The Danish Government

MAY 2022

National Strategy for Digitalisation

Together in the digital development

Ministry of Finance

Together in the digital development

The world is developing at a rapid pace these years. We are feeling that in Denmark too.

Some trends are global, for example the cyber threat, which has only become more topical with Russia's war against Ukraine. At the same time, our climate is changing rapidly. Global crises that call for cooperation, courage and action.

Other trends are national. The Danish welfare system is one of the best in the world. Perhaps even the best. This is something we need to protect. We must ensure that there is enough labour to provide the good welfare we expect.

The Covid-19 crisis showed us that, as a society, we can tackle even the biggest challenges when we act together. And not least, it showed us that digitalisation is a key tool. The crisis put a strong accent on the opportunities that digitalisation brings. And it accelerated developments that were already underway.

As one of the world's most digitalised countries, Denmark is in a strong position to seize the digital opportunities. But we need to further accelerate digitalisation. The challenge is to roll out technological solutions widely to make sure that they benefit everyone. This is why the government's strategy now covers both the public and private sectors.

Last year the government therefore established the Danish Government Digitisation Partnership to discuss the next digital steps for Denmark. In autumn 2021, the Danish Government Digitisation Partnership made 46 ambitious recommendations for how the government should harness and use digital opportunities. The recommendations offer specific suggestions for what we need to do right now to accelerate progress towards a better digital future.

With the National Strategy for Digitalisation, the government is taking up the baton from the Danish Government Digitisation Partnership's recommendations. We are adding to it and investing a total of more than DKK 2 billion in our digital society over the next five years. For the benefit of citizens and businesses.

The ambition is clear: Denmark must remain a digital frontrunner. We need to strengthen our common welfare, accelerate the green transition and boost growth and exports through digitalisation. At the same time, we have to protect citizens and businesses against cyber attacks. This calls for wise investments here and now.

The rapid digital evolution also calls for us to address the challenges that follow. As we transform our welfare system, we need to ensure that everyone can use and benefit from digital services. We also have to continue to invest in our digital security and ensure the ethical use of new technology and data.

With the strategy, the government sets the digital course, both in the short and long term. We provide solutions to the problems we face now, while laying the foundation for the future development.

The government encourages broad and binding cooperation between public and private partners, with civil society and the research community when continuing our digital journey.

Together, we will make Denmark stronger and lay the foundation for its digital future.

The Danish Government

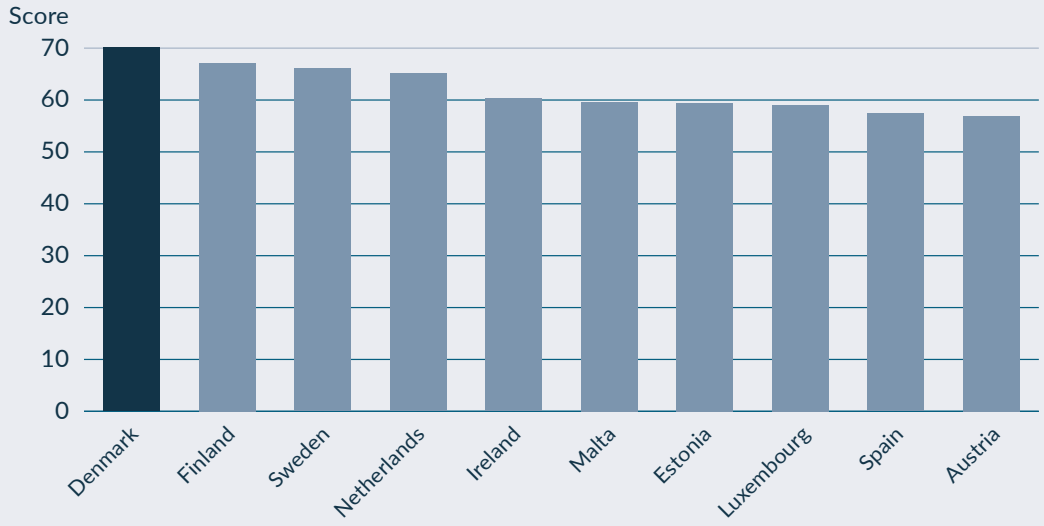
Contents

Denmark's digital development

Denmark as a digital pioneer
Today, Denmark is one of the most digital societies in the world. Our digital public sector is a world leader, helping to make everyday life easier for citizens and businesses on a daily basis. Overall, we have some of the most digital citizens and businesses in the EU.

In Denmark, we are best when we do things together. We solve tasks across central government, municipalities and regions, and we do so in interaction between the public and private sectors. That approach has taken us a long way.

Denmark ranks at the top in Europe



Note: Every year, the European Commission measures the digitalisation progress of EU Member States in its Digital Economy and Society Index (DESI). The results are measured in terms of human capital, connectivity, integration of digital technology and digital public services, and the report provides an overview of the performance of the various EU countries.

Source: Eurostat, DESI 2021. DESI (The Digital Economy and Society Index) measures the digital performance of EU countries.

Since the turn of the millennium, Denmark has undergone a profound digital transformation of the public sector and of Danish businesses, which has placed us among the best in the world.

Denmark's leading position is the result of innovative businesses and close and committed cooperation across the entire public sector and in close partnership with private partners. This includes areas where it has been necessary and appropriate to create cross-cutting solutions that are widely used in the everyday lives of Danes when they are in contact with the public or the private sector.

This cross-sector collaboration is unique in a global perspective and has produced outstanding results and digital solutions such as NemID, Digital Post, borger.dk, virk.dk, etc., which make everyday life easier for people and businesses.

The strong digital foundation was crucial in order for Denmark as a society to respond quickly when the Covid-19 crisis hit the country. Because of our good, shared data and digital solutions, we were quickly able to develop new solutions and roll out vaccines to all Danes. And our businesses were able to adapt quickly and reach existing and new markets through e-commerce. That is why we need to use digital tools, data and new technology even more in the future to increase growth, find new solutions in the green transition and develop and strengthen our welfare system.

Since the turn of the millennium, digital development has been driven by joint public sector digitalisation strategies agreed between the central government, municipalities and regions. In parallel, successive governments have launched initiatives and strategies to boost the digital transformation of businesses and selected sectors such as health and research.

As a result of this work, we now have a solid digital foundation on which to build the further digitalisation of society – in collaboration across the public and private sectors, the research community and civil society.

Key steps in the digital development

2021 **Corona Passport app** is launched

2021 **Health insurance card app** is launched

2020 **Driving licence app** is launched

2015 The first **Apple Watch** is available in stores

2014 **Digital post** is made mandatory for people in Denmark

2013 **MobilePay** is introduced

2013 **Digital post** is made mandatory for businesses in Denmark

2011 **4G** network is rolled out in Denmark

2010 **NemID** and **mobile banking app** are launched

2009 **Digital land registration** is introduced

2007 **Borger.dk** is launched

2007 The first **iPhone** is launched

2006 **Spotify** is founded

2006 The first Danish **Facebook profiles** are created

2005 **Google Maps** is introduced

2005 The first video is uploaded to **YouTube**

2005 **E-invoice** is introduced in Denmark, making electronic invoicing standard for B2G (business to government)

2003 **NemKonto** is introduced in Denmark

2003 **Sundhed.dk** and **Virk.dk** are launched

2001 The first article on **Wikipedia** is created

2001 The first joint public sector digitalisation strategy is presented – people can now **send e-mails to public authorities**

1999 **Nokia 3210** is introduced to the market

1989 **World Wide Web** is introduced and it becomes possible to access websites from all over the world

1982 **1G** network is launched

1982 **Commodore 64** is launched

1968 The **CPR register (the civil registration system)** is introduced

1959 **Datacentralen** is established by the central government, counties and municipalities

The Danish Government Digitisation Partnership

In spring 2021, the government established the Danish Government Digitisation Partnership, which was tasked with making recommendations for a new overall digitalisation strategy for Denmark.

With the Digitisation Partnership, the government brought together representatives from the business community, the social partners, the research community, Local Government Denmark (KL) and Danish Regions to set the direction for Denmark's digital development.

The work of the Digitisation Partnership resulted in 46 specific recommendations within 7 areas. With its recommendations, the Digitisation Partnership points to specific actions that harness the opportunities of digitalisation and thereby contribute to a better life for citizens, growth for our businesses and address some of the most pressing challenges we face as a society: the green transition, increasing international competition and continued pressure on our welfare system.

Focus areas of the Danish Government Digitisation Partnership

Focus areas

1. Increased growth and exports through the world's most digitised and productive businesses
2. The world's best digital public sector
3. Digital public service with focus on the individual
4. Healthcare as digital frontrunner
5. A greener Denmark through digitisation of the utility sector
6. Intelligent and flexible transport through digitisation
7. Accelerated innovation though public-private partnerships

Foundation

- Life-long digital skills development
- Increased and responsible use of data
- Strong cyber security
- Pioneer of modern digital infrastructure

Source: The Danish Government Digitisation Partnership.

The next steps in Denmark's digital development

With the strategy, the government is following up on the recommendations of the Digitisation Partnership and is launching 61 initiatives. The initiatives will make a concrete difference in the daily lives of Danes, reduce unnecessary bureaucracy for Danish businesses and accelerate their digital transformation, provide new tools in the green transition, free up resources for care and nursing services in the public sector and contribute to growth and innovation in the private sector. At the same time, we are preparing Danish society for the future by strengthening the digital skills of Danes in various ways and strengthening the cyber and information security of authorities, businesses and citizens.

