectors of manufacture/energy, technology and service.

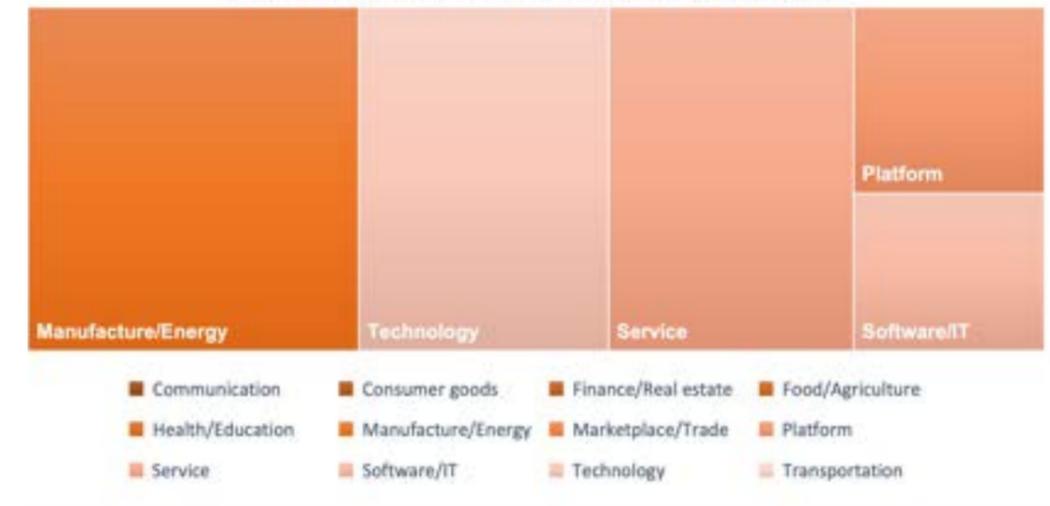
Examples of innovation firms include Mandal based Heaten, which makes high temperature heat pumps for de-carbonization of industrial heating processes, Fishency Innovation in Stavanger, which develops a system utilizing artificial intelligence for the aquaculture industry, and Rebartek in Sogne, which delivers reinforcing bar as a service.

Compared to the other regions of the Nordics, the novel innovation firms of the Agder and Rogaland region are particularly focused on innovations in manufacturing, material technology, and product technology. The region is thus heavily focused on industrial innovation, similar to Sor-Ostlandet and Trondelag. Amongst these three industrially focused regions, Agder and Rogaland stand out by having all three major focus areas in industrial innovation.

Table 49 shows the top 10 novel innovation firms of the Agder and Rogaland region, formed during the past five years, while table 50 shows the innovation focus of the firms, and table 51 gives a brief description of the firms and their innovative focuses. Some of the novel innovation firms in the region are smaller in terms of employment, while others are middle-sized. The leading novel innova-

tion companies of Agder and Rogaland have external public financing, typically below one million euro. Kryptovault in Stavanger, which specializes in large-scale data centre operations, and Norsk Solar in the same city, which operates solar assets in emerging markets, stand out by having attracted more than ten million euro in external capital.

Agder and Rogaland, relative importance of sectors among innovation firms founded past 5 years



Agder and Rogaland, relative importance of sectors among innovation firms founded past 5 years



Table 49. Novel innovative firms in Agder and Rogaland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Heaten	1-10	2020	Mandal	Manufacture/ Energy	2.9
Intoto	1-10	2018	Kvinesdal	Technology	0.5
Globus.ai	11-50	2017	Sandnes	Software/IT	1
Norsk Solar	11-50	2017	Stavanger	Manufacture/ Energy	17
Kryptovault	11-50	2017	Stavanger	Software/IT	14.3
Justify	1-10	2018	Stavanger	Service	0.5
PictoryTale	11-50	2017	Kristiansand	Platform	2.2
Rebartek	1-10	2018	Sogne	Service	0.2
Fishency Innovation	1-10	2017	Stavanger	Technology	0.2
Aivero	1-10	2017	Stavanger	Technology	0.8

Table 50. Innovative focus of novel innovative firms in Agder and Rogaland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/ platform	Software	Manufacturing technology	Product technology	Material technology
Heaten						X	X	X
Intoto	X							
Globus.ai					X			
Norsk Solar						X	X	X
Kryptovault	X			X				
Justify	X	X		X				
PictoryTale	X		X	X	X			
Rebartek	X					X	X	
Fishency Innovation					X	X	X	X
Aivero	X			X	X		X	

Table 51. Descriptions of novel innovative firms in Agder and Rogaland region

Name	Description
Heaten	High temperature heat pumps for efficient and deep de-carbonisation of industrial heating processes.
Intoto	A company providing real-time data from rivers and streams.
Globus.ai	Specializes in artificial intelligence, machine learning including reinforcement learning.
Norsk Solar	Builds, owns and operates solar assets in emerging markets.
Kryptovault	Specializes in large-scale data centre operations.
Justify	A legal tech startup.
PictoryTale	Platform for experiencing and publishing augmented reality content.
Rebartek	Rebartek delivers reinforcing bar as a service.
Fishency Innovation	Develops and commercializes a hardware and software solution using AI for the aquaculture industry.
Aivero	Specializes in the fields of machine vision, robotics, depth video, and 3D video streaming.

Vestlandet region innovation map



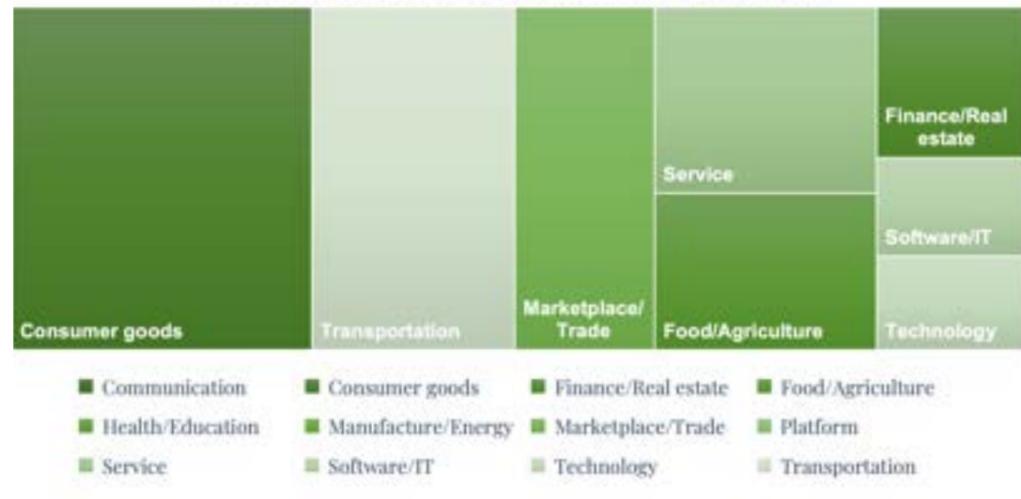
The novel innovation companies of the Norwegian Vestlandet region are mainly found in Bergen, the second-largest city in Norway and an essential seat for innovation. Relative to other regions in Norway, novel innovation firms in Vestlandet are particularly focused on consumer goods, transportation, and marketplace/trade.

