Digital Frontrunners: Country Spotlights 2019

Meet the nations leading the way in digitalisation.
Nesta is an innovation foundation. For us, innovation means turning bold ideas into reality and changing lives for the better.

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Nesta runs two programmes in the Nordics and Benelux. These are Digital Frontrunners, an active network of over 300 future of work experts, policymakers and practitioners and FutureFit, a major training and research project involving unions, researchers and learning experts. The programmes are supported by Google and Google.org.

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Looking for Inspiration:

The Digital Frontrunner Countries

New technology, ageing populations, and globalisation are driving some of the biggest changes in labour markets around the world. According to the 2018 Future of Jobs Report, 75 million jobs could be displaced by 2022 in 20 major economies. At the same time, technological advances may also create 133 million new roles.

The challenges and opportunities of digitalisation are wide and far reaching, and many questions emerge:

- How can we keep pace with the rapid rate of change?
- How can we plug the gaps being left in the labour market?
- How can we uncover new ways to drive innovation?
- How can we motivate workers to become continuous, lifelong learners?

- How can we harness AI and new tech to deliver an inclusive world of work?
- Can we harness mega trends like migration?
- Can we get businesses, governments, and academia to work more effectively together?

Through the Digital Frontrunners programme, we are uncovering how Belgium, Denmark, Estonia, Finland, the Netherlands and Sweden are grappling with these questions. As some of the most digitally advanced countries in the world, they are widely considered to be leaders in their response to digitalisation.

Although we can’t look to the Digital Fronrunner countries for all of the answers, there is plenty of inspiration to be found in their examples.

In this spotlight series

While the Digital Fronrunner countries have shared challenges, this spotlight series provides a snapshot of the unique priorities for each country, and illustrates how they are actively responding to them through a variety of initiatives.

The case studies included from each country will provide:

1. A snapshot of key statistics and indicators:
   - Population size
   - Median age
   - Digital Economy and Society Index (DESI)
   - Percentage of the population with basic digital skills
   - Percentage of the population with above basic digital skills
   - Percentage of female ICT specialists
   - Percentage of adults aged 25 to 64 who participate in lifelong learning

2. A summary of the country’s priorities when it comes to responding to digitalisation

3. A summary of the approaches being implemented to address these priorities

4. Two case studies for each country summarising:
   - What it is
   - Who set it up
   - How it works
   - Impact it’s had

We hope that this series will serve as inspiration for other governments and policymakers around the world. Check out the online version of these, the latest analysis, research and opinion pieces on:

www.nesta.org.uk/project/digital-fronrunners/

@D_Fronrunners

In the Digital Fronrunners programme, we are always keen to learn about innovative approaches seeking to create a world of work that’s fair and forward-thinking. If you’d like to tell us about your work, please get in touch!

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1https://www.weforum.org/reports/the-future-of-jobs-report-2018
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Belgium

Population — 11.56 m  Median Age — 41.4  DESI 2019 — 9th

61% of the population have basic digital skills  1.8% female ICT specialists
31% have above basic digital skills  45.2% of adults aged 25 to 64 participate in lifelong learning

Belgium is delivering digital skills through inclusive and user-centred approaches.

As a Digital Frontrunner country, Belgium is committed to the digitalisation of the workplace and consistently performs near the top in European digital rankings. However, in order to reap the benefits of this digital transformation, the country will need to address the shortage of skilled professionals it is experiencing.

The approach

Belgium is working to deliver the digital skills training required to prepare the workforce for the digital era through an inclusive, user-centred approach that seeks to include people from all backgrounds.

Many recently launched initiatives highlight the need to go beyond developing basic digital skills, with an emphasis on developing entrepreneurial know-how. Fostering such skills will lead to a more resilient workforce, capable of adapting to the changes that come with an increasingly digital workplace.

The main driving force behind these efforts is called Digital Belgium, a strategy initiated by the Belgian Government in 2015. The strategy has incorporated three goals for 2020, which address several gaps in the labour market:

1. To be in the top three in the Digital Economy and Society Index (DESI)
2. To introduce 1,000 new startups
3. To create 50,000 new jobs in a wide range of sectors

The government has also invested €6 million in digital skills training on a yearly basis to address the skills shortage. The Digital Champions website compiles all the digital skills initiatives in Belgium, and offers a glimpse of what is currently happening in this field.