Digitalisation should not be undertaken just for the sake of it, but to solve challenges and develop society for the better. The government's National Strategy for Digitalisation is therefore based on 9 visions that set the direction for where digital solutions should be deployed to solve concrete societal problems and create value for citizens and businesses.

However, we should not be blind to the downsides of a more digital world. New forms of crime are emerging, our democratic discourse is challenged, and there is a risk that our most personal data will spread if not well looked after. That is why the government has invested in our National Strategy for Cyber and Information Security, a strengthened Data Ethics Council and active efforts to protect our democratic values and influence digital developments internationally by Danish standards.

9 visions

Vision 1

Strengthened cyber and information security

Vision 2

Coherent service for citizens and businesses

Vision 3

More time for welfare through increased use of new technology

Vision 4

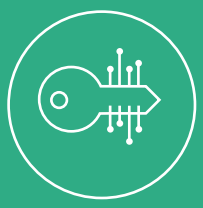
Increased growth and digital SMEs

Vision 5

The digital healthcare of the future

Vision 6

Acceleration of the green transition through digital solutions



Vision 7

A strong, ethical, and responsible digital foundation

Vision 8

Denmark at the centre of international digitalisation

Vision 9

A population ready for a digital future

5 principles for Denmark's digital development

With the strategy, Denmark is taking the next steps in digital development. Based on 5 clear principles, the government wants to ensure that digital development continues on Danish terms and for the benefit of the citizens and businesses in Denmark. The principles guide the overall approach to achieving the 9 visions.

We need to make sure that we maintain the approach that has given us such outstanding results in the past. The principles serve as common guidelines for all initiatives launched under the National Strategy for Digitalisation and for further work on digitalisation in society.

Digitisation Council

To follow up on the National Strategy for Digitalisation and advise the government on the further digital development of Denmark towards 2030, the government is establishing a new Digitisation Council.

The Council will consist of experts and representatives from both the public and private sectors.

The Digitisation Council will be tasked with continuously monitoring the implementation of the initiatives of the National Strategy for Digitalisation and advising the government on new digital trends and the further digitalisation of Denmark during the period covered by the strategy, i.e. until 2026.

5 principles

1 Digital solutions must benefit everyone, drive growth and support competitiveness and productivity

- Digital investments must be focused where they can solve specific problems in society and make life easier for citizens and businesses.
- Digitalisation must strengthen Danish businesses, especially small and medium-sized enterprises (SMEs), and contribute to growth, productivity and increased competitiveness.
- Everyone, regardless of digital skills, should be able to participate in society.

2 Digital development must focus on security, responsibility and ethics

- Data and digital solutions must be developed and used in a responsible and transparent way, so that people and businesses know that their data is being treated responsibly.
- The security of digital solutions must be strengthened and be at the heart of the development of new digital solutions.

3 Digital progress must be made in collaboration between the public and private sectors

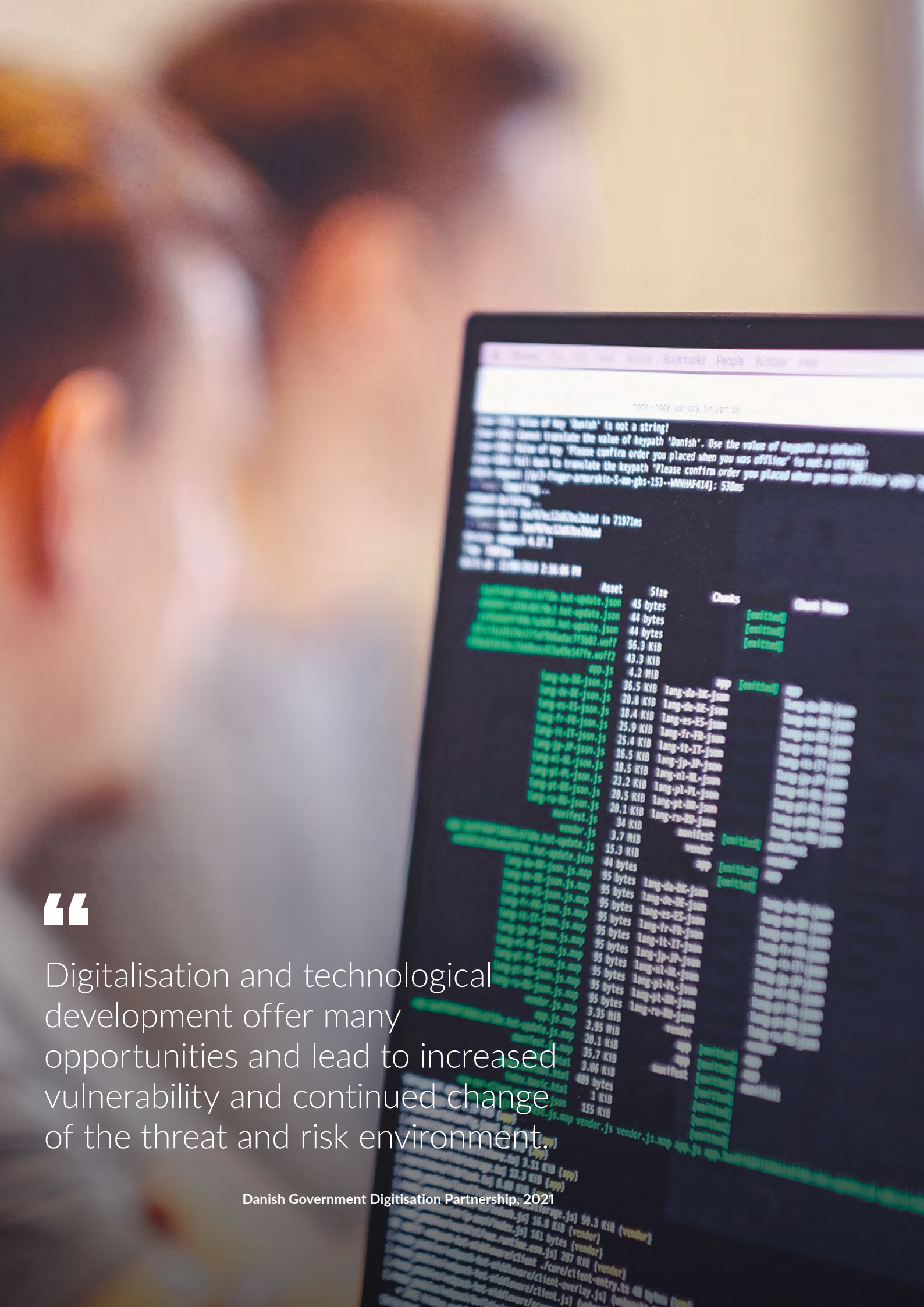
- Digital development must take place in close collaboration between the public and private sectors to ensure growth, innovation and coherence across solutions of public authorities and businesses.

4 Public data is a common good that must contribute to growth and innovation

- Valuable and non-personal public data must be made available to researchers, businesses and public authorities to drive innovation and development.
- Authorities should coordinate their data efforts and make sure they are coherent and focused on those for whom they are intended to create value.

5 Denmark must shape digital development globally

- We must be present in the international digital arenas and export markets, and we must aim to shape digital development by Danish values so it reflects the good experience and solutions built in Denmark.
- Danish research strengths must help shape the development of digital solutions globally.



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Digitalisation and technological development offer many opportunities and lead to increased vulnerability and continued change of the threat and risk environment.

Danish Government Digitisation Partnership, 2021

Vision 1
Strengthened cyber and information security

With our high level of digitalisation comes vulnerability to malicious actors who seek to exploit weaknesses in our digital infrastructure and in our businesses through new forms of attack. The cyber threat is one of the most serious threats against Denmark today and is expected to remain so in the future. A threat that is unfortunately highly topical with Russia's war in Ukraine.

The threat environment is rapidly and constantly changing. Every day, authorities, businesses and citizens are targets of cyber attacks, and the cyber threat has become a basic condition in the private lives and working lives of Danes and in society as a whole. Many businesses do not consider themselves as targets for cyber criminals and therefore do not take the necessary precautions.

Cyber criminals and hostile intelligence services are putting digital security under pressure. It is a threat that must be taken very seriously and calls for a strengthened response if we are to keep pace.

Making Denmark digitally secure is more important and urgent than ever.

That is why the government has launched a new National Strategy for Cyber and Information Security 2022-2024, investing DKK 270 million in 34 new initiatives. The strategy has a particular focus on our critical infrastructure and covers a wide range of issues, from central government to citizens and businesses. The initiatives will ensure that vital functions are continuously adapted to the changing threat environment. At the same time, the government is strengthening Denmark's participation in international cooperation to combat the cyber threat.

The government and the parties to the agreement have also allocated DKK 500 million to strengthen Denmark's cyber defence through the implementation of the cyber reserve. Municipalities and regions are also continuously working to strengthen cyber and information security.

Finally, it is crucial that Denmark plays an active role in the development and deployment of entirely new and revolutionary technologies that will impact society in the future and that can be directly applied to strengthening cyber security in Denmark. The government will therefore bridge research and businesses by promoting the development of quantum technology in Denmark. Danish research in quantum technology is world-leading in several areas, and the government will work to ensure that research can be used both to strengthen cyber security, but also for solutions in businesses in various industries – including future medicine and green transition as well as the defence and security sector.

Cyber and information security in Danish SMEs should be strengthened

40 %

of SMEs have an inadequate level of digital security compared to their risk profile.

Source: Digital security in Danish SMEs, Danish Business Authority, 2021.

24 %

of Danish SMEs have not implemented the two most basic security measures; updating of operating systems and data backup.

Source: Digital security in Danish SMEs, Danish Business Authority, 2021.