Examples of innovation companies include Think Outside, which develops products for the sport and outdoor markets, imove, which offers car subscription-based on software as a service, and JET Seafood, which is a digital trade portal for Norwegian wholesale salmon.

Compared to the other regions of the Nordics, the novel innovation firms of the Vestlandet region are particularly focused on innovations in consumer services, business services and product technology. Vestlandet is the region of Norway where novel innovative firms are the most focused on service innovation.

Table 52 shows the top 10 novel innovation firms of the Vestlandet, formed during the past five years, while table 53 shows the innovation focus of the firms, and table 54 gives a brief description of the firms and their innovative focuses. Most of the novel innovation firms of Vestlandet are smaller in terms of employment, while some are medium-sized. All of the top 10 leading novel innovation firms have received external public financing, typically a few hundred thousand euro. Imove and Salmon Evolution stand out, with each having received over twenty million euro in public external financing.

Vestlandet, relative importance of sectors among innovation firms founded past 5 years



Vestlandet, relative importance of sectors among innovation firms founded past 5 years



Table 52. Novel innovative firms in Vestlandet region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
imove	11–50	2018	Bergen	Transportation	20.9
Waste IQ	1–10	2017	Bergen	Technology	2.9
Salmon Evolution	1–10	2017	Molde	Food/Agriculture	28.1
Bueno	1–10	2021	Bergen	Finance/Real estate	0.1
LifePlanner	1–10	2018	Bergen	Service	0.4
Tjommi	11–50	2018	Bergen	Software/IT	0.5
Travis	1–10	2018	Bergen	Service	0.3
Think Outside	11–50	2017	Bergen	Consumer goods	0.2
JET Seafood	1–10	2017	Bergen	Marketplace/Trade	0.1
Pode	1–10	2018	Bergen	Software/IT	0.3

Table 53. Innovative focus of novel innovative firms in Vestlandet region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
imove	X	X						
Waste IQ	X			X	X		X	
Salmon Evolution						X	X	
Bueno	X	X						
LifePlanner		X						
Tjommi	X	X		X	X			
Travis	X							
Think Outside							X	X
JET Seafood	X			X				
Pode	X	X						

Table 54. Descriptions of novel innovative firms in Vestlandet region

Name	Description
imove	Mobility company that offers mobility services and car subscription SaaS.
Waste IQ	Developer of a waste technology tracking platform.
Salmon Evolution	Provides optimal growth and health conditions for salmon in the farm.
Bueno	Offers services to those who own property abroad.
LifePlanner	Personal service in case of emergencies, links up with insurance companies, lawyers, funeral agencies.
Tjommi	B2C app helping customers get money back from price drops.
Travis	Helps with travel bills and expense reports.
Think Outside	Technology startup developing innovative products for the sport and outdoor markets.
JET Seafood	Digital trade portal for wholesale Norwegian salmon.
Pode	A co-op puzzle exploration game built around the themes of friendship and cooperation.

Trondelag region innovation map



The novel innovation firms of the Trondelag region are all found in Trondheim, Norway's fourth-largest city, which hosts innovative firms in numerous different sectors. Compared to other Nordic regions, the innovation firms of Trondelag are particularly focused on technology, food/agriculture, and manufacture/energy.

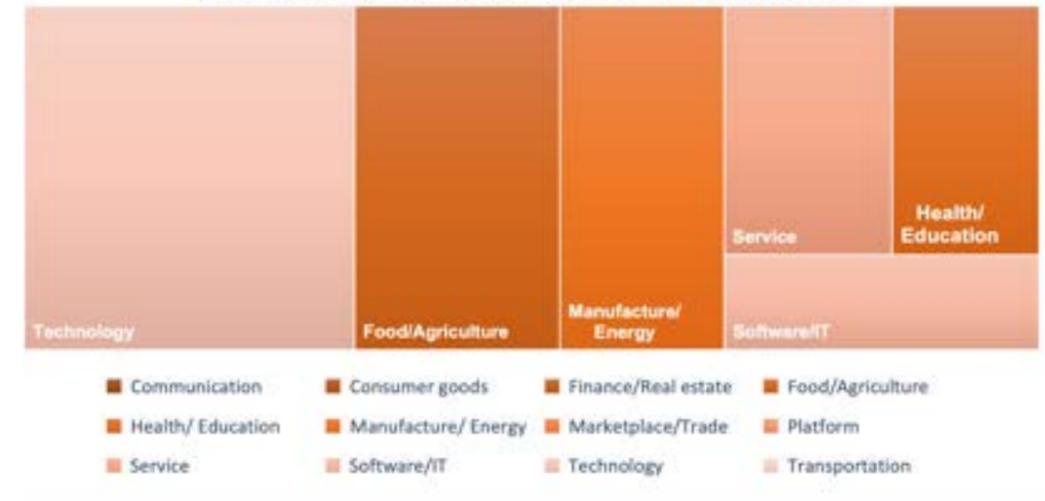
Examples of novel innovation firms include Cimon Medical, which manufactures doppler ultrasound technology, Heligarden, which provides homes and businesses with urban farming products, and Orbital Machines, which manufactures an innovative electric turbopump for orbital carrier chains.

Compared to other Nordic regions, the innovation companies in Trondelag are particularly focused on technology innovation, material technology, and software. Like Agder and Rogaland, and Sor-Ostland, the region has a heavy industrial innovation focus. Trondelag is a manufacturing focused innovation region.

Table 55 shows the top 10 novel innovation firms of the Trondelag, formed during the past five years, while table 56 shows the innovation focus of the firms, and table 57 gives a brief description of the firms and their innovative focus-

es. The novel innovation companies of Trondelag are typically small in terms of employment, but some are medium-sized. Most have received external public financing, typically a few hundred thousand euro. Cimon Medical stand out by having attracted more than six million euro in financing, while Nomono, an audio technology development company, has attracted close to four million euro in external public financing.

