

CIO Trends #8: Nordics

IT leadership best practices for CIOs, CTOs and CDOs



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In this e-guide we take a look at how digital transformation is shaking up the Nordic region and placing CIOs at the forefront of the social and economic changes that come with it.

Norway, Denmark, Sweden and Finland are all heading in the same direction at a pace. This e-guide features an article about each.

Also read now it is traditional industries in the Nordic region that are driving digital transformation rather than the disruptors normally associated with it. This is not surprising as the Nordic economies are built on traditional businesses such as manufacturing, logistics and financial services. Global competition means they need to adapt quickly.

Karl Flinders, EMEA content editor

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■ Nordic digital transformation driven by traditional businesses

Gerard O'Dwyer, guest contributor

The Nordic region's longer-established companies are playing a more forceful role to advance digital transformation than local digital natives.

According to a new report commissioned by Tieto and conducted by IDC Nordic, digital transformation's main fuel is not coming from tech disruptors but mature industry players transforming their existing businesses.

Produced from data collated in July 2018, the [Towards a data-driven future](#) report surveyed CEOs and senior IT-department chiefs in 300 mid to large sized companies in Sweden, Finland and Norway. It looked at the technology-linked capital investment plans, activities and expectations of companies operating within IT, manufacturing, transport logistics and other core industry sectors.

Significantly, the IDC report observes that Nordic companies are lagging somewhat behind their global peers, and especially the US, in digital transformation.

Providing a timely road-map for Nordic enterprises, the report's medium-term forecast is that over 50% of the global economy will be digitised by 2021. The

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predicted outlook is that growth across all industries will be driven by digitally enhanced offerings. Furthermore, organisations will feel a more compelling need to digitalise their offerings, supply chains, and entire business models to remain competitive and relevant.

The weight of visible disruption is increasingly coming from Nordic and global companies that already have a strong market position, said [Markus Suomi](#), Tieto's chief technology officer. These are companies that can also universally boast an existing customer base, a flourishing partner ecosystem and a high brand awareness.

"Disruptive initiatives from established organisations are often less apparent," said Suomi. "That said, the impact is at least as profound as that of a digitally native startup."

The majority of the Nordic region's digitally transforming enterprises are currently categorised as digital explorers or digital players. Extensively, these are companies that are not actively engaged in innovating their business models. Instead, they tend to be proactively using digital technologies to bolster efficiency and customer experiences.

The report highlights that IT is playing an expanding and more critical role in the business transformation of Nordic companies. The key technologies driving change range from the internet of things (IoT) to AI-linked machine learning and

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voice recognition. Fundamentally, these are areas primed for growth and built on more mature technologies like cloud, mobility, and social networking.

Moreover, the Nordic path to digital transformation is being propelled by changes to organisational structures and partner networks. Within this evolving framework, companies are not just involving their senior IT executives more in the business decision-making process, but promoting or recruiting strategically to drive technologies identified as essential to growing their business innovation.

The digital transformation gap with US peers has motivated Nordic companies to invest more resources, in capital and IT expertise. The share of digital transformers is around 16% among Nordic enterprises.

Nordic organisations are generally structured to focus on business optimisation, with many adopting a more guarded approach in their advance unless a real disruptive force is encountered. Although quick to leverage new technology, the report finds that only 7% of Nordic organisations have opted to change revenue models, or effected major revisions to their business models.

An earlier survey conducted by Tieto found over 70% of the CEOs in Nordic companies believe their current business model will become obsolete in the next five years or earlier. The new report assesses that over 80% of senior executives in Nordic organisations believe the most significant changes are still to come.

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Around 85% expect to change business or operational models over the next two years, an indicator that digital transformation remains at the early stage for most Nordic organisations.

AI technology a strategic priority

While social networking and data analytics are rated as the most important technologies to fuel business transformation, AI technology is among the strategic priorities for most companies and industries.

Swedish organisations are marginally ahead of their Finnish counterparts, with Norwegian enterprises following behind.