The challenges

— Belgium performs just slightly above the EU average when it comes to equipping citizens with ‘basic’ digital skills (DESI 2019).
— The country ranks 12th in the human capital category, struggling particularly in the number of STEM graduates.
— Up to 584,000 open STEM vacancies could remain unfilled by 2030 if no decisive action is taken.

Digitalisation at a glance

— Committed to the digitalisation of the workplace.
— Strategy goes beyond digital skills: emphasis on developing entrepreneurial know-how.
— In 2015, the government initiated the Digital Belgium strategy to address gaps in the labour market.
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Work remains to equip more citizens with digital skills and address growing STEM vacancies.
CASE STUDY

Digital Belgium Skills Fund

Supporting and funding projects that educate socially vulnerable young people and adults in digital skills.

Who set it up?
Established by Deputy Prime Minister and Federal Minister of Digital Agenda, Alexander De Croo.

How does it work?
162 applications were processed in 2018 and 37 were chosen. This includes BeCode, a coding school which helps young adults to become professional programmers. Interface3Namur was also launched, delivering training courses that focus on software development, digital literacy, and digital skills to develop services for SMEs.

Impact
Training initiatives targeted at socially vulnerable people under 30 are selected by the King Baudouin Foundation. Each selected project is eligible to receive financial support between €50,000 - €500,000.

Find out more: http://digitalbelgium.be/en/

“The digital revolution is an opportunity revolution. Anyone can make it into the digital world, if you have the right skills.”
— Alexander De Croo, Deputy Prime Minister

CASE STUDY

Studio Digital, iDrops

The project offers training and mentorship in digital skills for vulnerable groups, such as refugees and people struggling with addiction.

Who set it up?
The initiative is run by iDROPS, a social innovation agency tackling social issues (funded by Digital Belgium Skills Fund).

How does it work?
Workshops were held at five different locations in the Flanders region during 2017. The number has been growing year-on-year and the project is constantly organising workshops all over the region.

Impact
The workshops expose participants to new technology such as apps and Internet of Things (IoT) devices. Participants are helped to produce a development plan, to pursue their own area of technological interest. They then receive training in developing entrepreneurial skills so they can develop their own projects.

Find out more: https://idrops.org/en/projects/studio-digital
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The Netherlands

Population — 17.36 m  
Median Age — 42.6  
DESI 2019 — 3rd

79% of the population have basic digital skills  
48% have above basic digital skills  
1.8% female ICT specialists  
64.1% of adults aged 25 to 64 participate in lifelong learning (AES 2016)

Work is needed to address the growing number of ICT vacancies in areas such as cybersecurity.

The Netherlands is working to attract more people into tech professions, with a strong focus on cross-sector collaboration.

The Netherlands is a Digital Frontrunner with excellent digital infrastructure and highly educated professionals. According to the EDPR 2017, nearly the whole Dutch population (92 per cent) makes use of the internet, and the digitalisation of public services was among the most advanced in the EU in 2017.

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The approach

Launched in 2016, the Dutch Digital Agenda was set up to digitalise the Dutch economy through education and innovation; developing open and high-speed infrastructure; increasing security and trust; and providing more opportunities for entrepreneurs.

The Netherlands’ skills system also takes into account the wide range of stakeholders involved in delivering an effective digital strategy. The Netherlands National Coalition builds on the existing ECP – Platform for the information society, an independent platform where government, industry and social organisations exchange knowledge about the impact and responsible application of new technologies. Almost 200 ECP members work together to bolster the digital skills of citizens in all age groups.

However, like many European nations, the country is experiencing a number of future skills challenges.

The challenges

— The number of STEM graduates is among the lowest in the EU, and companies face difficulties in finding highly qualified people.  
— According to the Technology Pact Monitor 2018, there were an estimated 66,400 vacancies in technology at the beginning of 2018, compared to 41,200 at the beginning of 2016.  
— The Netherlands is a hotspot for leading ICT companies. In particular, demand for cybersecurity skills is expanding rapidly; however, a shortage of trained specialists is imminent unless more students graduate from ICT programmes.