There is a lack of top management commitment and competencies

22 %

of companies and authorities that have tried to recruit information security staff have either been unable to recruit or had to hire a profile that did not have all the required competencies.

Source: The labour market for information security skills in Denmark, Højbjerre Brauer Schultz, 2019.

26 %

of Danish SMEs make decisions about the company's digital security work, where the management is only involved to some extent.

Source: Digital security in Danish SMEs, Danish Business Authority, 2021.

Citizens lack knowledge about cyber and information security

16 %

of citizens comply with the recommendation to have a password of more than 12 characters that is not reused multiple places.

Source: Information Security among Danes, Danish Agency for Digital Government et al., 2020.

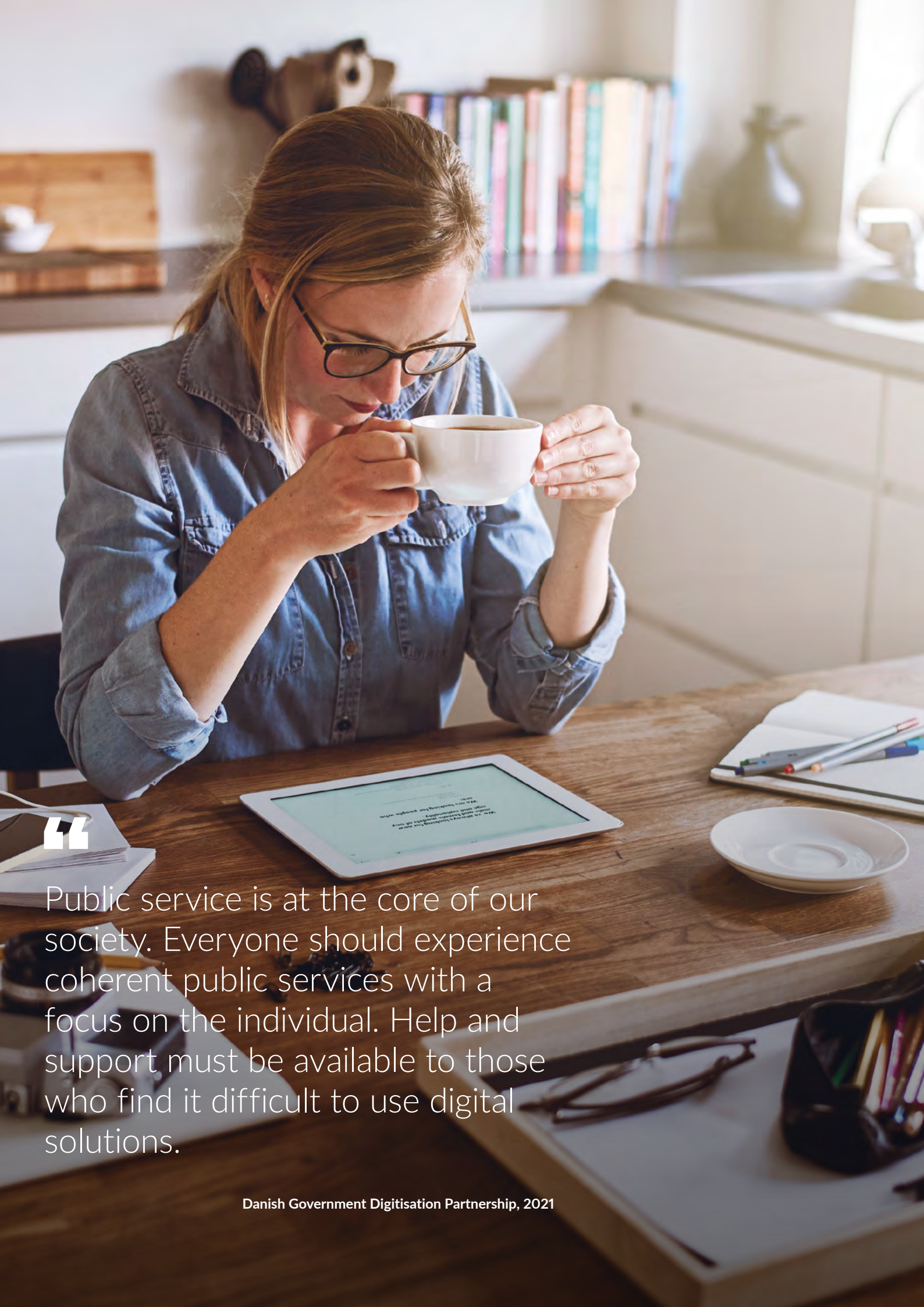
21 %

of Danes received scam calls in 2020.

Source: Information Security among Danes, Danish Agency for Digital Government et al., 2020.

Strategic actions

- Authorities responsible for vital societal functions that rely heavily on IT will be required to develop cyber and information security strategies and establish a decentralised cyber and information security unit.
- Actions focused on increasing the level of competences and leadership in cyber and information security in government agencies will be launched.
- New public-private initiatives to strengthen cyber security in SMEs will be launched. This will be supported by a new cyber security pact between the government and a number of key private sector players in the field.
- Campaigns to build knowledge among citizens, businesses and authorities and the security portal sikkerdigital.dk will be strengthened.
- The development of quantum technology in Denmark will be strengthened in order to create a position of strength in terms of defence, security and commerce.
- Investments will be made in the digital security of SMEs through targeted advisory services.
- Efforts will be made to strengthen the digital literacy of children and young people to make sure they are equipped to navigate the Internet safely and securely.



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Public service is at the core of our society. Everyone should experience coherent public services with a focus on the individual. Help and support must be available to those who find it difficult to use digital solutions.

Danish Government Digitisation Partnership, 2021

Vision 2
Coherent service for citizens and businesses

Citizens and businesses should feel that the public sector offers the best and most coherent public service with a focus on the individual citizen and business. Digital public solutions and services must be coherent, user-friendly and based on the individual user's needs and situation. At the same time, public services must be accessible to all, and help should be provided to citizens and businesses for whom digital solutions pose a challenge.

Being in contact with the public authorities should be easy – for example, as a citizen you can submit applications digitally and get an overview of benefits, or as a business you can easily make reports and see upcoming deadlines. Citizens and businesses must experience a modern digital service that is more user-friendly, coherent and consistent – regardless of which part of the public sector they are in contact with.

A cohesive public sector requires a more data-driven public service, where data is increasingly used and shared across authorities to ensure a more coherent and personalised service to the individual.

The use of data in public services must always be based on security and accountability. It should be easy for citizens and businesses to keep track of their contacts with public authorities and to have an easy overview of their own data. The government will therefore make it easier to get an overview of one's own data, and provide better opportunities for giving digital consent to, for example, sharing and processing of data.

Although the vast majority of Danes are digitally literate, there is still a group of citizens, such as the elderly and vulnerable, who find digital solutions challenging. The government will therefore strengthen efforts for digital inclusion by taking better care of those citizens and ensuring that they have equal access to our society. The public sector must be inclusive and the digitalisation of society should always be community-centred. The right help and guidance must therefore be offered to digitally challenged citizens, as well as alternatives for those who are unable to use digital solutions. At the same time, persons who provide digital assistance must be better equipped to act as a trusted link between citizens and the public sector.

Many Danes are satisfied with public services – but everyone must be included

91 %

of 15-89-year-old users of the services on public authorities' websites are mainly satisfied with how easy it is to use the services.

20 %

of Danes are challenged to varying degrees by the digital society, for example due to cognitive or physical disability, lack of digital or language skills.

9 mn

annual visits to Virk, the digital gateway for businesses to the public sector.

82 %

of Danes who use digital solutions agree that their user experience with public digital solutions is good.

Source: Public IT usage 2021, Statistics Denmark, 2022.
Danish Business Authority, statistics for visits to the Virk's reporting portal 2021.

"All Danes should experience that digital tools help make everyday life easier.

Danish Government Digitisation Partnership, 2021

Strategic actions

- Efforts to include digitally challenged citizens will be strengthened through targeted help and guidance, and by making it easier to give power of attorney to allow others to act digitally on your behalf.
- Digital coherence across welfare areas will be created by improving data sharing in cases that cut across authorities and sectors.
- It will be made easier to give and withdraw consent to public authorities so that citizens can give permission for their data to be shared with public authorities in a simple and trustworthy way.
- The digital service will be enhanced through targeted development of digital self-service solutions, more targeted information and guidance on the website borger.dk and new functions in Digital Post.
- A new app – MitVirk – will be developed to help Danish businesses, especially SMEs and sole traders, meet their obligations and deadlines to the public sector.

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Digitalisation can help address the major challenge of labour shortage seen in the private and the public sector.

Danish Government Digitisation Partnership, 2021

Vision 3
More time for welfare through increased use of new technology

We are facing an acute shortage of labour in the public and the private sector. There is an urgent need for more staff to undertake citizen welfare, which should help to create security, quality and proximity. At the same time, businesses need more resources in production and to serve customers, so they can continue to create growth and value for the society.

To meet the huge labour shortage, we need to change the way we do things today. With digital solutions, automation and better use of new technologies and data, we can rethink and streamline workflows and find new ways to deliver services. This implies major changes in the public sector as well as in businesses.

Technology and digital solutions should therefore be an integral part of the way in which the public and private sectors work and perform their tasks in general – and especially in areas where we know that labour shortages will remain high in the future. For example, robotics can alleviate monotonous work by taking over heavy lifting in the industry or elderly care. Similarly, wider use of telemedicine can support citizens, especially the large and growing group of people with chronic diseases, and free up healthcare resources.

We are already well on the way to harnessing digital opportunities to address major societal challenges.