The cross-border disparity in Nordic digital transformation rates is attributed to several contributing factors. These include the different pace of economic development in the wake of the 2008 financial crisis coupled with variations in industry demographics across the region.

Sweden's economy recovered more rapidly than was the case for Finland post crash. In Norway, which was not seriously impacted by the financial crash, many companies did not get the same "wake-up call" on the need for digital transformation. Consequently, many Norwegian organisations responded later than counterparts in Sweden and Finland.

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The IDC report reveals that Nordic IT chiefs are taking a lead role in the business development of organisations as they adapt to the digitally transformed world.

The Nordic digital revolution

The transforming Nordic digital revolution is impacting all quarters and corners of business and industry. [For example an banking/IT consortium](#) that includes Tieto, Nordea Bank, OP Financial Group, Asiakastieto and the financial services provider Privanet Securities, has created a Nordic partnership to develop a new blockchain-based platform that digitalises trading in non-listed company shares.

“The digital platform enables parties to trade reliably and securely using a shareholders’ register that is digitally controlled. It takes care of tax obligations and regulatory reporting,” said [Kimmo Lönnmark](#), CEO of Privanet Securities.

“The model we are using makes the platform globally scalable, and eliminates the need for the manually operated notary business model that traditionally serves as an intermediary between borrowers and investors.”

The consortium plans to start building a global, market-ready platform with customer piloting in 2019.

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■ Sweden's central bank to test digital currency

Gerard O'Dwyer, guest contributor

Sweden's vision of a cashless society has gained traction after the Riksbank (central bank) rolled out plans to test a digital currency, the e-krona.

The decline in the use of cash and cash-based transactions in Sweden is [driving the Riksbank initiative](#).

In 2016, the ruling Social Democrats presented a plan to make Sweden the world's first cashless society by 2030. This specific target date was broadly supported by opposition party leaders subject to the government reaching a consensus agreement on the plan with trade unions, banks and the country's leading national consumer groups.

The Riksbank's action reflects a visible undercurrent of support for the government's cashless society ambition.

Sweden's march towards a heavily digitised economy was highlighted on October 1, when the global furniture giant Ikea rolled out its first cash-free retail store in Valbo. The pilot store will only accept digital payments in the form of bank cards and smartphone-based pay solutions.

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The e-krona initiative is technically being run as a pilot project to test the suitability of different digital currencies. The central bank has not taken a firm decision about whether a national e-krona launch might be a short- or long-term possibility.

The central bank will use the project to ascertain how an e-krona could be best employed to provide the general public with access to a state-guaranteed means of payment.

A decision as to whether the central bank will introduce the e-krona to replace legal tender notes and coins will take some time, said Eva Julin, the [Riksbank's e-krona project](#) manager.

"We will need to run trials, then test and prove various solutions," said Julin.

"Any technological solutions we develop and test must have the capacity to be viable and practical. This is a learning process for us, but one that may lead to useable digital currency."

Any concrete plans to launch an e-krona would first require legislative amendments to the Swedish Central Bank Act (Sveriges Riksbank Act). The existing act would need to be expanded to enable the central bank to issue an account-based e-krona. An amended act would also be required to accommodate the issuing of a value-based e-krona without interest and with traceable transactions.

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Sweden's banking and commercial sectors are supportive of Riksbank's e-krona vision, albeit somewhat sceptical that the government can meet its 2030 cash-free target date. Sweden's banks are universally supportive of the plan. Most bank branches in Sweden no longer provide an over-the-counter service for cash-based transactions to customers.

The Riksbank has recorded a sharp increase in mobile, card and online payments in the last eight years. The proportion of cash transactions in the retail sector has dropped from 40% in 2010 to 15% in 2017. Around 85% of consumers aged 16 to 74 years in Sweden conducted their banking online in 2017. This compares to a European average of 51%.