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Digitalisation at a glance

— Excellent digital infrastructure, highly educated professionals, and Europe’s hotspot for leading ICT companies.  
— The Dutch Digital Agenda was launched in 2016 to digitalise the economy through education, infrastructure and support for entrepreneurs.

Initiatives address future skills challenges through cross-sector collaboration, and new ways to make tech professions more attractive and accessible.

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3 ECP - Platform for the Information Society, https://ecp.nl  
4 The Digital Economy and Society Index 2019 (DESI 2019), Netherlands  
5 The Netherlands, National Coalition  
6 Techniekpact Monitor (Technology Pact Monitor) https://www.techniekpactmonitor.nl  
7 Cyber security is becoming a Dutch export, Computer Weekly https://www.computerweekly.com/news/450278680/Cyber-security-becoming-Dutch-export
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3. ECP - Platform for the Information Society https://ecp.nl
4. The Digital Economy and Society Index 2019 (DESI 2019), Netherlands
5. Techniekpact Monitor (Technology Pact Monitor) https://www.techniekpactmonitor.nl
## CASE STUDY

### Techniekpact

A joint public-private initiative that focuses on training more technical talent and making employment in the tech sector more attractive.

**Who set it up?**

Established in 2013 and renewed in 2016, the Dutch Technology Pact 2020 (Techniekpact) is a joint initiative between 60 public and private stakeholders including government, businesses, trade unions, and the education community.

**How does it work?**

The pact’s members have agreed on 22 national actions to create a sustainable workforce for the technology sector, with an aim to produce 30,000 additional technology graduates a year.

**Impact**

Unemployment among people with a technical education background decreased from 5.1% in 2016 to 4.0% in 2017, while the percentage of unemployed technical women fell from 8.6% to 6.4% over the same period. The government has earmarked €300 million to co-finance new plans for the Dutch Technology Pact 2020.

Find out more: https://www.techniekpact.nl

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## CASE STUDY

### Make IT Work

Retraining non-STEM graduates for the IT sector to address immediate skills gaps, make tech skills more accessible, and provide businesses with new digital talent.

**Who set it up?**

The programme was established in 2015 through the collaboration of a number of partners: the Hogeschool van Amsterdam (Amsterdam University of Applied Sciences), leading ICT companies, the municipality of Amsterdam, and the Amsterdam Economic Board. After being funded by the Dutch government until September 2017, Make IT Work is now independent and sustainable, with funding coming from candidates and the participating companies who recruit graduates from the programme.

**How does it work?**

Run by the Hogeschool van Amsterdam, Make IT Work equips graduates with a new qualification in IT (in Software Engineering, Security or Business & Data Analytics). Employers are fully involved in the process, covering part of the training costs and offering salaried placements when matched with a graduate at a job fair. The programme is currently offered in Amsterdam, Hilversum and Groningen, and 105 companies have joined Make IT Work as employers.

**Impact**

In its first four years, the programme has trained around 400 participants, with a student age range of 21 to 62. So far, 97% of graduates are still working in the IT field, and one third of all of the participants of Make IT Work are women.

Find out more: https://www.it-omscholing.nl/nl/

“A career in IT can be an exciting opportunity. Fast-track training from the Make IT Work programme in the Netherlands is helping university graduates without advanced IT skills achieve that dream.”

— Baukje Vetter, Account Manager, Make IT Work
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Denmark, the smallest country in Scandinavia, has been widely recognised as one of the most advanced digital economies in the EU. Ranked in the DESI scale as the fourth most digitally advanced economy in Europe, there’s plenty to learn from Denmark when it comes to digitalisation. One area in which Denmark has particularly excelled, in relation to other frontrunner countries, is in its effort to ensure that all citizens benefit from digitalisation. Some 95 per cent of Danes are online - well above the European average - while half of those aged 65 or above have basic digital skills (DESI 2017).