For example, digitalisation is already being used extensively to free up treatment and care resources, and the first experience with artificial intelligence has been gained through, for example, automated case processing. In the private sector, artificial intelligence is used across industries, particularly for automating workflows, for example through software robots for process optimisation. At the same time, better use of speech recognition technologies enables *chatbots*, for example, to understand questions from citizens and provide more rapid and comprehensive answers. Thus, increased use of artificial intelligence can make administration more efficient and support better and faster decisions, as well as perform repetitive administrative processes and free up more time for companies' core business and citizen welfare.

The government's vision is for Denmark to be among the best in the world at quickly and efficiently developing and implementing new technologies that can create value for citizens, businesses and society, and support employees in carrying out their tasks. The government therefore wants to launch a 10-year plan for technology and automation in the public sector, which will free up more time for citizen welfare, equivalent to 10,000 full-time jobs over 10 years. This is a large and comprehensive task that requires strong cooperation between the central government, municipalities and regions. It also calls for enhanced public-private cooperation in the development, adaptation and use of innovative technologies.

Wider use of welfare technology has great potential

4 out of 10

public authorities use artificial intelligence. This number is expected to more than double in three years.

Source: Digital & Technology – IT in practice 2021-2022, Ramboll.

89 %

of municipalities consider artificial intelligence relevant for solving their tasks.

Source: Municipal Technology Radar 2022, Local Government Denmark and KOMBIT.

16 %

of municipalities have deployed artificial intelligence.

Source: Municipal Technology Radar 2022, Local Government Denmark and KOMBIT.

77 %

of municipalities respond that welfare technology creates a better physical working environment.

Source: Welfare technology in Danish municipalities 2021 – Survey of Danish municipalities' use of welfare technology, Carenet et al., 2021.

Case
Artificial intelligence can be used in case processing and free up more time

Smartmail: Municipalities spend a lot of resources receiving, sorting and logging incoming mail and e-mails. Artificial intelligence can be used to automatically distribute mail to the right recipients and caseworkers in the municipality and record them correctly right away. The intelligent mail sorting solution Smartmail was developed and tested in a signature project successfully conducted by Norddjurs and three other municipalities in 2019-2021. Smartmail harnesses the potential of artificial intelligence to save manpower by reducing the resources needed to handle mail. At the same time, the solution supports that the right employees receive relevant mail in the first place. It also ensures shorter processing times for citizens. Norddjurs Municipality has experienced a reduction in the time spent distributing incoming mail of approximately 66% compared to previously.

Source: Danish Agency for Digital Government

Strategic actions

- New technological solutions will free up time and labour in the public sector. A 10-year plan for new technologies in the public sector will therefore be launched to free up more time for citizen welfare, equivalent to 10,000 full-time jobs over 10 years, and to help solve public sector labour shortages. The government will discuss the work with Local Government Denmark (KL) and Danish Regions.
- Public sector use of new technologies, such as artificial intelligence, will be accelerated through targeted investment in the deployment of mature technologies with proven impact.
- Public-private cooperation on innovation and new technologies will be strengthened and targeted at key challenges such as the green transition and labour shortages.
- Video meetings should be offered as a supplement to physical meetings in several parts of the public sector. This will provide citizens with a flexible option in a busy day when they need to contact public authorities and it will also free up time, for example in the healthcare sector.

> We need to automate to prevent labour shortage in the future so that resources can be freed up for providing welfare to citizens.

Danish Government Digitisation Partnership, 2021

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Danish businesses – small and large – should be world leaders in harnessing digital opportunities.

Danish Government Digitisation Partnership, 2021

Vision 4
Increased growth and digital SMEs

Two out of three private jobs in Denmark are in SMEs. However, Danish SMEs are less digitalised compared to large companies. They also invest less in technological solutions than large companies and are less innovative than SMEs in our neighbouring countries. This is partly due to a lack of resources and knowledge about the opportunities of digitalisation, lack of skills to implement new technology, and unclear or outdated rules for the development and use of new technologies.

A digital transformation of the business society is therefore needed, where all Danish businesses – small and large – take part in and benefit from the digital transformation.

That requires an extra effort. In Denmark, SMEs must have optimum conditions to kick-start their digital transformation from their current base, and for future growth companies to advance so that we can remain one of the most digital countries in the world.

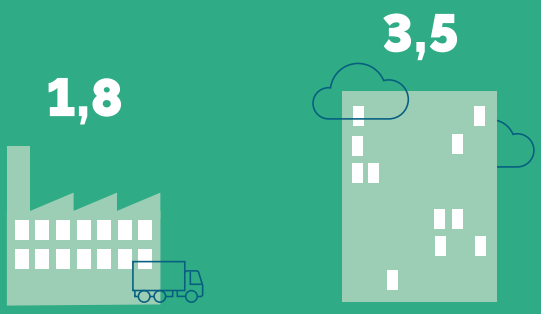
The government will support the digital transformation of the business sector by launching a number of initiatives that will make it easier to run green and productive businesses in Denmark. The initiatives are part of a comprehensive effort to realise the vision of *MinVirksomhed* in the long term.

MinVirksomhed means that automation and digital solutions should make it easy for businesses to share many types of data – just as is the case in parts of the citizen area, such as income information. In the long term, the vision is that companies report the same data only once to the authorities. This will particularly benefit SMEs.

Many businesses, regardless of size, know the challenges of unnecessary bureaucracy and complying with complex regulation. Danish businesses spend around DKK 30 billion a year on invoicing, bookkeeping and reporting to the authorities. This corresponds to approximately DKK 70,000 a year per business. Automated solutions can make this work easier and lead to fewer errors, shifting the time spent by businesses from administration to core business and helping to create growth and prosperity.

In short, we need to use digitalisation to make it easier to be a green and productive business. Therefore, the government will develop infrastructure where standardised green product data can be easily shared between businesses and authorities in connection with public procurement and reporting. At the same time, it should become easier to identify and control fraudsters to make competition fair – for SMEs, entrepreneurs and large companies alike.

There is a big difference in the level of digitalisation between SMEs and large companies



SMEs
10-249 employees

Large companies
250 employees or more

Note: The figure shows the weighted average of a digitalisation index for SMEs (10-249 employees) and large companies (250+ employees) respectively, showing how digitalised enterprises are across a number of parameters. The level of digitalisation is measured as an index based on 5 indicators. 1 point is given for each indicator. The digitisation index shows businesses in liberal urban professions with at least 10 employees.

Source: Own calculations based on VITA survey 2021, Statistics Denmark, 2021.

SMEs in Denmark should become more digital

DKK 30 bn

on person-hours is what Danish SMEs spend on invoicing, bookkeeping and reporting to the authorities.

2,800

digital projects in SMEs across Denmark have been launched between 2018 and 2021 as a result of the SME:Digital programme.

93 %

of businesses that have received advice through SME:Digital so far have invested in new technology or plan to do so.

Note: Calculations based on reporting classes A and micro B.

Source: KPMG, Danish Ministry of Industry, Business and Financial Affairs.

Case
Automation in businesses

bcm transtech, finalist for the Digital SME:Transformation of the Year Award 2021, has implemented digital transformation from 2020 to 2021 with the support of SME:Digital.

The company is an international supplier to the corrugated industry and has established itself as a world market leader in automated storage and shelving systems, lifts, etc. which it exports to corrugated mills and facilities worldwide. bcm transtech has developed and implemented a digital sales tool they call bcmart (pronounced "Be Smart"). The digital sales tool has significantly reduced the time spent in the quote and planning phase.

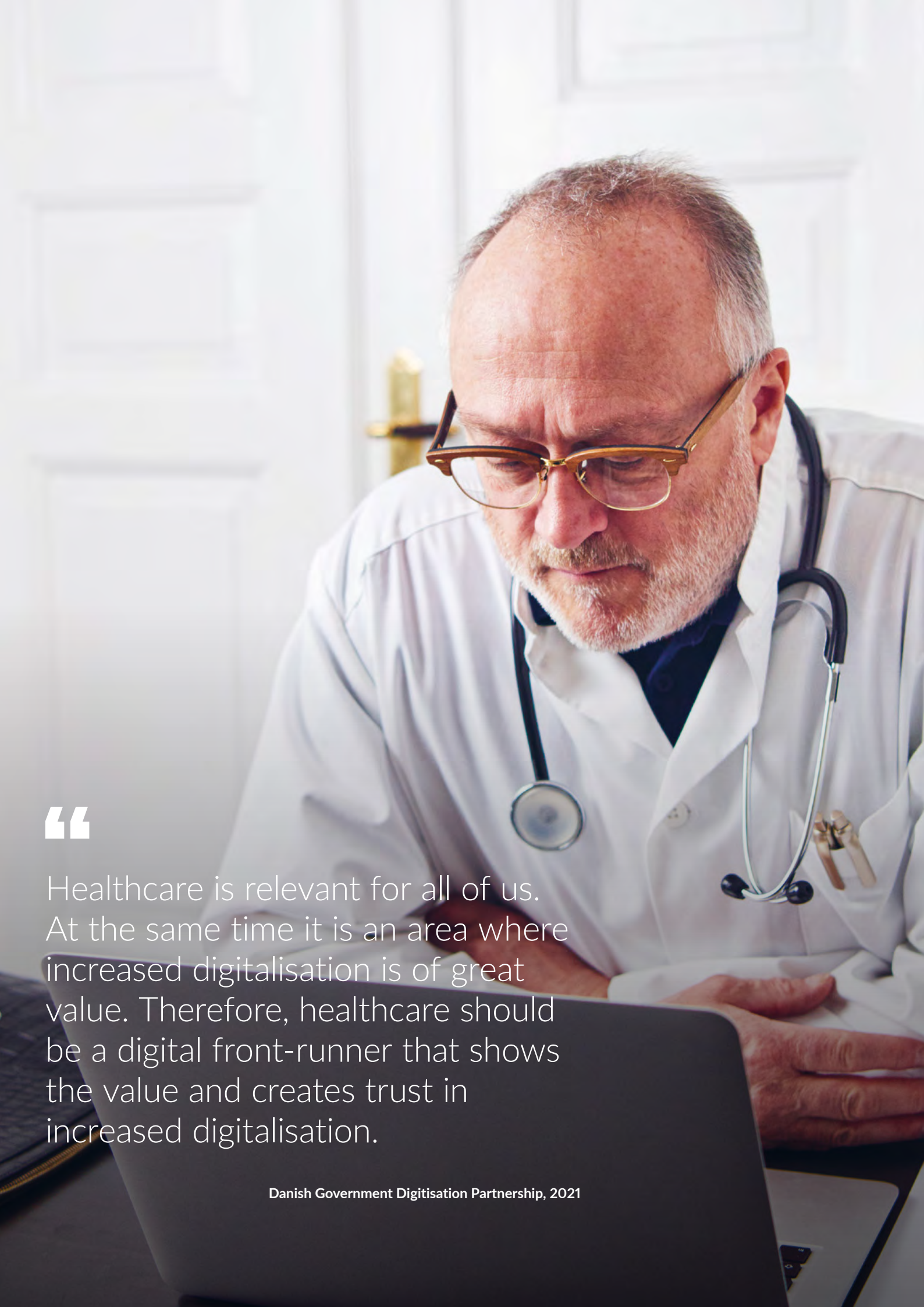
With bcmart, the right quote and a customised stock layout can now be ready in hours, where it used to take months. At the same time, more customers are made aware of the possibility of choosing a standardised solution, as they can choose one of the basic concepts from bcmart. With the new system, the company finds that salespeople can spend more of their time being proactive and exploring new markets. At the same time, since the introduction of the new platform, the company has received large international orders generated exclusively in bcmart. The orders are closed without even having visited the customers.