However, not everyone embraces a rapid transition to a digital currency. Interest groups representing older citizens, such as the [Swedish National Pensioners' Organisation](#) (Pensionärernas Riksorganisation), are demanding a national debate and possible referendum to decide the issue. The lobbying group has 350,000 members.

"The right to use cash must remain a right in Sweden so long as the law applies," said Christina Tallberg, the SPNO's chairman. "People must continue to have this option available to them. We are not against a cash-free society, we just want it to proceed at a pace everybody can feel comfortable with."

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■ Danish government launches wide-ranging digital services project

Gerard O'Dwyer, guest contributor

The Danish government has announced a digital project that includes 22 separate initiatives, including an app-based citizens digital platform that can be used to access all publicly held data on Danish citizens.

The World-Class Digital Service (WCDS), as it's known, was introduced by The Ministry for Public Sector Innovation (MPSI) with the objective to implement an integrated approach to accelerate the process of digitisation in Denmark's public sector.

The societal changing aspect of the WCDS is reflected in certain high-profile initiatives. One of the most prominent of these is a Digital Healthcare project that would enable homecare services' recipients to access professional support and communicate directly with medical teams, or specific health specialists, over digital platforms.

WCDS forms part of the government's long-term plan to transform how frontline public health services are delivered in Denmark. The objective is to scale-up the

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use of digital health solutions and platforms to help reduce non-emergency visits to clinics and hospitals.

The same digital healthcare initiative will be used to reduce the number of homecare visits by medical and other healthcare and community service professionals. The catalyst for change here is cost reduction and achieving public spending savings through improved efficiencies in the delivery of client services.

“Digitisation has major advantages for municipal authorities and public services. It will enable public authorities to better deal with data on living conditions, social security benefits and child benefits. Service users will be able to access more information on public services and benefits they receive digitally,” said [Sophie Løhde](#), Denmark’s public sector innovation minister.

Denmark’s growing reputation as a digital innovator has influenced a government proposal to join the so-called [Digital 7 \(D7\) network](#) in 2019. The D7 serves as a collaborative forum between the most advanced countries in the field of public digitalisation.

The plan underscores Denmark’s intent to become a leading and innovative player within public services digitisation. The current roll call of D7 members includes Estonia, Canada, South Korea, New Zealand, Israel, the UK and Uruguay.

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WCDS will enable more government departments and municipalities to move more information on public services and benefits to digital platforms such as My Overview. My Overview, which is currently accessible on the Danish government's borger.dk portal, is a one-stop resource for public services information ranging from personal taxes, passport renewal, digital post, healthcare services, public housing and even school enrolment.

The MPSI is working to develop an app for My Overview that will allow users to communicate and conduct various functions more easily with those government and municipal departments responsible for delivering public services. Moreover, the WCDS will introduce trust-building measures that are intended to add greater transparency around how public authorities handle and store personal data.

The My Overview digital platform will be redesigned to give citizens access to a comprehensive digest of what data state departments and local authorities hold on record about them.

Public trust in the government's digitisation plans is very much on the mind of the MPSI. A recent survey commissioned by the MPSI found 83% of Danish citizens have confidence in the government and public agencies to process personal data efficiently and honestly.

The same poll discovered 37% of Danes hold a high level of trust in public bodies to reliably and ethically handle personal information. The MPSI is hoping

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that its proposed trust-building measures will elevate the public confidence meter to 90% by 2024.

“Denmark has a really good track record at using digital solutions in the public sector,” said Løhde. “We need to raise the level of our ambitions in the digital field and continue to develop and become one of the very best countries in the world for digitisation in the future. We are now taking the next big step.”

Strategic collaboration

The ambitious reach of the WCDS project is evident in the MPSI's decision to form a strategic collaborative partnership pact with municipal organisations Kommunernes Landsforening (KL) and Danske Regioner (Danish Regions). This emphasises the government's determination to spread the full benefits emanating from the public sector digitisation reform across all of Denmark's five regions and 98 municipalities.