The approach

Denmark’s success is partly down to its unique focus on fostering innovation through collaboration, partnership and learning from others. In 2017, Denmark became the first nation in the world to appoint a ‘Tech Ambassador’, Casper Klynge, who is responsible for looking for innovative solutions around the world and sharing best practice in Denmark and beyond. Denmark has also made great progress in the use of digital technologies by enterprises and citizens, leading the EU rankings (overall) in the use of online services, including banking, shopping and online entertainment, and in the number of small to medium-sized businesses that sell online (31 per cent). This success has largely been due to the Danish government’s Digital Growth Strategy.

The challenges

— Denmark is facing a stagnating supply of ICT professionals, while demand is growing.
— According to Europe’s Digital Progress Report (2017), Danish companies will face a deficit of 19,000 employees with digital skills by 2030.
— Maintaining a steady supply of expertise will be crucial to Denmark’s continued success.

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Denmark

Population — 5.81 m  Median Age — 41.5  DESI 2019 — 4th

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Digitalisation at a glance

— Excelling in national efforts to ensure all citizens benefit from digitalisation.
— In 2017, became the first nation to appoint a ‘Tech Ambassador’.
— Success driven by focus on fostering innovation through partnerships and collaboration, sharing best practice and learning from others.

Maintaining a steady supply of expertise will be crucial to Denmark’s continued success.

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2. Ibid
4. https://techamb.um.dk
Digital Growth Strategy

The Digital Growth Strategy consists of 38 initiatives that will run until 2025; the initiatives aim to help businesses make use of new technologies, and ensure all Danes can access and benefit from a digital future.

Who set it up?
The Digital Growth Strategy was set up by the Danish government in January 2018.

How does it work?
The 38 initiatives all support Denmark’s digital growth in different ways. For example: Digital Hub Denmark, a matchmaking platform to improve companies’ access to talent within emerging digital technologies; and the Technology Pact, a national collaboration network to encourage more young people to engage in STEM subjects.

Impact
The initiatives have been allocated a total of €134 million from 2018 to 2025 and €10 million onwards per year. The government’s strategy document states that they will continuously monitor whether the strategy is achieving its ambitious goals - including that all Danes must thrive and feel secure as they go through digital transformation.

Find out more:

The Disruption Council

A partnership between trade unions, employer organisations, entrepreneurs, experts, youth and ministers that aims to prepare Danish civil society for the jobs of the future.

Who set it up?
The Danish Government established the Disruption Council for the period of 2017-2019, with the aim of ensuring that new policies and initiatives benefit all members of society, not just the highly educated.

How does it work?
Over the course of 2017-2019, members of the council have visited workplaces that will potentially be transformed by digital technology, researched the impact of digitalisation, and established a shared understanding of the threats and opportunities.

Impact
Through eight meetings in 2017-2018, the council has made recommendations that have contributed to the Strategy for Denmark’s Digital Growth, the development of the Danish Technology Pact, and Denmark’s tripartite agreement on retraining, along with proposals to ensure that technology such as AI will improve the welfare of Danish citizens, even though many traditional jobs are likely to disappear.

Find out more:
https://fho.dk/blog/2017/05/15/the-disruption-council/
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Impact
The initiatives have been allocated a total of €134 million from 2018 to 2025 and €10 million onwards per year. The government’s strategy document states that they will continuously monitor whether the strategy is achieving its ambitious goals - including that all Danes must thrive and feel secure as they go through digital transformation.

Find out more:

CASE STUDY

The Disruption Council

A partnership between trade unions, employer organisations, entrepreneurs, experts, youth and ministers that aims to prepare Danish civil society for the jobs of the future.

Who set it up?
The Danish Government established the Disruption Council for the period of 2017-2019, with the aim of ensuring that new policies and initiatives benefit all members of society, not just the highly educated.

How does it work?
Over the course of 2017-2019, members of the council have visited workplaces that will potentially be transformed by digital technology, researched the impact of digitalisation, and established a shared understanding of the threats and opportunities.

Impact
Through eight meetings in 2017-2018, the council has made recommendations that have contributed to the Strategy for Denmark’s Digital Growth, the development of the Danish Technology Pact, and Denmark’s tripartite agreement on retraining, along with proposals to ensure that technology such as AI will improve the welfare of Danish citizens, even though many traditional jobs are likely to disappear.