Trondelag, relative importance of sectors among innovation firms founded past 5 years



Trondelag, relative importance of sectors among innovation firms founded past 5 years



Table 55. Novel innovative firms in Trondelag region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Nomono	11-50	2019	Trondheim	Technology	3.8
Cimon Medical	1-10	2020	Trondheim	Technology	6.2
Scout Drone Inspection	11-50	2017	Trondheim	Technology	0.5
Capeesh	1-10	2017	Trondheim	Software/IT	0.4
Open Access	1-10	2019	Trondheim	Technology	0.1
Nisonic	1-10	2017	Trondheim	Health/Education	1.5
RagnaRock Geo	11-50	2018	Trondheim	Software/IT	0.1
Orbital Machines	1-10	2018	Trondheim	Manufacture/Energy	0.2
Heligarden	1-10	2018	Trondheim	Food/Agriculture	0.2
Smart Cylinders	1-10	2017	Trondheim	Service	

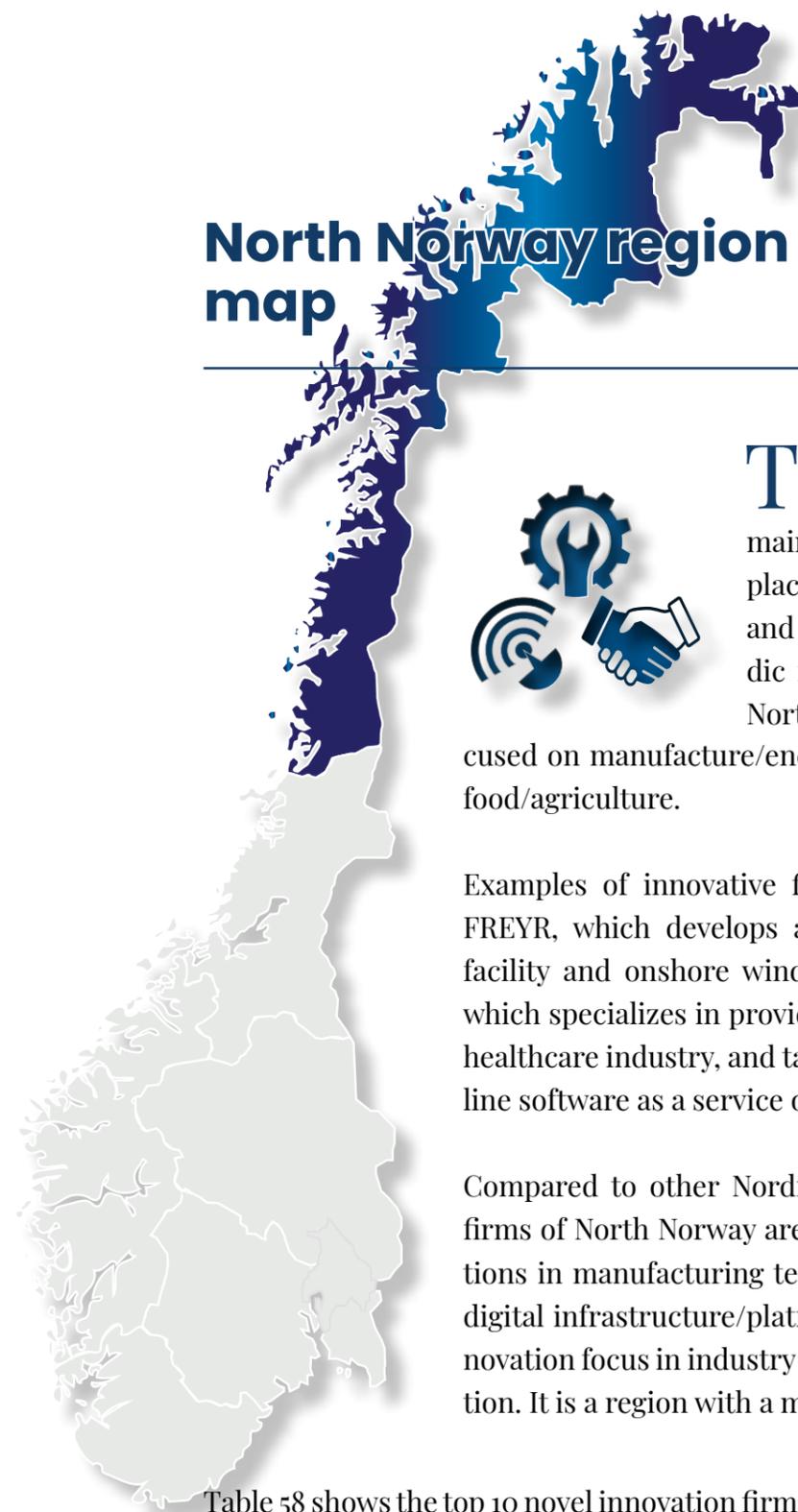
Table 56. Innovative focus of novel innovative firms in Trondelag region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Nomono					X		X	
Cimon Medical							X	
Scout Drone Inspection					X		X	
Capeesh					X			
Open Access							X	X
Nisonic							X	
RagnaRock Geo					X			
Orbital Machines							X	X
Heligarden	X	X						
Smart Cylinders	X							

Table 57. Descriptions of novel innovative firms in Trondelag region

Name	Description
Nomono	Audio technology development company.
Cimon Medical	Develops and manufactures novel doppler ultrasound technology.
Scout Drone Inspection	Develops an autonomous drone that will provide a complete visual inspection.
Capeesh	Language learning software based on machine intelligence.
Open Access	Develops technology for remote ocean monitoring.
Nisonic	Develops products that will allow physicians to diagnose and monitor increased ICP.
RagnaRock Geo	Artificial intelligent software intended to interpret seismic data company.
Orbital Machines	Manufactures an innovative electric turbopump for orbital carrier chains.
Heligarden	Provides homes and businesses with urban farming products.
Smart Cylinders	Service related to the process of delivering and receiving LPG cylinders.

North Norway region innovation map



The novel innovation companies of the North Norway region are mainly found in Tromsø, but also places such as Bodo, Nordfjordnes, and Narvik. Compared to other Nordic regions, the innovation firms of North Norway are particularly focused on manufacture/energy, health/education as well as food/agriculture.

Examples of innovative firms include Mo I Rana based FREYR, which develops a combined lithium ion battery facility and onshore wind-park, MEDSENSIO in Tromsø, which specializes in providing AI-enabled solutions for the healthcare industry, and tasti.TECH, which develops an on-line software as a service ordering system for restaurants.

Compared to other Nordic regions, the novel innovation firms of North Norway are particularly focused on innovations in manufacturing technology, business services, and digital infrastructure/platform. North Norway has thus innovation focus in industry as well as services and digitalization. It is a region with a mixed innovation focus.

Table 58 shows the top 10 novel innovation firms of north Norway, formed during the past five years, while table 59 shows the innovation focus of the firms, and table 60 gives a brief description of the firms and their innovative focuses. The novel innovative firms of north Norway are typically small in terms of employment and have not received significant external public financing. The exception is FREYR which is medium-sized and has attracted close to four million in external financing.