The national partnership format agreed between the MPSI, KL and Danske Regioner includes the establishment of a jointly financed Technology Investment Fund (TIF). The TIF will fund approved projects to develop and test different digital solutions for downstream use in publicly delivered services such as healthcare, education and housing.

The TIF is projected to invest DKK410m (€55m) from 2018-2022.

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While the MPSI's WCDS project has been generally well received in Denmark, it has not been universal. Concerns over the pace and impact of the proposed digital initiatives, particularly those affecting the delivery of healthcare services, have been raised by the DaneAge Association (DAA/ Ældre Sagen), a non-profit organisation with 650,000 members which represents the interests of senior citizens in Denmark.

"Some of the digital technology changes that are proposed in the government's digital project do not suit older citizens, especially those who may be mentally impaired or are accustomed to homecare visits," said Per Tostenæs, a senior adviser to the DAA's management board.

"For some, using a computer or other device to communicate with digital platforms could be an overwhelming and uncomfortable experience for senior citizens."

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■ Finnish city Espoo trials artificial intelligence for community support

Gerard O'Dwyer, guest contributor

Finland is fast becoming a major Nordic and European powerhouse in the development of [artificial intelligence](#) (AI) technologies and applications.

The latest chapter in this technology journey, and one which has captured the attention of municipal authorities across Finland, is the City of Espoo's Customer-Centric Project (CCP).

The project has seen Espoo's authorities bring in IT group [Tieto](#) to test a range of AI models that could be employed to provide greater efficiency in the delivery of specialised frontline services.

A satellite of metropolitan Helsinki, Espoo is Finland's second largest city and municipality, with 270,000 residents.

The CCP supports Espoo's plan to enhance the overall effectiveness of its response systems. Espoo wants to use AI to support important core functions, such as channeling funding and critical resources to the local authority's

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vulnerable residents. Moreover, the city is seeking to more accurately target high-risk individuals and families within the municipal area, who may be experiencing financial distress.

Widespread interest in Espoo's AI project

The AI-based dimension of Espoo's CCP has attracted external interest from many of Finland's 210 other municipalities.

The project is happening against a backdrop where the Finnish government has set about reforming the country's local government structure. The merging of smaller neighbouring municipalities is a fundamental part of this reform, as is the centralisation of frontline public services such as healthcare and education. The Local Authorities Reform Bill is expected to reach Finland's national parliament, the Eduskunta, in the second half of 2019.

Budget-conscious municipalities, which are to become more self-financing under the proposed reform, are eager to explore the expanded use of customer-centric digital platforms and AI solutions to reduce their operating costs. As a result, councils are examining ways of using AI as a cost-saving measure to replace certain traditional and manually delivered customer service functions. The objective is to redirect savings gained from the wider use of digital platforms and AI to bolster funding and resources for frontline services.

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The CCP is gaining most traction among Finland's bigger urban municipalities. Espoo has indicated a willingness to share the results of its project with city authorities in Tampere, Turku, Oulu and Jyväskylä. Chiefs in these cities are hoping that the CCP could become a customer-centric AI standard for Finland's largest urban municipalities.

"The AI solutions we want to develop must have the ability to identify those client groups that urgently need our services. The potential of AI to provide an early warning system to identify the municipality's most vulnerable clients are being tested. It will also be important to use AI to gather, analyse and handle personal data in a secure manner," said [Tieto's Tomas Lehtinen, project manager for the Espoo initiative](#).

Data sharing for efficient local services

The client-centric AI services models tested in the CCP revealed the technology's capacity to anticipate financial, medical wellbeing and social welfare needs before an individual's or family's situation reached a crisis point. The same CCP models will be used to transform how different municipal departments governed by the City of Espoo collect and share personal data relating to individuals and families.

Espoo's long-term objective is to apply a holistic approach to a client's personal data, services record and future needs. Just like other local authorities in Finland, data regarding municipal residents in Espoo is siloed. In practice, this

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means that personal data relating to individual clients is generally stored on the information databases of different departments. Under Espoo's current administrative IT system, the various departments and frontline office units within the municipality do not routinely share information.