Strategic actions

- The government wants to make it easier to run a business and to be a green business in Denmark. Specific initiatives are being launched as part of the vision for MinVirksomhed, which aims to use digital solutions to reduce unnecessary bureaucracy and automate reporting requirements.
- Work will be launched to automate business reporting, which will help businesses keep their books and report to the authorities to the tune of almost DKK 3 billion. An SME-friendly procurement system will make it easier for businesses to bid for public contracts.
- Green initiatives will be launched for the benefit of businesses and particularly SMEs: ESG data initiative, a more automated climate compass and green product data, will make sustainability documentation and reporting easier for businesses.
- Digital transformation and automation in SMEs will be strengthened through SME:Digital and SME:Robot, which offer advice to SMEs and the opportunity to test robotic solutions in their own business.
- Technology transfer from universities to the business sector will be strengthened through a national effort to make it easier for SMEs and entrepreneurs to use new knowledge and technology from public research, and thus the ability of businesses to exploit new technology and digital solutions.

> The Danish Government Digitisation Partnership has a vision that 'Min Virksomhed' be developed to facilitate the administration in SMEs with data-driven solutions. This is to give a considerable boost to the digitalisation and automation of SMEs.

Danish Government Digitisation Partnership, 2021



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Healthcare is relevant for all of us. At the same time it is an area where increased digitalisation is of great value. Therefore, healthcare should be a digital front-runner that shows the value and creates trust in increased digitalisation.

Danish Government Digitisation Partnership, 2021

Vision 5
The digital healthcare of the future

In healthcare, we face growing labour shortage and major demographic challenges – Danes are getting older and more people are suffering from multiple diseases. Over the next 30 years, life expectancy is expected to increase and the proportion of people over 75 will almost double in Denmark. At the same time, there are fewer people of working age and the proportion of people with the most common chronic diseases is rising. This puts massive pressure on the healthcare system as we know it.

Denmark is well advanced in developing and using digital solutions. And the Covid-19 crisis has shown the value of digital solutions in healthcare. To future-proof our healthcare system, we need to take the next big steps in the digital transformation to bring healthcare closer to citizens and support treatment and a healthier population through digital solutions and the use of new technology.

In Denmark, we have some of the best health data in the world. Better access and use of health data go hand in hand with the development of new therapies and implementation of new health technology solutions for the benefit of patients and Danish life science companies. Better use of health data can improve the coherence of care for citizens, improve diagnosis of diseases, support innovative research and increase quality and geographical equity in healthcare.

For example, better care pathways are created when healthcare professionals can collaborate across sectors and do not spend unnecessary resources gathering information in connection with cross-sectoral care pathways. In addition, the diagnosis and treatment of diseases can be improved through increased and responsible use of our health data by, for example, data-driven technologies such as artificial intelligence.

At the same time, digitalisation and new technological solutions can create more time for patients and help to address the capacity challenge of health worker shortage. For example, the use of telemedicine solutions and patient-reported information can contribute to a better use of healthcare resources when people are involved in their own care, for example through home measurements, and the use of video consultations can help to increase geographical equity in healthcare.

Therefore, the government will continue both the close joint public-sector cooperation with regions and municipalities on the digitalisation of healthcare and the strong public-private cooperation in the life science field on the development of the digital healthcare of the future. In this way, we can improve the quality of healthcare, offer citizens more secure, citizen-oriented and tailored healthcare, support the shortage of healthcare workers and create growth opportunities for Danish life science companies.

In 2030, Denmark will have ...

160,000 more

elderly over 75

40,000 more

citizens with COPD

160,000 more

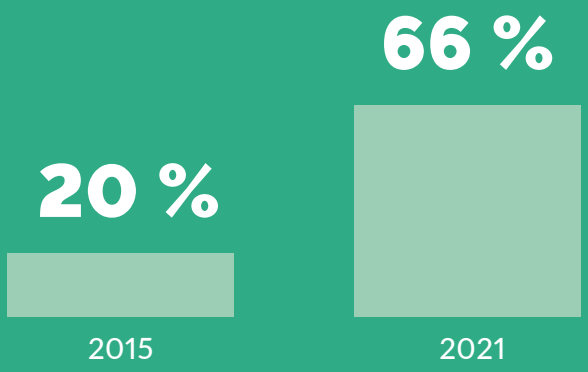
citizens with type-2 diabetes

Source: Statistics Denmark, Danish Health Data Authority & Danish National Institute of Public Health, University of Southern Denmark.

Case
Telemedicine can give citizens better, more flexible and personalised care, wherever they live in the country

Many patients with COPD need extra oxygen from an oxygen cylinder to help them breathe. Patients' state of health can vary and there is a need for patients to be able to monitor their own health on an ongoing basis. This is possible with telemedicine solutions, where patients can take measurements at home and submit information on measurement results to and receive answers to various questions from the local nurse via a tablet. This allows the nurse to monitor the patient's condition and, on this basis advise the patient through messages or video calls, or assess whether treatment adjustment is needed in collaboration with a doctor. By allowing both patients and nurses to monitor progress, telemedicine solutions provide extra reassurance to patients, while allowing them to stay at home in familiar surroundings and avoid the long trips to the doctor or hospital – which for some patients means a long time on the road.

The share of citizens using health apps has increased



Source: Citizens' attitudes towards and use of e-health: Selected results from the 5th national survey, Pernille Bertelsen, Associate Professor, Danish Centre for Health Informatics, Aalborg University.

Examples of public apps used by Danes

5 mn

downloads of the MinSundhed app

Source: Sundhed.dk.

1.6 mn

users use the MinLæge app and the trend is increasing

Source: The Danish Organization of General Practitioners (PLO).

2.1 mn

downloads of health insurance card app

Source: Danish Agency for Digital Government

49,500

is the number of times a day the health insurance card app is used

Source: Danish Agency for Digital Government

4.6 mn

downloads of the Corona Passport app

Source: The Danish Ministry of Health.

Strategic actions

- Citizens must be offered better, more flexible and personalised high-quality care, wherever they live in the country. This will be done by disseminating telemedicine solutions, such as virtual consultations, home measurements and patient-reported information.
- New technology and self-reported data from citizens will be used increasingly in treatment and early detection of diseases.
- Sharing information and sending messages in the healthcare system must be made easier, particularly in the context of sectoral transitions between general practice, municipalities and hospitals.

Further development of the healthcare system

With its proposal for a healthcare reform and Strategy for life science 2021-2023, the government has set the direction for continued work to improve the healthcare system. Digital solutions and better use of health data also play an important role, with initiatives such as:

- Developing the comprehensive patient overview, *Et samlet patient-overblik*, to strengthen close and coherent healthcare by facilitating workflows, ensuring more time for the individual patient and promoting good, coherent patient pathways by providing easy and flexible access to the relevant information when it is needed in the patient's care pathway.

- Strengthening the use of data to support quality development in local healthcare and create knowledge and overviews of citizens' overall pathway across municipalities, general practice and hospitals.

- Strengthen the implementation of digital solutions in general practice, such as video consultations and the use of artificial intelligence, to provide a more flexible and modern framework for doctors' work.

- Better use of health data for the benefit of Danish patients as well as research and development of innovative life science solutions through, among other things, the realisation of a vision for better use of health data, a single entry point to health data for research and innovation, etc.

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We must be a global leader in efficient and sustainable use of natural resources. The use of utility and climate data is to help create the basis for this.

Danish Government Digitisation Partnership, 2021

Vision 6
Acceleration of the green transition through digital solutions

We are in the midst of a global crisis for our climate, biodiversity, environment and nature. The green transition therefore requires comprehensive action and is one of the most important tasks facing us as a society. At the same time, developments in Ukraine have made it clear that climate and energy policy is also security policy.