North Norway, relative importance of sectors among innovation firms founded past 5 years



North Norway, relative importance of sectors among innovation firms founded past 5 years



Table 58. Novel innovative firms in North Norway region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
FREYR	11-50	2018	Mo I Rana	Manufacture/Energy	3.9
MEDSENSIO	1-10	2017	Tromso	Health/Education	
Workability	1-10	2021	Tromso	Service	
SignLab	1-10	2017	Lundenes	Health/Education	
tasti.TECH	1-10	2020	Tromso	Food/Agriculture	
Geo	1-10	2018	Bodo	Technology	
Orca Labs	1-10	2018	Tromso	Software/IT	
TourPhotos	1-10	2017	Tromso	Platform	
Nordfjord	1-10	2018	Nordfjordnes	Technology	
Luminiser	1-10	2017	Narvik	Manufacture/Energy	

Table 59. Innovative focus of novel innovative firms in North Norway region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
FREYR						X	X	X
MEDSENSIO	X				X			
Workability	X							
SignLab		X		X				
tasti.TECH	X			X	X			
Geo	X					X		
Orca Labs	X			X	X			
TourPhotos	X			X				
Nordfjord	X				X			
Luminiser							X	

Table 60. Descriptions of novel innovative firms in North Norway region

Name	Description
FREYR	Develops a combined 32+2 GWh lithium ion battery facility and 600 MW onshore wind-park.
MEDSENSIO	Specializes in providing AI-enabled solutions for the healthcare industry.
Workability	Service provider in workplace welfare.
SignLab	Developing a digital learning platform that makes learning sign languages more accessible.
tasti.TECH	Offers SaaS online ordering system for restaurants.
Geo	Services in surveying, quantity calculation, machine control and 3D scanning.
Orca Labs	Offers mobile apps, software clustering, application development and network security services.
TourPhotos	Photography platform dedicated to tourism and activity companies.
Nordfjord	Supplier of D365 and Dynamics AX solutions and also provides expertise in ERP systems.
Luminiser	Luminiser has license to manufacture and sell the Luminiser Lantern.

Helsinki region innovation map



The Helsinki Capital region is home to novel innovative firms in many different sectors. Together with Stockholm and Oslo, Helsinki forms a nordic knowledge triangle. In comparison to the average Nordic country, the innovative firms of Helsinki are particularly focused on the fields of consumer services, platform, and finance/real estate.

Examples of innovation companies formed during the past five years include Rens, an e-commerce platform that manufactures and sells shoes, Yahaha, which develops a platform for game developers and game players, and Happeo, which provides an intranet enterprise social network and collaboration platform. Another example is Tesseract, a financial services and investment management system developer for digital assets.

Compared to the average Nordic nation, the novel innovation firms of Helsinki are particularly focused on innovations in the fields of consumer services, digital infrastructure/platform, and software. Helsinki is thus a digitally focused innovation region, unlike all other regions of Finland, which are industrially focused. In comparison with the other parts of the Nordics, Finland stands out by having a strong focus on industrial innovation, except for the capital region of Helsinki which like Stockholm, Copenhagen and Oslo, is mainly focused on digital innovation.

Table 61 shows the top 10 novel innovation firms of Helsinki, formed during the past five years, while table 62 shows the innovation focus of the firms, and table 63 gives a brief description of the firms and their innovative focuses. While some of the novel innovation firms of the Helsinki region are smaller in terms of employment, others are medium-sized. All of the top 20 innovation firms founded past in the five years have attracted some external public financing, typically

over one million euro. Yahaha and Redhill Games stand out by having attracted about twenty-six million euro in external capital. Tesseract has also gathered over twenty million euro in external public financing.

Helsinki, relative importance of sectors among innovation firms founded past 5 years



Helsinki, relative importance of sectors among innovation firms founded past 5 years



Table 61. Novel innovative firms in Helsinki region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Tesseract	11-50	2017	Helsinki	Finance/Real estate	21.7
Yahaha	51-100	2020	Helsinki	Platform	26.4
Happeo	11-50	2017	Helsinki	Platform	17.1
Zyfra	11-50	2017	Helsinki	Technology	11.5
iFarm	11-50	2017	Helsinki	Food/Agriculture	3.4
Veri	1-10	2019	Helsinki	Health/Education	3.4
Rokote Laboratories	1-10	2020	Helsinki	Health/Education	9
Blok	1-10	2017	Helsinki	Finance/Real estate	4.9
Bob W	11-50	2018	Helsinki	Finance/Real estate	10
Leadoo Marketing Technologies	1-10	2018	Helsinki	Platform	8
Flowrite	1-10	2020	Helsinki	Communication	0.6
Silo.AI	51-100	2017	Helsinki	Software/IT	10
Rens	11-50	2017	Helsinki	Consumer goods	1.3
Swarmia	1-10	2019	Helsinki	Software/IT	6.7
Calqulate	1-10	2019	Helsinki	Platform	1.5
Redhill Games	11-50	2018	Helsinki	Software/IT	25.6
Reworks	11-50	2018	Helsinki	Software/IT	4.9
Sellforte	11-50	2017	Helsinki	Service	4.6
Kide Science	11-50	2017	Helsinki	Health/Education	2.7
Noice	11-50	2020	Helsinki	Platform	4.3

Table 62. Innovative focus of novel innovative firms in Helsinki region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Tesseract	X							
Yahaha	X	X		X	X			
Happeo	X			X				
Zyfra				X	X		X	
iFarm					X	X	X	X
Veri		X			X		X	
Rokote Laboratories							X	
Blok	X			X				
Bob W	X	X						
Leadoo Marketing Technologies	X			X				
Flowrite	X	X		X				
Silo.AI				X	X			
Rens		X		X		X	X	
Swarmia	X			X	X			
Calqulate	X			X				
Redhill Games					X			
Reworks					X			
Sellforte	X			X	X			
Kide Science	X	X		X	X			
Noice		X		X				

Table 63. Descriptions of novel innovative firms in Helsinki region

Name	Description
Tesseract	A financial services and investment management innovator in digital assets.
Yahaha	Develops a platform where developers and game players can use the engine to develop their own games.
Happeo	Intranet software, enterprise social network, and collaboration platform.
Zyfra	Developing products on the basis of the industrial internet of things and AI.
iFarm	Universal data-driven technology of growing plants on automated vertical farms.
Veri	Helps individuals achieve optimal metabolic health through a blood sugar sensor and an iOS app.
Rokote Laboratories	Working to develop a nasal spray vaccine against covid-19.
Blok	Digital real estate agency.
Bob W	Operates hospitality, as alternative to hotels and short-stay apartments.
Leadoo Marketing Technologies	Marketing platform, turns passive website visitors into leads.
Flowrite	Turns words into ready-to-send emails, posts, and more.
Silo.AI	AI lab providing tooling for CV, NLP and ML.
Rens	An e-commerce platform that manufactures and sells shoes.
Swarmia	Data-driven support for software teams.
Calqulate	Analytics platform helps subscription companies understand their current and future business performance.
Redhill Games	Redhill Games is a free to play PC game studio.
Reworks	Develops mobile lifestyle games.
Sellforte	Offers AI-powered Marketing ROI measurement.
Kide Science	Science education for young children with platform for teachers and parents.
Noice	Builds a social platform for gaming.