For the City of Espoo, the goal is to combine separate personal data information sources using AI to create a higher degree of efficiency, said Lehtinen.

"We are aiming to use AI to benefit municipal residents, our employees and the City of Espoo as a whole. The client-centric services solutions we are looking at will have multiple layers of benefits. Much of the AI data we generate can also be shared with various research institutes. AI doesn't have a decision-making role in Espoo at present, but going forward it can offer the city's personnel with an important support tool in their daily decision-making," he said.

Aside from main technology partner Tieto, Espoo is also collaborating with the [Finnish Center for Artificial Intelligence \(FCAI\)](#). Espoo joined the FCAI in May 2018, after the institute was co-founded by Aalto University and the University of Helsinki.

"The information in Espoo's databases, and the shared databases of the Helsinki metropolitan area, carry a high level of value and significance for researchers. Espoo's decision to pioneer this niche area of AI and intelligent technologies reflects well on a municipality that has an ever-growing number of innovation-led startup firms. It sets a strong basis for cooperation with AI

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development specialists like the FCAI,” said [Samuel Kaski, the head of the FCAI](#).

AI effective in predicting residents' needs

Advanced tests focused on harnessing AI to cultivate social and healthcare service planning, as well as bolstering the ability to predict the well-being of clients. The results have been largely positive. Completed trials confirmed the suitability of AI as an effective, cost-efficient tool in the planning of social and healthcare services and in predicting clients' individual well-being requirements.

One of the CCP's highest-profile trials combined the social, healthcare and early education citizen relationship data of the entire population of Espoo between 2002 and 2016. Analytics software was used to scrutinise the mass of data from more than 37 million contacts. Espoo plans to use the knowledge gained from the AI study to better target the municipality's most vulnerable residents, particularly in cases that might require client intervention to prevent social exclusion.

Matti Ristimäki, the head of Tieto's data-driven businesses division, said: “The AI trials demonstrated that the technology and the utilisation of data have a significant role to play in healthcare, whether in developing new service paths or supporting healthcare professionals in their daily work.”

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Oslo: A hub for the social startup scene

Matthew Staff, guest contributor

There's a commonly used phrase among tech entrepreneurs in Oslo at the moment: "I want to save the world, but get rich while trying."

For all of Silicon Valley's innovation, ASEAN's manufacturing prowess, or central Europe's socially driven legislation, it is Scandinavia that arguably encapsulates all three of these strands most effectively – Norway's capital in particular stands out as one of the world's foremost hubs for tech-based, but socially motivated, startups.

Through speaking with some of the city's leading lights across this "startups for good" revolution, it seems more than a conscious self-positioning. Rather, it's a natural alignment of commercial opportunity, cultural readiness and social values that is being capitalised on.

"When you go through a financial crisis and an oil price crash in the same decade, it inevitably changes investment patterns, and business outlooks," says [Sten Kirkbak](#), chief marketing officer at [XPLORA](#), a wearable technology

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platform that was initially set up so parents could locate or communicate with lost children without arming them with smartphones at such a young age.

The invention, which has now reached the US, UK, Germany and Spain, manifested from Kirkbak's own terrifying experience of losing his then-four-year-old son in a shopping mall, and realising that through internet of things (IoT) and communication technologies, he could connect to his fridge, television and car, but not his own child.

Converting societal common sense into commercial success, via technological innovation, was a proposition that Kirkbak managed to realise in the aftermath of both aforementioned crises – and he's not alone.

A thriving new-look economy

Kjetil Bøhn, CEO of [Quantafuel](#), a company using [proprietary catalytic systems to turn plastic waste into high-quality synthetic fuels](#), agrees that diversification, not necessity, has been the mother of invention for the country.

"Norway essentially used to revolve around oil and gas, fishing and shipping, and the shift that has occurred in the past few years has affected everyone. Highly skilled engineers have looked away from those sectors to apply their skills in more socially driven domains," he says.