Find out more:
https://fho.dk/blog/2017/05/15/the-disruption-council/

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23 https://govinsider.asia/connected-gov/access/denmarks-lifelong-learning-vision/
Estonia

Population — 1.32 m
Median Age — 42

60% of the population have basic digital skills
35% have above basic digital skills

2.2% female ICT specialists
44% of adults aged 25 to 64 participate in lifelong learning (AES 2016)

Digitalisation at a glance
— Named by Wired as 'the most advanced digital society in the world'.
— Leading the way with the digitalisation of public services, with 99% of services online.
— Pioneering e-residency scheme allows anyone across the globe to become a digital resident, register their company and use online services.

Estonia’s innovative approach can only succeed if its citizens and workers are digitally savvy enough to access it.

Estonia: a prototype for digital society?

Estonia, the northmost state of the Baltics region, has a population of just 1.3 million people. However, make no mistake: dubbed as 'E-stonia', this small country has been widely recognised as a relative giant within the digital realm. Named by Wired as the 'the most advanced digital society in the world', Estonia has paved the way for other countries around the world to join the digital age, through its successful digitalisation of 99% of public services. This feat was achieved by the e-Estonia initiative, launched in 1997 through collaborative efforts between the Estonian government and Enterprise Estonia.

The approach
Digital development has permeated all aspects of daily life in Estonia. In 2000, the government declared internet access to be a human right, ensuring that even those living in rural areas could get online. The percentage of individuals with at least basic digital skills is higher than the EU average. The growth of online public services in Estonia has been accompanied continuously by efforts to improve the digital skills of the population. Digital skills are named as a policy priority in both the Digital Agenda 2020 and the Estonian education strategy, known as the Lifelong Learning Strategy 2020.

The country has developed a global citizenship who actively contribute to the growth of its economy. Its groundbreaking e-residency scheme, launched by the government in 2014, allows anyone across the globe to become a digital resident, register their company or enterprise and use online services. Going digital has reportedly saved the state 2% of its GDP each year and has undoubtedly had a positive environmental impact, with almost all public services becoming paperless. Additionally, with Estonia ranking first in the national cyber security index 2018, citizens have a growing level of trust in their government and the transparency of their processes.

The challenges
— Integrating digital technologies into daily working life remains a challenge. Companies in Estonia are ranked 21st in the European Union out of 28 in sharing information digitally and using social media.
— Despite impressive efforts to boost digital skills, the OECD’s Survey of adult skills (PIAAC) reported that 8-10% of Estonians (between 72,000 – 90,000 people) have low skills in information processing, while 42-44% are not able to cope in a technologically advanced environment.
— Increasing the computer literacy of the older generation is a priority, with many Estonian citizens over 60 struggling with elementary IT skills.

Sources:
1) e-Estonia: https://estonia.ee/enter/
2) https://www.wired.co.uk/article/estonia-e-resident
3) https://e-estonia.com
5) https://www.valitsus.ee/en
6) https://www.eas.ee/east/?lang=en
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18) http://e-estonia.com
20) http://www.oecd.org/skills/piaac/
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**CASE STUDY**

**HITSA’s Progetiger Programme**

A technology education programme focused on engineering sciences, design and technology, and information and communication technology (ICT).

**Who set it up?**

The programme is a public-private partnership between HITSA (The Information Technology Foundation for Education) and the Ministry of Education and Research. It was launched in 2012, when teaching programming and robotics was introduced to public schools.

**How does it work?**

The Progetiger Programme is aimed at preschool, primary and vocational education. Its core aims are: to integrate technology education into the curriculum, to offer teachers educational resources and training opportunities, and to financially support schools in acquiring different programmable devices.

**Impact**

The programme has reached 85 per cent of schools and 44 per cent of kindergartens in Estonia in five years. More than 830,000 euros-worth of equipment has been supplied to 446 schools and kindergartens for teaching robotics, programming, 3D modelling and multimedia.