South Finland region innovation map



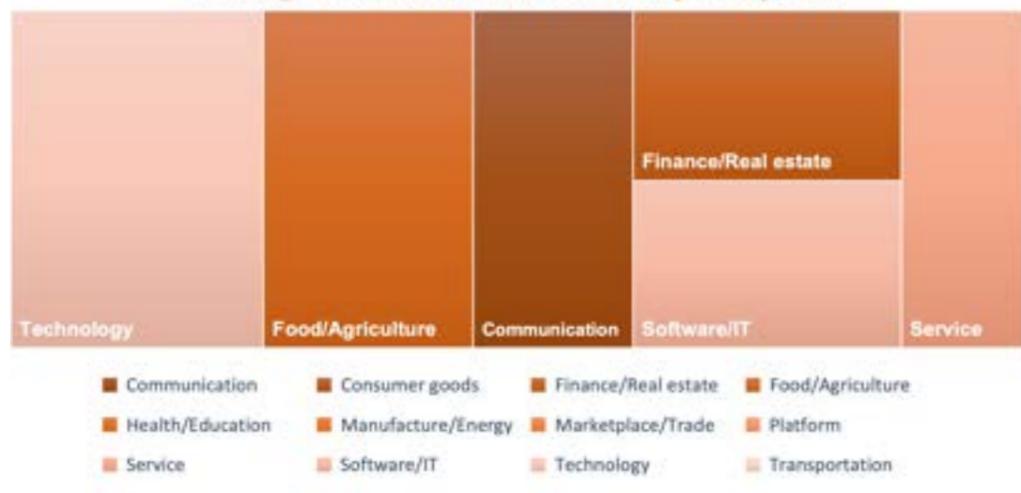
The novel innovation companies of the South Finland region are focused to Espoo, Finland’s second-largest city. Relative to other Nordic regions, the innovation firms are particularly focused on the fields of technology, food/agriculture, and communication.

Examples of innovation firms founded past five years include IQM Builds, which builds hardware for universal quantum computers, eniferBio, which has developed a sustainable production process for fish feed raw material, and OneStream, which offers cloud based solution to live stream videos to social media sites.

Relative to other Nordic regions, the novel innovation firms of South Finland are particularly focused on innovations in material technology, product technology, and manufacturing technology. The region thus has an industrial technology focus. In fact, Finland stand out among the Nordic regions, as except for the capital region of Helsinki, which is focused on digital innovation, all other regions are industrially focused. The region of West Finland and Åland and the region of South Finland have all three major innovation focuses in industrial innovation.

Table 64 shows the top 10 novel innovation firms of the South Finland, formed during the past five years, while table 65 shows the innovation focus of the firms, and table 66 gives a brief description of the firms and their innovative focuses. While some of the novel innovation firms of South Finland are smaller in terms of employment; the typical firm is middle-sized. Most have attracted external public financing. IQM stand out by having attracted more than 71 million euro in external financing, while Lifetime Group, which is an IT consulting and software product development company, has attracted some seven million euro.

South Finland, relative importance of sectors among innovation firms founded past 5 years



South Finland, relative importance of sectors among innovation firms founded past 5 years

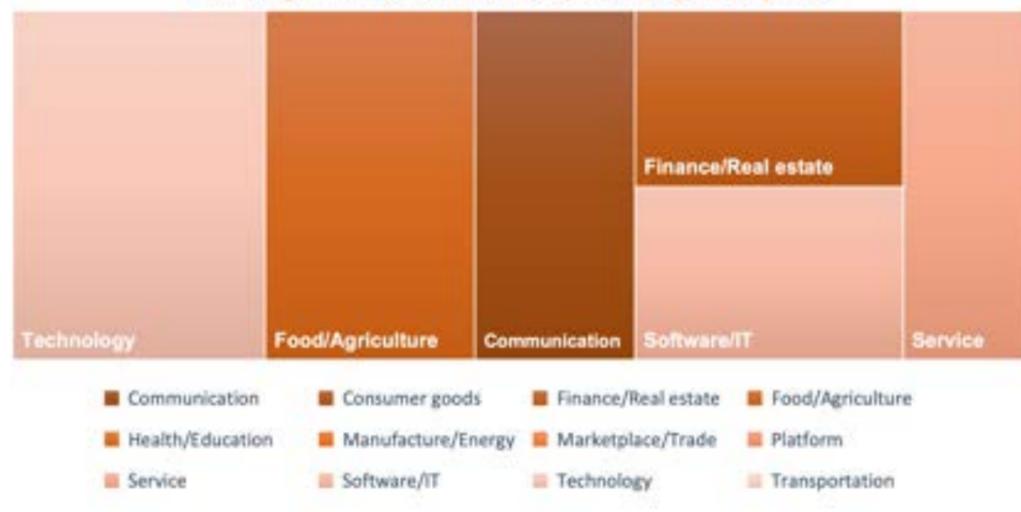


Table 64. Novel innovative firms in South Finland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
IQM	51-100	2018	Espoo	Technology	70.8
Sensible 4	51-100	2017	Espoo	Technology	6
Surrogate.tv	11-50	2018	Espoo	Software/IT	3.8
Pixieray	1-10	2021	Espoo	Technology	3.8
Gubbe	11-50	2018	Espoo	Service	2
Lifetime Group	51-100	2018	Espoo	Software/IT	6.9
eniferBio	1-10	2019	Espoo	Food/Agriculture	1
Rentle	1-10	2018	Espoo	Software/IT	0.3
OneStream	11-50	2017	Espoo	Communication	
Dwellet	11-50	2017	Espoo	Finance/Real estate	

Table 65. Innovative focus of novel innovative firms in South Finland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure /platform	Software	Manufacturing technology	Product technology	Material technology
IQM						X	X	X
Sensible 4					X		X	
Surrogate.tv					X			
Pixieray							X	
Gubbe		X						
Lifetime Group	X				X			
eniferBio						X	X	X
Rentle	X	X		X				
OneStream				X				
Dwellet	X	X						

Table 66. Descriptions of novel innovative firms in South Finland region

Name	Description
IQM	Builds scalable hardware for universal quantum computers, focusing on superconducting technology.
Sensible 4	Autonomous driving software company that develops self-driving vehicles for all-year round use.
Surrogate.tv	Developer of games designed to offer an experience that combines real-world physics and consequences.
Pixieray	Develops traditional eyeglass optics by introducing a pioneering adaptive solution.
Gubbe	Service for helping elders with their daily chores and staying active.
Lifetime Group	IT consulting and software product- development company that designs, develops and deploys solutions.
eniferBio	Has developed a new, sustainable production process for high-quality fish feed raw material.
Rentle	Easy-to-use rental software, for those wishing to rent out housing, equipment, etc.
OneStream	Cloud based solution to live streaming pre-recorded videos to social media sites.
Dwellet	Rental agency, focused on simplifying the process of renting.