"It's been a government-driven change too," adds [Karen Dolva, CEO and co-founder of No Isolation](#), a company developing tools to prevent involuntary

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social isolation. “Since the two crises, numerous initiatives, programmes, accelerators and incubators have been created, aimed at helping tech startups.”

“And most of these startups are looking to solve problems,” adds Arne Peder Blix, CEO and co-founder of web operating system firm, [Friend](#). “The diversification away from oil has allowed a new-look economy to thrive.”

Business receptivity

Such entrepreneur encouragement ties in seamlessly with a [world-leading technological infrastructure](#) that exists in Norway. Being a relatively small population of little more than five million people, the country also serves as an ideal testbed for new businesses looking to leverage initial market feedback and data collation before branching out internationally.

[Johan Høgåsen-Hallesby](#), [chief technology officer \(CTO\)](#) of [Urban Sharing](#), the company behind Oslo's city bike sharing initiative and delivering the technology for Edinburgh's first city-wide cycle hire scheme, believes this level of business receptivity has been vital to the startup community's evolution in recent years.

“Within Norway, there's an evident readiness: a commercial readiness to explore problem solving technologies, and a social readiness to embrace advanced technologies like AI [artificial intelligence], IoT, [electric vehicles](#) or even [micro-mobility](#) in our case,” he says.

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And naturally, if there are companies with the knowhow to fill this market gap, and a clientele ready and willing to indulge, then there are investors not far behind.

“In Norway, more and more investors are developing an actual mandate and strategy to put funds into projects that contribute to a better society,” Kirkbak says. “Healthcare, education, green transportation, security – these are huge trends that investors want to be seen to be aligned with, so regardless of motive, there is lots of money being put into ideas that tackle societal challenges.”

Such business readiness is linked with more cultural notions of openness, transparency and collaboration to ignite a socially driven business movement.

This is especially the case among younger generations who don't just want a job anymore, but a meaningful job. Whether it's caring for the environment, making people feel safer, cutting down on carbon emissions or improving levels of healthcare, Norway seems to be one of very few countries to put its money, and inventions, where its concerns are.

“The mentality reflects what people want to be associated with, culturally,” Bøhn adds. “And it fosters a mindset shift from competition, to collaboration.

“It's a mentality where a Norwegian person typically believes they are no better than anyone else. And further than that, they want to work for people who are

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the most socially acceptable, to try to create something meaningful through modern technologies.”

Social values

This ushers in the third leg of Norway’s startup tripod: social values.

As a prime example, by the end of 2019, cars will be banned in Oslo. Addressing issues of health and eco friendliness, the city is striving for social respectability and positive change. And the best part is, the population is almost entirely in favour of such a move.

“It’s obviously great for us,” Høgåsen-Hallesby jokes in reference to Urban Sharing’s bike sharing model, “but importantly it highlights values that most Norwegians already possess. Oslo has a population of little more than 600,000 people, yet we have had as many as 100,000 unique users of our bikes this year, and half of those are annual subscribers.”

It’s a fond embrace of modern technology and business ideologies that would be lost on many countries, but that encapsulates why the “startups for good” trend is blossoming in Norway’s capital.

Høgåsen-Hallesby adds: “I used to be afraid that, because we had such a big impetus from oil before, there would be an engrained laziness when it came to innovation. Our welfare system is good, and people are pretty well-off.

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“But I’m so pleased to see that people have gone the other way, and the trend points towards diversification and creating a different kind of value moving forward.”

Even more encouragingly, the trend is only just getting started.

“In the Nordics, and Norway in particular, there’s something big happening from a startup perspective,” says Tharald Nustad, founder of [Nordic Impact](#), a venture capital firm that invests in social startups. “The Norwegian business environment is receptive to the startup community, our culture aligns with the values being displayed, and our society is ready and willing to embrace the technologies on offer.

“Together, this forms a combination that can help a relatively small country solve some of the world’s most pressing problems.”

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