Denmark has a historical and moral obligation to lead the way in the green transition. We account for only a small share of the world's total emissions, but we have a great opportunity to influence the rest of the world.We can do this by taking the lead and showing that being a prosperous and competitive country does not have to be at odds with the green transition and by helping to develop concrete solutions to the climate crisis that the whole world can use. We are well placed to succeed in the green transition thanks to our strong innovative environment, green technologies, good public data and ability to collaborate across society and across borders.

To succeed in the green transition, we need to bring all these tools into play. And this is where data, new technology and digitalisation offer new opportunities that we must seize. Digital solutions have great potential to reduce greenhouse gas emissions, make material use more efficient and minimise waste, protect our drinking water, create a coherent green utility sector that makes better use of resources and infrastructure, and protect land and cities from extreme weather.

In addition, access to good broadband and mobile coverage is a necessary condition for living a digital life and an important tool for promoting the green transition. Basic geographic data and digital infrastructure, combined with a robust telecommunications infrastructure, provide the basic foundation for data exchange across sectors and technologies. At the same time, the telecommunications infrastructure is crucial for society to exploit the opportunities of movement data. For example, positioning data via a robust 5G network is expected to become increasingly critical to society. Therefore, the government will strengthen the coherence across digital infrastructures as a foundation for increased use of data and new technologies. The government intends to do this by creating a new Agency for Data Supply and Infrastructure which is to coordinate the telecommunications policy with the great potential of using data for e.g. optimising traffic flow.

Digitalisation has the potential to make the green transition smoother, less burdensome and more efficient for citizens and businesses. For example, the Danish government wants to establish a circular data bank that collects and provides data on waste and materials. The data bank creates a foundation for private businesses and public authorities to make their material consumption more efficient and minimise waste.

In addition, we must reduce the impact of digitalisation itself on climate and the environment. Despite the green benefits of digitalisation, increased digitalisation may also lead to increased energy and resource consumption in, for example, server rooms and data centres. In this context, new climate-efficient technologies can be used to reduce the footprint of digitalisation.

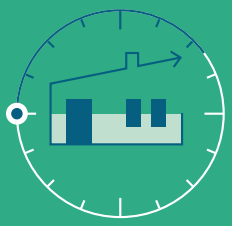
The green transition will require a massive effort from all parts of society. The climate crisis knows no municipal or national boundaries and can only be solved though a concerted effort. This calls for better collaboration and coordination across the public sector, private sector players and research communities to create value in our digital, green efforts.

At the same time, we need quick adoption of new technologies, up-to-date digital infrastructure and transparency on sustainability in order to support green behaviour and sustainable consumption by citizens, businesses and investors.

Overall, the government's objective is that data and digitalisation to a much greater degree are used to ensure efficiency and coherence in Denmark's green transition while creating a breeding ground for Danish business adventures in the future. Digital solutions have the ability to accelerate the green transition by optimising our use of resources and infrastructure, improving planning in society and creating new green business models.

That is why the government will promote the use of data-driven public and private-sector solutions such as artificial intelligence, sensors, satellites and other promising technologies to reduce our climate footprint and ensure efficient adaptation to climate change.

Digital solutions can reduce emissions



15 %

of emissions can be reduced by improving access to utilies data and expand AI across sectors, according to the World Economic Forum.

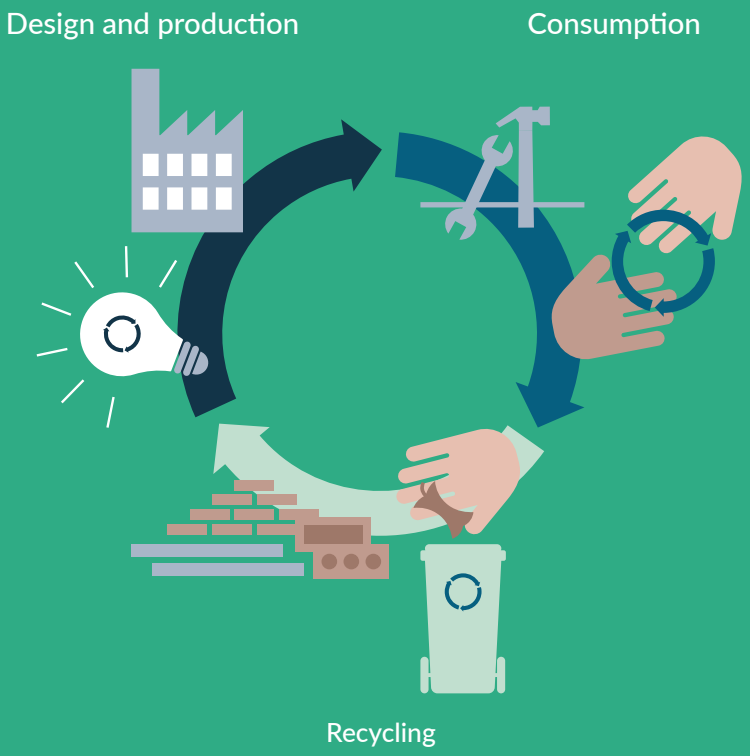
Source: Digital technology can cut global emissions by 15 pct. Here's how, World Economic Forum, 2019.

10-30 %

reduction in direct emissions in cities is estimated to be possible by implementing smart-community solutions such as IoT in urban spaces.

Source: Climate partnership for services, IT and consultancy, the Danish government's climate partnerships, 2020.

Digitalisation in the circular economy offers an important contribution to the green transition



Strategic actions

- Concrete initiatives will be initiated to contribute to the green transition, for example by utilizing data about water. With improved data on where water is and to where it is moving, we can better protect ourselves against future weather events and e.g. issue flood warnings.
- A circular data bank will be established to collect and provide data on waste and materials, enabling businesses and public authorities to make their material consumption more efficient and minimise waste.
- A digitisation programme for the utilities sector will drive progress towards a coherent green utilities sector that makes better use of resources and infrastructure across value chains and supply types.

> We will use data, artificial intelligence and digitisation to pave the way for green transition in all sectors.

Ambition from the government's climate partnerships, 2021

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We need to find a balance where we use data and new technology to a much higher degree to stimulate innovation, competitiveness and growth as well as efficient public services. However, this must be done in a responsible manner that instils trust and is based on our societal values.

Danish Government Digitisation Partnership, 2021

Vision 7
A strong, ethical and responsible digital foundation

Our digital welfare society stands on a foundation built over many years. Since the establishment of the CPR register (the Civil Registration System) in 1968, which was originally stored on punched cards in the municipalities' IT centres, numerous steps have been taken towards digitising the public systems.

This has enabled Denmark to pave the way in the development of public services. Our health registers, tax system, digital mail and self-service systems, which are now a natural part of Danes' everyday lives, stand on the shoulders of systems and data registers that have been built over decades.

To ensure that we can continue to develop our public service for the benefit of citizens and businesses, it is essential that we invest in our digital foundation. This applies to our strong foundation of data, maintenance of our common IT systems, coherent digital architecture and standards across solutions and ensuring a clear legal framework for digitisation.

The current public IT landscape should be considered as critical infrastructure just like the roads and bridges that bind the country together. This means that the systems must be inspected and future-proofed in the same way as we regularly maintain our roads and bridges. Public authorities should therefore continuously develop and modernise their public IT solutions and ensure that new technologies are adopted.

The government's ambition is for the digital pillars of society to be developed, maintained and replaced in a timely manner to ensure a solid digital foundation.

One of these common pillars is public data. In the coming years, the government will therefore invest in our common data so that businesses, authorities and researchers can continue to develop coherent and accessible data that cut across sectors in society. The government wants public data to be used and shared widely in society in an efficient, standardised and data-ethically sound manner. Above all, this will require that it is straightforward to find public data and get answers on what they can and can't be used for.

Alongside the many sector-specific data initiatives, there is a need for strengthened coordination in the public sector to ensure re-use and coherence across sectors, prevent closed data silos and ensure that our investments in public data benefit as many citizens, businesses, researchers and authorities as possible.

In addition, the government will work to ensure that data ethics and responsible data use become a core pillar of authorities and businesses' digital development.

There needs to be a healthy public awareness and debate about data ethics. Issues arise in multiple situations – both for authorities, citizens and not least SMEs, which often lack the necessary qualifications and skills to work with data ethics.

At the same time, the digital solutions of the future should to a greater extent be developed on the basis of common architecture and widespread standards to create robust solutions that are able to interact.

Finally, legislation must support efficient and user-friendly digital governance, a modern framework for the use of new technologies and the development of digital solutions based on civil rights.

The trust in digitalisation in Denmark should be increased through clear ground rules and institutional initiatives focusing on responsibility, transparency and rights.

Danish Government Digitisation Partnership, 2021

Data ethics, trust and accessibility

67 %

of Danish SMEs agree that it is difficult to determine how their data can be used according to data ethics standards.

Source: Responsible data use as a competitive parameter – results from questionnaire survey, Danish Council for Digital Security et al, 2021.

78 %

of Danish SMEs have not developed a policy or guidelines for data ethics.

Source: Responsible data use as a competitive parameter – results from questionnaire survey, Danish Council for Digital Security et al, 2021.

78 %

of Danes agree or strongly agree with the statement "I generally trust public digital solutions".

Source: Public IT usage 2021, Statistics Denmark, 2022.

78 %

of citizens who use public digital self-service solutions believe that information about them should be shared between authorities to a greater extent if it can improve the user experience on digital self-service solutions.

Source: Public IT usage 2021, Statistics Denmark, 2022.