West Finland and Åland region innovation map



In the West Finland and Åland region, many novel innovation firms are focused to Turku, but also the cities Tampere, Jyväskylä, and Seinäjoki. Relative to the other Nordic regions, the innovation firms founded past five years in West Finland and Åland are mainly focused on the areas of transportation, technology, and marketplace/trade.

Examples of novel innovation firms include Jyväskylä based Logmore, which offers logistics quality control by data loggers and a cloud platform, Turku based Comptek Solutions, which offers a technology for compound semiconductor devices, and Turku based Baia, a cloud-based commerce platform for emerging markets and informal economies.

Relative to other Nordic regions, the novel innovation firms of West Finland and the Åland region are particularly focused on innovations in material technology, manufacturing technology and product technology. The region is thus entirely focused on industrial innovation. In fact, Finland stands out among the Nordic regions, as besides the capital region of Helsinki, which is focused on digital innovation, all other regions are industrially focused. West Finland and Åland, and South Finland have all three major innovation focuses on industrial innovation.

Table 67 shows the top 10 novel innovation firms of the West Finland and Åland region, formed during the past five years, while table 68 shows the innovation focus of the firms, and table 69 gives a brief description of the firms and their innovative focuses. All the novel innovation firms in the region have attracted some external public financing, some a few hundred thousand euro and others above one million. Logmore stand out by having attracted over four million in financing, while Revonte, a Tampere based company that has created a soft-

ware-driven platform for building e-bikes, has attracted two and a half million euro. While some of the novel innovation firms of the region are smaller in size of employment, others are medium-sized.

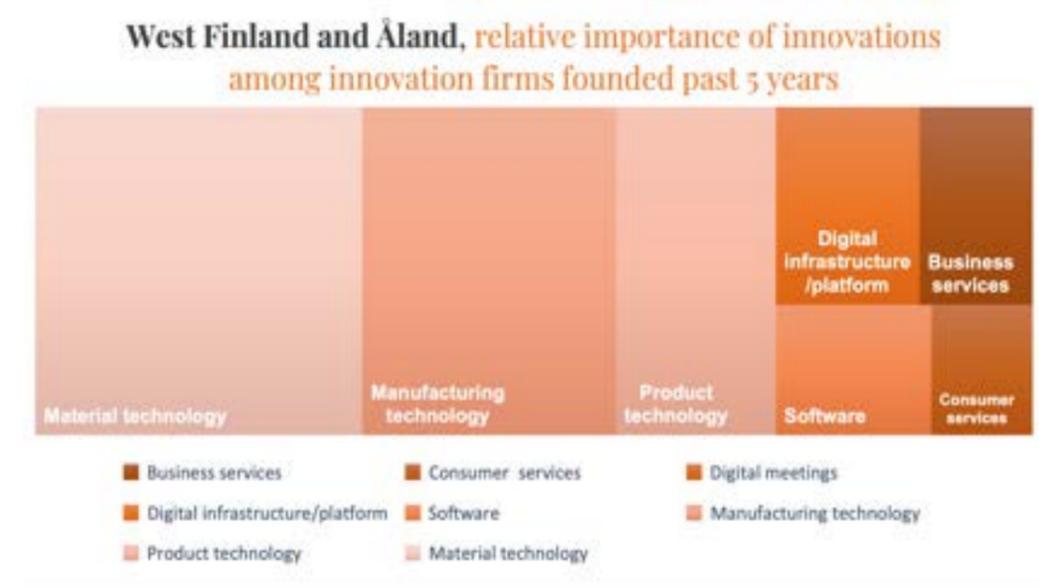


Table 67. Novel innovative firms in West Finland and Åland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Logmore	11-50	2017	Jyväskylä	Transportation	4.2
Boom Corp	1-10	2020	Tampere	Software/IT	1.5
Brinter	1-10	2018	Turku	Technology	1.2
Revonte	11-50	2018	Tampere	Technology	2.5
Comptek Solutions	11-50	2017	Turku	Technology	1.8
Maslog Oy	1-10	2017	Seinäjäki	Technology	0.8
Baia	11-50	2019	Turku	Marketplace/Trade	0.3
Entis	1-10	2017	Turku	Food/Agriculture	0.6
RED Ai	1-10	2020	Turku	Finance/Real estate	0.1
Adaptos	1-10	2018	Tempere	Health/Education	2.3

Table 68. Innovative focus of novel innovative firms in West Finland and Åland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure /platform	Software	Manufacturing technology	Product technology	Material technology
Logmore	X			X	X			
Boom Corp					X			
Brinter						X	X	X
Revonte				X	X	X		X
Comptek Solutions	X						X	
Maslog Oy						X	X	X
Baia	X	X		X				
Entis						X	X	X
RED Ai	X			X				
Adaptos							X	X

Table 69. Descriptions of novel innovative firms in West Finland and Åland region	
Name	Description
Logmore	Aims to improve logistics quality control by QR data loggers and a connected cloud platform.
Boom Corp	A mobile games developer company.
Brinter	Has developed a modular 3D bioprinter.
Revonte	Created a software-driven e-bike platform for building e-bikes.
Comptek Solutions	Offers a novel passivation technology for compound semiconductor devices.
Maslog Oy	Develops and manufactures the inside wheel for e-drivetrains.
Baia	Cloud-based commerce platform designed exclusively for emerging markets and informal economies.
Entis	Entis' snacks are insect and vegetable protein-based.
RED Ai	Develops an AI powered finance grid built on a novel propriety protocol.
Adaptos	Has developed an adaptive bone graft substitute.

East Finland region innovation map



In the East Finland region, novel innovation companies are particularly focused to the city of Joensuu but can also be found in Kuopio and Harjuma. The innovation companies of the region are strongly focused on the areas of technology, service, and software/IT.

Example of innovation firms founded past five years includes 3AWater in Kuopio, which is building technology to reduce the risk of environmental damage in mining, Redkik in Joensuu, an insurance and software per service provider for the shipping industry, and Gamer Health in Kuopio, a developer of app for esports.