Find out more:
https://www.hitsa.ee/it-education/educational-programmes/progetiger

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**CASE STUDY**

**Vaata Maailma Look@World Foundation**

A project-based organisation that promotes the safe use of computers and the internet. This in turn supports education, science and culture in Estonia to enhance citizens' quality of life.

**Who set it up?**

Vaata Maailma, or the Look@World Foundation, was founded in 2001 by a number of private sector initiatives.

**How does it work?**

The organisation’s project areas include: ICT skills; ICT-related hobby education; and safe use of ICT. It has carried out a number of large projects, including: SmartAcademy (Nutiakadeemia), Estonian Digital Skills and Jobs Coalition, NutiKaitse 2017, and SmartLabs, all of which provide digital skills training for adults and school-level children.

**Impact**

Between 2002-2004, some 100,000 people received basic computer training through the Vaata Maailma training project. This was fully financed by private companies: Swedbank, SEB Bank, Elion and EMT. Between 2009-2011 Vaata Maailma’s training project again offered basic computer/e-services training to 102,697 people (more than 10% of Estonia’s adult population).

Find out more: http://vaatamaailma.ee/en

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Finland

Population — 5.52 m
Median Age — 42.7
DESI 2019 — 1st

76% of the population have basic digital skills
3.1% female ICT specialists
45% have above basic digital skills
54.1% of adults aged 25 to 64 participate in lifelong learning (AES 2016)

Digitalisation at a glance
— The government’s AI strategy has gained much attention for its work to position Finland as a frontrunner in artificial intelligence.
— The government’s AI-driven virtual assistant, Aurora, aims to streamline public services, monitor skills levels and inform policy decisions.

Finland’s ambitious AI strategy aims to encourage digital innovation, while preparing citizens for its impact on the future of work.

Finland has received lots of attention for its ambitious goals to harness artificial intelligence (AI) and its many applications, including working to shape and prepare for AI’s impact on the future of work. Launched in 2017, the government’s AI strategy has been setting up a fertile landscape for new innovations and initiatives committed to making the country a frontrunner in AI, while working to ensure that the technology is used as effectively and inclusively as possible.

The approach

As part of the strategy, the public sector is developing the virtual assistant Aurora, which aims to deliver advice and services tailored to citizens’ needs. Individuals will be able to monitor the relevance of their skills, when these need updating, and receive support to apply for jobs.

Another initiative, the ‘Elements of AI’ free online course, has attracted tens of thousands of learners all over the world and is set to become the most popular course in the history of the University of Helsinki since its launch in 2017.

Digital skills and education have also played a key part in the government’s strategy. Overall, adult participation in learning in Finland is among the highest in the EU and has increased consecutively during the last ten years.

In spring 2017, the government proposed allocating an additional 60 million Euros in its budget for skilling the labour force, with a special focus on digital skills.

Digitalisation at a glance
— Adult participation in learning is among the highest in the EU, and has increased consecutively over the last ten years.

Ensuring new technology such as AI is used innovatively and ethically, and for the benefit of all citizens, is key.

The challenges
— The supply of talent with the right technical skills still trails behind demand.
— Increasing and maintaining digital skills among older people is key; while overall skills levels are high in Finland, the 2015 OECD PIAAC survey estimated that more than 800,000 adults over 55 had low foundation skills, potentially excluding them from the labour market and digital public services.
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According to a recent report from the Finnish Innovation Fund Sitra, almost 20 billion Euros public and private funds were directed to the development of skills and education in Finland in 2017.

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CASE STUDY

Artificial Intelligence Programme
A government action plan to support Finland to become one of the world’s leading countries in the application of AI.

Who set it up?
Launched in 2017 by the Ministry of Economic Affairs and Employment, the programme draws on the work of a steering group appointed by minister Mika Lintilä.

How does it work?
The programme has proposed eight key actions to meet its goals. For example, one focuses on how to attract and employ talent in Finland, and another on how to make bold decisions and investments in AI.

Impact
The programme has published two reports on how to take Finland into the age of AI, including policy recommendations for the future of work on growth and employment, learning and skills, and ethics. The strategy also led to the launch of the Aurora project.