921

open central-government datasets are displayed in 88 different locations. The National Audit Office, Rigsrevisionen, has identified a large untapped potential for making it easier for users from both the public and private sectors to find and access public data.

Source: Open data – The National Audit Office's report to the Danish Parliament commented by the Public Accounts Committee, Danish Parliament's Public Accounts Committee et al, 2019.

Strategic actions

- It should be easier for businesses, researchers and authorities to find and re-use public data to drive innovation and development. A single overview of available data will therefore be established to make it more accessible.

- Data ethics must be strengthened and, in a world that continues to become digitalised, citizens' rights must be protected. To this end, the Danish Data Protection Authority will be strengthened and the business-oriented data ethics initiatives and the Danish Data Ethics Council will be continued.

- Citizens and businesses should be guaranteed equal and coherent digital services. General application of common principles and widespread standards should contribute to a strong digital foundation in the public sector.

> The EU's focus on digitalisation creates unique opportunities for Denmark.

Danish Government Digitisation Partnership, 2021

Vision 8
Denmark at the centre of international digitalisation

Denmark is recognised internationally as a digital pioneer with both businesses and the public sector leading the way in the use of digital solutions. This has created great demand for Danish digital solutions and competencies. We must maintain this position and use it to set an ambitious digital agenda in the EU and increase exports of Danish digital solutions.

The government therefore wants Denmark to influence and set the direction for the European work on a number of central digital agendas. These include cyber security, digital public service, regulation of big tech and a well-functioning digital single market with a level playing field. Similarly, we must help promote the responsible use of data and new technology for the benefit of citizens and businesses.

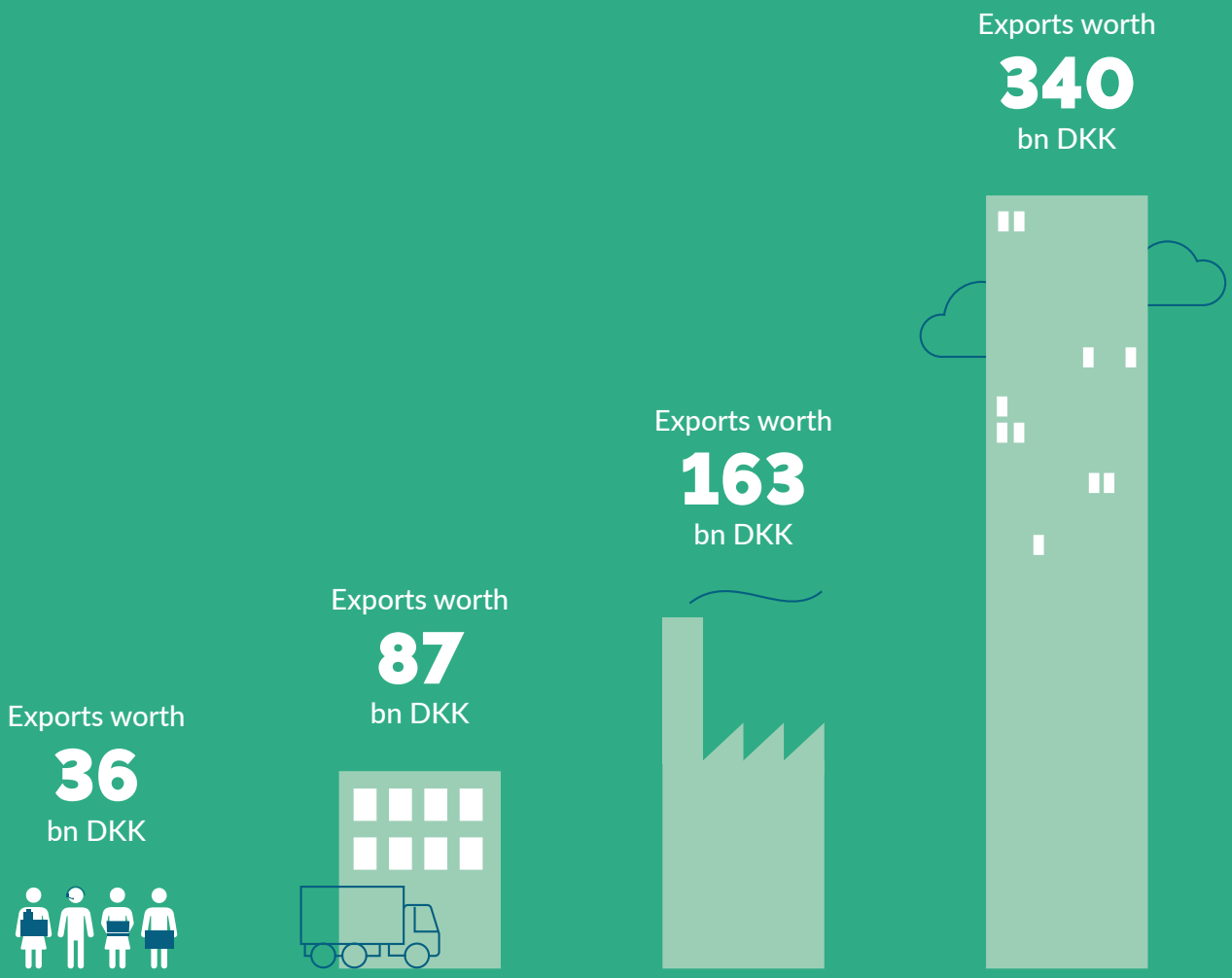
At the same time, we must participate actively in the EU's new policy initiatives and work to secure EU funds for projects in which Denmark participates and that can benefit Danish citizens, research institutions, SMEs and authorities.

The technological development also means that new private actors far from Denmark are playing a greater role in how we organise our society. Therefore, the government is engaging in a critical dialogue with the tech industry and is taking the lead in international discussions on the social responsibility of big tech via the *Strategy for Denmark's Tech Diplomacy*. Including under the auspices of the EU and the UN where the global digital ground rules are being formed. With its *White Paper on Big Tech*, the government has already started the debate on how to make a more responsible and fair society with big techs.

It is important that we maintain our strong international position in the digital field in order to be able to spread Danish values and digital solutions in a global world. The government therefore wants greater internationalisation and export of Danish digital solutions. This holds considerable potential as many countries are about to invest in public digital solutions.

At the same time, the government wants to strengthen activities to attract foreign investors to Danish digital growth areas. This will help enhance Denmark's innovation power and talent base so that we can respond to the digital challenges of the future and maintain our competitiveness. The government will therefore initiate targeted action to bring technology, innovation and talent to Denmark and create more jobs in the high-tech.

Small businesses are lagging behind on exports



Note: Today, large businesses account for more than half of Danish exports. Digitisation can serve as a lever to increase exports, especially for SMEs.

Source: International trade in goods (enterprise characteristics by economic units), Statistics Denmark.

Strategic actions

- Denmark must strengthen its engagement in EU's digital programmes and Denmark must help shape the digital development and regulatory agenda.
- The export activities for Danish digital solutions will be strengthened to create growth and exports for Danish businesses. This will be supported by establishing a task force consisting of public and private sector players as well as actions in Denmark to showcase Danish digital solutions.
- Danish positions of strength in new technologies must be advanced, for example by attracting international knowledge-based businesses, investors and talent to Denmark.

> At the political level, the European Council has identified digitalisation as one of the most efficient tools for preparing the EU to deal with societal crises, increase competitiveness and facilitate the green transition.

Danish Government Digitisation Partnership, 2021

Promotion of responsible, democratic and safe technology development

- The government launched the Tech for Democracy initiative in 2021 where Denmark is leading the way internationally by defending the online democratic discourse and by providing a responsible framework for large tech businesses.

- The government has prepared *Strategy for Denmark's Tech Diplomacy 2021-2023*. Through the techplomacy initiative where Denmark has diplomatic representations in Silicon Valley and Beijing, the government works to ensure that big tech lives up to their social responsibility, that the global digital ground rules are based on democratic values and human rights and that technology supports Denmark's security and safety.

- The government's white paper *Towards a Better Social Contract with Big Tech* presents nine principles for a more responsible and fair society with big tech. The white paper is a step towards a common direction for Denmark and the international community where technology and accountability go hand in hand.

- The government's media proposal calls for a streaming tax on big tech and the establishment of a new Centre for Tech and Democracy to increase knowledge about the effects that big tech has on democracy, cohesion and people's well-being.

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The constant digital development means that digital skills must be acquired, developed and updated throughout life.

Danish Government Digitisation Partnership, 2021

Vision 9
A population ready for a digital future

Digital skills are a prerequisite for being able to take advantage of the opportunities offered by digitalisation – and for developing new digital solutions to the societal challenges we are facing. All Danes must be able to use digital solutions and have the digital qualifications to navigate social media safely and critically. The constant digital development means that digital skills must be acquired, developed and updated throughout life and many people in the workforce find themselves having to continuously learn new IT skills at an ever-increasing level.

It starts with our children and young people. Just as they learn to read and write, they must also build digital skills and understanding of digital technology early on. At the same time, they must learn to relate critically and constructively to the digital technologies that are increasingly prevalent in our society. It is therefore the government's ambition that technology, as part of a more practical school, becomes part of primary school education so that our children and young people become equipped for the future.

Higher education also needs to strengthen both student and teacher competencies and practical skills in using digital technologies. This way, more people will have relevant digital skills when they enter the labour market.

For instance, social and healthcare workers must be able to understand and use the technologies they interact with at hospitals, just as the carpenter and building designer need to be able to design a construction on a computer. Some of the prerequisites implies teachers having the right competencies and that the right learning technologies and digital platforms are available throughout the education system.