In relation to the average Nordic region, the novel innovation firms of East Finland are particularly focused on innovations in manufacturing technology, product technology, and business services. East Finland is thus a mainly industrially oriented innovation region. This is like the Lapland and Oulu region, as well as the West Finland and Åland region, and South Finland. The capital region of Helsinki is the only Finnish region that instead is mainly focused on digital innovation.

Table 70 shows the top 10 novel innovation firms of the East Finland region, formed during the past five years, while table 71 shows the innovation focus of the firms, and table 72 gives a brief description of the firms and their innovative focuses. The novel innovation firms of East Finland are smaller in size of employment. Most have limited or no public external financing. Kelluu Oy is an exception, as this Joensuu-based company, which develops technology for continuous aerial surveillance, has received over one million euro in external public financing.

East Finland, relative importance of sectors among innovation firms founded past 5 years



East Finland, relative importance of sectors among innovation firms founded past 5 years



Table 70. Novel innovative firms in East Finland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Redkik	1-10	2020	Joensuu	Service	0.5
3AWater	1-10	2019	Kuopio	Technology	0.1
Kelluu Oy	1-10	2018	Joensuu	Technology	1.2
SeeTrue Technologies	1-10	2018	Joensuu	Technology	0.2
Laava Tech	1-10	2017	Harjuma	Technology	
Gamer Health	1-10	2018	Kuopio	Software/IT	
Pitkospuu Productions	1-10	2019	Joensuu	Service	
Chipmetrics	1-10	2019	Joensuu	Technology	
Business Joensuu	1-10	2019	Joensuu	Service	
Cupcake Labs Oy Ltd.	1-10	2017	Kuopio	Software/IT	

Table 71. Innovative focus of novel innovative firms in East Finland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Redkik	X				X			
3AWater						X		
Kelluu Oy	X						X	
SeeTrue Technologies					X		X	
Laava Tech						X	X	
Gamer Health	X			X	X			
Pitkospuu Productions	X							
Chipmetrics						X	X	X
Business Joensuu	X							
Cupcake Labs Oy Ltd.					X			

Table 72. Descriptions of novel innovative firms in East Finland region

Name	Description
Redkik	An insurance and SaaS provider offering shipment coverage.
3AWater	Building technology helping to reduce the risk of environmental damage in mining.
Kelluu Oy	Develops and offers technology for continuous aerial surveillance.
SeeTrue Technologies	Develops robust eye-tracking solutions.
Laava Tech	Develops an artificial lighting system to improve yield for greenhouse operators.
Gamer Health	A developer of app for esports, enabling teams to sell white labeled apps to their fans.
Pitkospuu Productions	Develops and implements marketing of growth-oriented industrial companies.
Chipmetrics	Develops and test business concept builder for advanced materials and microelectronics manufacturing.
Business Joensuu	A science park business incubator.
Cupcake Labs Oy Ltd.	An app development company.

Lapland and Oulu region innovation map



In the Lapland and Oulu region of Finland, innovative firms founded the past five years are mainly concentrated to Oulu. Oulu is the most populous city in Northern Finland and some distance away from the densely populated parts of Southern Finland. Also, in Kuhmo, Vuokatti, and Rovaniemi novel innovation firms are found. Compared to the average Nordic nation, the novel innovation firms of Lapland and are particularly concentrated in health/education, technology, and manufacture/energy.

Examples of innovation firms started in the past five years includes Cerenion in Oulu, which has developed a software for monitoring of brain function in intensive care, Iiwari Tracking Solutions in Vuokatti, which provides positioning and tracking solutions to different industries, and Montinutra in Kuhmo, which produces high-value bioactive products from forest industry side streams.

Compared to other Nordic regions, the novel innovation firms of Lapland and Oulu are particularly focused on innovations in software, product technology, and material technology. The Lapland and Oulu region is thus a mainly industrially oriented innovation region. Also, the East Finland, West Finland and Åland, and Lapland and Oulu regions are mainly focused on industrial innovation. The capital region of Helsinki is the only Finnish region that is mainly focused on digital innovation.

Table 73 shows the top 10 novel innovation firms of the Lapland and Oulu region, formed during the past five years, while table 74 shows the innovation focus of the firms, and table 75 gives a brief description of the firms and their innovative

focuses. The novel innovative firms of Northern Norway are typically small in terms of employment, and have not received significant external public financing. The exception is FREYR which is medium-sized and has received close to four million in external financing.

Lapland and Oulu, relative importance of sectors among innovation firms founded past 5 years



Lapland and Oulu, relative importance of sectors among innovation firms founded past 5 years



Table 73. Novel innovative firms in Lapland and Oulu region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Cerenion	1-10	2017	Oulu	Health/Education	2.5
AIspotter	1-10	2018	Oulu	Software/IT	0.5
Finnadvance	1-10	2019	Oulu	Health/Education	0.6
Montinutra	1-10	2018	Kuhmo	Manufacturing/Energy	1
Iiwari Tracking Solutions	1-10	2018	Vuokatti	Technology	1.5
Sensmet	1-10	2017	Oulu	Technology	0.7
Badrap	1-10	2017	Oulu	Software/IT	0.2
SportaPost	1-10	2017	Rovaniemi	Software/IT	
Arctic Security	11-50	2017	Oulu	Platform	
Haja Networks	1-10	2018	Oulu	Communication	

Table 74. Innovative focus of novel innovative firms in Lapland and Oulu region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Cerenion					X		X	
AIspotter				X	X			
Finnadvance							X	
Montinutra						X	X	X
Iiwari Tracking Solutions	X			X	X		X	
Sensmet	X				X	X	X	X
Badrap					X			
SportaPost					X			
Arctic Security	X			X	X			
Haja Networks			X	X	X			

Table 75. Descriptions of novel innovative firms in Lapland and Oulu region

Name	Description
Cerenion	Medical device company that has developed a software for monitoring brain function in intensive care.
AIspotter	AIspotter automatically analyses video with a analysis service based on AI.
Finnadvance	Has developed microfluidic devices for in-vitro microvascular network generation.
Montinutra	Produces high-value bioactive products from forest industry side streams.
Iiwari Tracking Solutions	Provides positioning and tracking solutions to different industries.
Sensmet	Develops real-time multi-element water measurement applications.
Badrap	Provides all-in-one monitoring for email and IP addresses.
SportaPost	Developed an app for sports clubs to create and share content on social media, and to advertise.
Arctic Security	Develops and operates a threat intelligence analysis platform.
Haja Networks	Develops OrbitDB, a scalable and trustless peer-to-peer database.



Iceland region innovation map



Iceland is a Nordic island nation, with some distance between it and the other Nordic nations and a more remote cold climate. While small, the nation is known for its innovative startup environment. It has novel innovation firms in several different sectors, and relative to other Nordic regions, has a strong concentration of innovation firms in service, food/agriculture, and software/IT.