Find out more:

CASE STUDY

Integrify
A programming school integrating newly arrived immigrants into the workforce by training them as software developers.

Who set it up?
The company was founded in Helsinki in 2016 with the launch of a pilot training programme to respond to the growing need to empower newcomers to kickstart their life in their new home country.

How does it work?
The 12-month curriculum consists of intensive, daily software development teaching by professional developers, followed by a six-month internship period at a partner company.

Impact
Integrify has major public and private partnerships in Finland, including the City of Helsinki, with partner companies including IT consultancies, tech companies and start-ups. As of 2019, since the launch of the pilot programme in 2016 all graduates have obtained full-time jobs as junior developers. The company is now looking to expand its service across Europe, with the aim of training 10,000 people in digital skills by 2030.

Find out more:
https://www.integrify.io/en/
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Find out more: https://www.integrify.io/en/
Finding and training more ICT specialists with advanced digital skills will be essential.

Sweden is working to create a more digitally inclusive society through modernised education, new infrastructure, and cross-sector collaboration.

Second only to Finland in the DESI 2019 Survey of digital performance, nearly half of the population of Sweden has advanced digital skills (46 per cent), while more than three-quarters possess basic digital skills. The country has the second highest number of ICT specialists in the EU labour market (6.6 per cent), and Swedish employees also have the second highest average score in ICT-related problem solving among OECD countries.  

The approach

There is strong collaboration between the government, industry and various social partners in Sweden.

The ministries responsible for the skills policies are mainly the Ministries of Education and Research; Employment; Enterprise and Innovation; and Justice. While the Ministry of Education and Research works together with universities and higher vocational education to shape the Swedish education system, the two other ministries are responsible for ensuring education meets the needs of the labour market.

Skills provision is ensured together with the Swedish Public Employment Service, the Migration Agency, county administrative boards and municipalities. Industry also supports the system by offering training activities through education companies and a variety of workforce initiatives.

Although the current national Digital Agenda dates back to 2011, the new Digital Strategy was established in 2017, with clear goals towards a more digitally inclusive society.

The strategy addresses issues such as increasing digital skills, modernising the education system, and improving digital infrastructure, aiming to harness the opportunities of digital transformation, minimise the risks, and ensure that no citizens are left behind.

The challenges

— Sweden trails other EU countries when it comes to graduates in science and technology, ranked 15th out of 28, with 3.7% ICT graduates (DESI 2019).
— Demand for ICT specialists in Swedish companies outstrips supply and there’s a shortage of professionals with advanced digital skills (DESI 2019).
— Swedish IT and telecom companies have warned of a gap of approx 70,000 IT specialists by 2022, unless urgent measures are taken to attract more foreign workers with IT skills.

Government’s new Digital Strategy sets clear goals towards a more digitally inclusive society, addressing issues such as skills and infrastructure.

![Sweden map](https://example.com/swe_map)

Digitalisation at a glance

— One of the EU’s most advanced digital economies, according to DESI 2019.
— DESI 2019 shows strong focus on development of human capital, and progress in all aspects of this category.

Populations of adults aged 25 to 64 participate in lifelong learning (AES 2016)

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16 [https://www.government.se/information-material/2017/06/fact-sheet-for-sustainable-digital-transformationin-sweden-a-digital-strategy/]
17 [https://www.thelocal.se/20180620/migration-needed-to-avoid-deficit-of-70000-digital-professionals-in-sweden-report]
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Sweden is working to create a more digitally inclusive society through modernised education, new infrastructure, and cross-sector collaboration.

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Country Spotlights — Sweden
— Government’s new Digital Strategy sets clear goals towards a more digitally inclusive society, addressing issues such as skills and infrastructure.

The Digital Skills and Jobs Coalition

A multi-stakeholder partnership focusing on skills uptake and lifelong learning, aiming to raise interest in IT among young people and women and digitalise the Swedish school system.

Who set it up?
Established in May 2018, members of the coalition include the Government’s Digitalisation Council, Swedsoft, the Swedish National Agency for Education, the Swedish Association of Local Authorities and Regions, The Association of Swedish Engineering Industries, The Internet Foundation in Sweden and the Swedish IT and telecom industries. The network is the Swedish branch of the wider EU initiative, the Digital Skills and Jobs Coalition.