Examples of innovation firms formed during the past five years in services include IMS Vintage Photos, which helps digitize physical photos, and Expluria, which optimizes the post-booking experience, with real-time information to travelers.

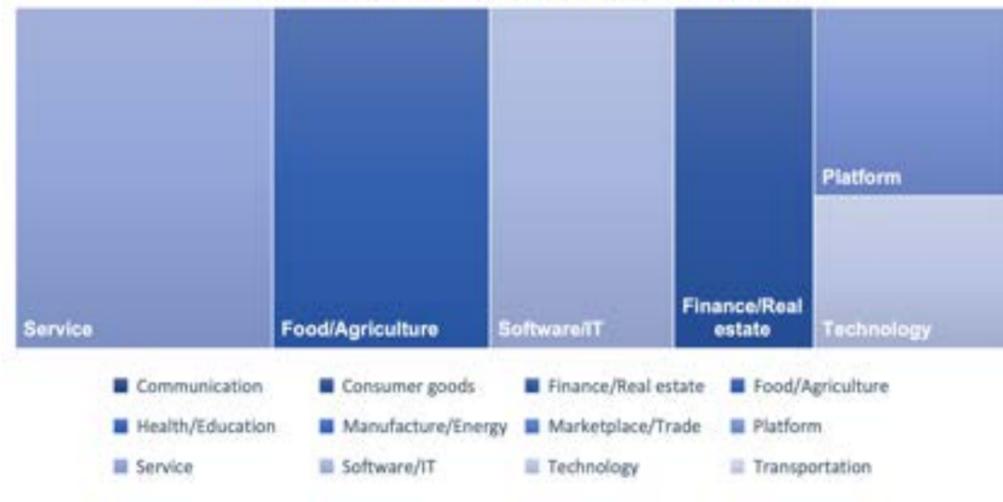
While most innovation companies of Iceland are found in the capital city of Reykjavik, Responsible Foods, which develops snack products with natural ingredients from Iceland, is located in Hafnardsfjörður. Novel innovative software/IT firms include GRID, which allows Excel users to turn their spreadsheets into modern web applications, and Teatime Games, a social games developer.

Compared to other Nordic regions, the novel innovation companies of Iceland are particularly focused on innovations in software, digital infrastructure/platform, and consumer services. Iceland is mainly aligned towards digital innovation in the activities of its innovative firms.

Table 76 shows the top 10 novel innovation firms of the Iceland region, formed during the past five years, while table 77 shows the innovation focus of the firms, and table 78 gives a brief description of the firms and their innovative focuses. The novel innovation companies of Iceland are typically small, in terms of employment, but several of them are also middle-sized. All the top ten novel innovation firms founded past five years have attracted some external public financing, and many companies over one million euro. GRID stands out by having attracted as much as fourteen million euro in external capital. TeaTime Games

has raised close to eight million, and Lucinity, which offers a platform that helps banks prevent financial crime, has raised seven.

Iceland, relative importance of sectors among innovation firms founded past 5 years



Iceland, relative importance of sectors among innovation firms founded past 5 years

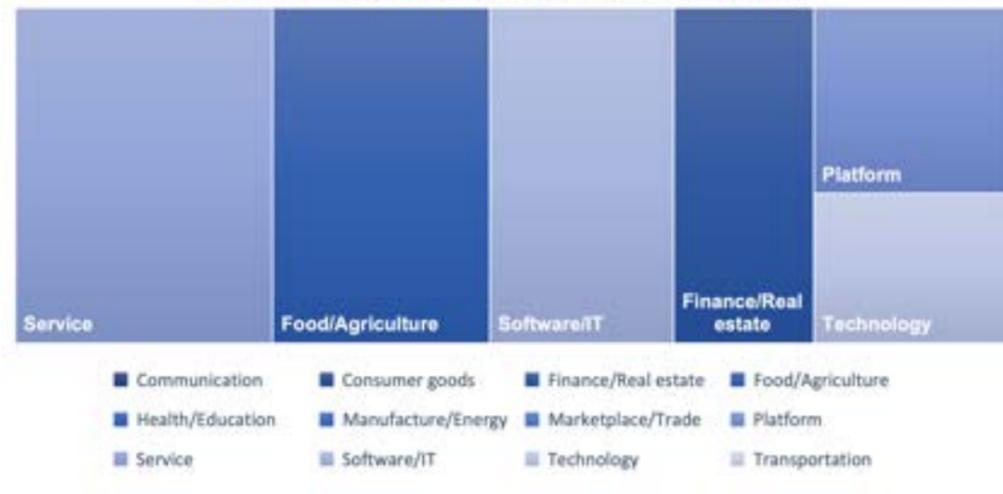


Table 76. Novel innovative firms in Iceland region, founded within past 5 years

Name	Number employees	Founded	Head office	Sector	External public financing (million euro)
Lucinity	11-50	2019	Reykjavik	Platform	6.9
GRID	11-50	2018	Reykjavik	Software/IT	14.1
Teatime Games	11-50	2017	Reykjavik	Software/IT	7.8
Fractal 5	1-10	2020	Reykjavik	Software/IT	2.6
Hefring Marine	1-10	2018	Reykjavik	Technology	0.1
Responsible Foods	1-10	2019	Hafnarfjörður	Food/Agriculture	1.4
The One - Dating App	1-10	2018	Reykjavik	Software/IT	0.3
Indo Services	1-10	2018	Reykjavik	Finance/Real estate	1
IMS Vintage Photos	11-50	2019	Reykjavik	Service	1.1
Expluria	1-10	2019	Reykjavik	Service	0.3

Table 77. Innovative focus of novel innovative firms in Iceland region

Name	Business services	Consumer services	Digital meetings	Digital infrastructure/platform	Software	Manufacturing technology	Product technology	Material technology
Lucinity	X			X	X			
GRID					X			
Teatime Games					X			
Fractal 5					X			
Hefring Marine	X			X	X		X	
Responsible Foods						X	X	
The One - Dating App		X	X	X	X			
Indo Services	X			X	X			
IMS Vintage Photos	X	X		X				
Expluria	X	X		X				

Table 78. Descriptions of novel innovative firms in Iceland region

Name	Description
Lucinity	Provides a platform which can help banks find and prevent financial crime.
GRID	Allows Excel users to turn their spreadsheets into modern web applications.
Teatime Games	A social games developer.
Fractal 5	Developing a social product to help prioritize networks better.
Hefring Marine	Develops a cloud-based telematics and sensory guidance system for vessels.
Responsible Foods	Develops snack products with natural ingredients from Iceland.
The One - Dating App	A conversation-first dating app.
Indo Services	Fintech company, offers indo wallets and competitive interest rates.
IMS Vintage Photos	Helps digitize physical photos.
Expluria	Optimizes the post-booking experience, with real-time information to travellers.

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