How does it work?
The coalition is running a pilot with universities to carry out short courses to reskill professionals, as well as launching an open digital platform offering comprehensive lessons in digital skills and programming for schools. The coalition and its partners are also keen to support Sweden’s migration and integration policy, to attract foreign talent to help solve the digital skills gap.

Impact
The Digital Skills and Jobs Coalition Sweden has grown to 24 members (and counting), as more organisations recognise the value of working together to solve Sweden’s digitalisation challenges. The coalition was officially launched in January 2019, and is led by a project manager who is tasked with implementing its six-point action plan.

The outcomes of the coalition are yet to be seen – so far it has been successfully addressing the shortage of digitally skilled people and facilitating the building of relationships between different stakeholders to develop new strategies.

Skills360 Hackathon

A programme aiming to bring the entire labour market together (including government, business, academies, startups and associations) to address the challenges caused by digitalisation.

Who set it up?
The Swedish Agency for Government Employers set up the programme to find ways of delivering relevant skills into the labour market, including skills that are currently excluded but in growing demand.

How does it work?
A series of ten workshops was followed by a hackathon in September 2018. From 80 participants, 40 came from government agencies, with others from associations, business, academies and start-ups. According to the organisers, the Skills 360 Hackathon is ‘a knowledge hack, not a programming hack’.

Impact
The hackathon sparked conversations around digital skills policy and how to tackle skills mismatch in the labour market. Participants formed 16 teams, each working together to develop potential solutions. Following the event, a collaborative group (including members from government, education and business) was formed to further discuss, refine, and test the solutions and develop inclusive skills programmes.

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Find out more:

Summary

This spotlight series highlights that, although challenging, the changes we are experiencing in the world of work can be tackled.

We have previously provided a blueprint for how governments could address these challenges in ‘Digital Frontrunners: Designing inclusive skills policy for the digital age’. This spotlight series builds on this by providing further context regarding the priorities of each country and providing more practical examples for how to act on them.

Find out more

Here we have captured a small snapshot of how Belgium, Estonia, Denmark, Finland, Netherlands, and Sweden are acting on their priorities. The Digital Frontrunners programme is helping governments from these countries create skills policy to foster workforces that are fit for the future.

We do this through:

1. Workshops that bring together policymakers, experts and practitioners in order to foster collaboration and co-design effective solutions
2. Original research into the most pressing questions regarding the future of work and skills
3. Analysis, commentary, and inspiration which you can find on our website: www.nesta.org.uk/project/digital-frontrunners

Please get in touch if you would like to:

- Attend one of our events
- Tell us about your work or something you think we should really know about
- Join our newsletter

Infographic Sources

Belgium

The Netherlands

Denmark

Estonia
e-estonia. https://estonia.ee/overview/

Finland

Sweden
Statistics by subject area/population/population-composition/

Digitalfrontrunners@nesta.org.uk
@D_Frontrunners
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Summary

This spotlight series highlights that, although challenging, the changes we are experiencing in the world of work can be tackled.

We have previously provided a blueprint for how governments could address these challenges in ‘Digital Frontrunners: Designing inclusive skills policy for the digital age’. This spotlight series builds on this by providing further context regarding the priorities of each country and providing more practical examples for how to act on them.

Find out more

Here we have captured a small snapshot of how Belgium, Estonia, Denmark, Finland, Netherlands, and Sweden are acting on their priorities. The Digital Frontrunners programme is helping governments from these countries create skills policy to foster workforces that are fit for the future.

We do this through:

1. Workshops that bring together policymakers, experts and practitioners in order to foster collaboration and co-design effective solutions
2. Original research into the most pressing questions regarding the future of work and skills
3. Analysis, commentary, and inspiration which you can find on our website: www.nesta.org.uk/project/digital-frontrunners

Infographic Sources

Belgium

The Netherlands

Denmark
The average Dane - Statistics Denmark, https://www.dst.dk/en/Statistik/Publikationer/gennemsnit/danæren

Estonia
e-estonia. https://estonia.ee/overview/

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