Demand in the labour market for people with specialised IT skills is already great, and projections show that the demand will only increase in the future. The lack of specialised IT skills risks inhibiting Danish growth, innovation and export opportunities. That is why more people need training in IT, technology, data and coding.

The government wants the Danes to acquire more digital skills by 2030 so that they become equipped to seize the opportunities offered by the digital development.

Few children understand digital concepts

7 %

know what an algorithm is

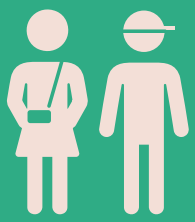
1 %
in 4th grade

13 %
in 7th grade

32 %

know what cookies are

15 %
in 4th grade



53 %
in 7th grade

13 %

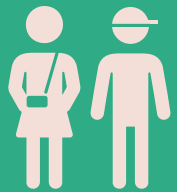
know what a user condition is

4 %
in 4th grade

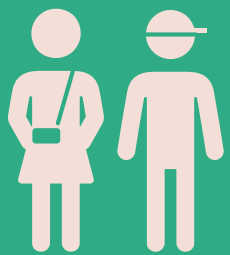
24 %
in 7th grade

57 %

know what fake news is



48 %
in 4th grade



67 %
in 7th grade

Source at the bottom: Digital literacy for children – part 4, Children's Welfare in Denmark, Media Council for Children and Young People and Trygfonden, 2019.

Strategic actions

- Children and young people should be better equipped for the digital society of the future. That is why technology must be integrated in primary school education. This can be done by introducing more practical elements into primary education. At the same time, technology as a proficiency must be strengthened among teachers at higher education and future primary school teachers.
- The digital skills and understanding of graduates and the workforce as a whole must be boosted by strengthening higher education (both regular programmes and supplementary and continuing programmes).

> It is essential that basic digital skills are acquired early in life. All children and young people must have acquired basic digital skills and be digitally literate when they leave primary and secondary school.

Danish Government Digitisation Partnership, 2021

World-class digital research

- The government has continued to pursue the research objective that Denmark should invest at least 1% of GDP in research. This means that 1% of GDP is allocated annually in the public research budget to research and development, which, among other things, creates the foundation for strong technological and digital research environments in Denmark.

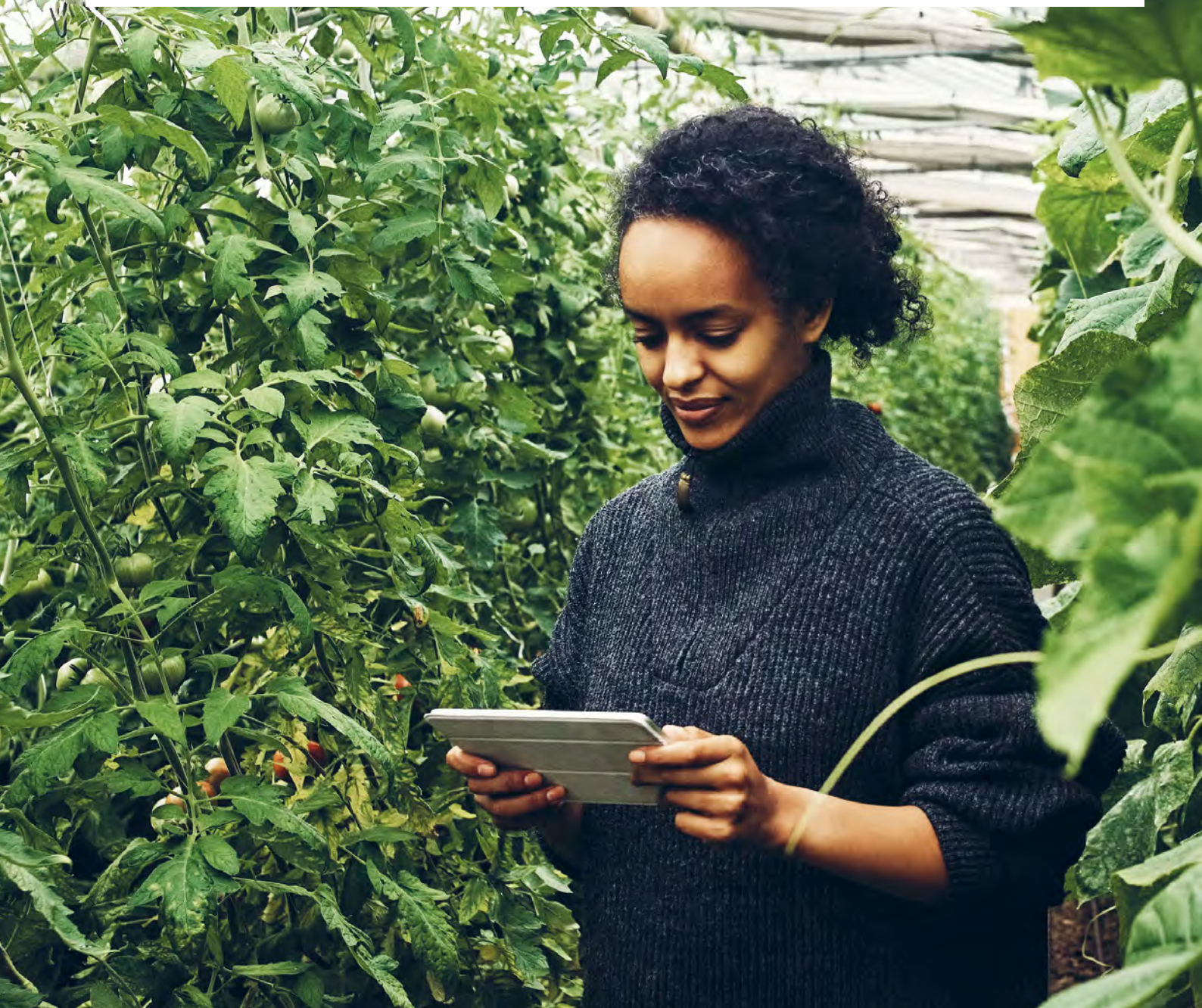
- In 2022, the government and the parties in the Danish Parliament have allocated DKK 469 million under Innovation Fund Denmark for strategic research and innovation in digitalisation and new technologies. The funds are to strengthen research and innovation in areas such as robot and drone technology, automated production technology, big data and artificial intelligence, quantum technologies and quantum computing, cyber and information security, space-based technologies and data.

- A number of strong digital research environments exist across Denmark's eight universities that contribute to the development and adaptation of new digital technologies to create value for Danish society and businesses. For example, a number of universities are collaborating on a pioneer centre for research in artificial intelligence, which is funded through a collaboration between the Danish National Research Foundation and several private foundations. The eight Danish universities are also working together through the Danish e-infrastructure Cooperation (DeiC) to provide national access to supercomputers in Denmark and internationally and to participate in the creation of LUMI, one of the world's most powerful supercomputers.

The next steps in Denmark's digital development

With the National Strategy for Digitalisation, the Danish government is presenting its proposal for a new digital future for Denmark. However, we will only succeed if we continue to build on our good cooperation and work together. This applies to public sector, private businesses, civil society, organisations and researchers alike.

The government will continue the collaboration and dialogue on digitalisation, which was the starting point of the Digitisation Partnership, in a permanent and binding format in the Danish Digitisation Council. Digital development is happening at an ever-increasing pace and, in collaboration with the Digitisation Council, the government will work to ensure that Denmark is equipped for the future.



Overview of initiatives in the National Strategy for Digitalisation for 2022-2026

VISION 1
Strengthened cyber and information security

1. National Strategy for Cyber and Information Security

The strategy will strengthen Denmark's digital security and is aimed at authorities, businesses and citizens. The strategy sets out a number of new security requirements for ministerial areas that are in charge of essential functions or critical IT systems. Furthermore, the strategy launches a series of actions focused on increasing the level of competency and leadership in cyber and information security. The strategy also focuses on building knowledge among citizens and businesses, for example by strengthening the information portal sikkerdigital.dk. At the same time, international cooperation in the EU, UN, NATO and with like-minded countries must be strengthened to make it more difficult to carry out cyber attacks against Denmark.

2. Strategic action for the development of quantum technology in Denmark

The government and the parties in the Danish Parliament agree that a Danish strategy for quantum research should be prepared. Quantum research is a Danish position of strength, and in addition to the research and innovation strategy, the government will take the initiative to develop a broad national strategy for the development and commercialisation of the technology by the industry. The purpose of this work is to ensure that significant economic benefits can be reaped and that quantum technology gets a key role in delivering the recommendations of the digitisation partnership, including on cyber security and green transition.

3. SME:Digital fund to strengthen businesses' defences against cyber attacks

Support for consultancy on how SMEs can strengthen digital security, including how to manage data, processes and systems, for example through a certification or labelling scheme. The DKK 50 million fund was announced on 7 March 2022 and opened for applications on 17 March 2022.

4. Strengthening digital literacy among children and young people

This initiative includes the Digital Traffic Club for Children and Young People, which is to equip children and young people to navigate the Internet safely and securely, development of teaching materials and programmes on digital literacy that teachers and educators can use as inspiration in their teaching as well as school patrols for digital road safety, where students, teachers, educators and parents are trained and appointed to support a healthy digital culture in the country's educational institutions.

5. Cyber security pact with private sector players

The government is entering into a cyber security pact with a number of private sector players. The parties will initiate and coordinate efforts to strengthen cyber security in Danish businesses, to share knowledge about digital threats and to cooperate to ensure synergy in the efforts to ensure the cyber defence of Danish businesses.

VISION 2
Coherent service for citizens and businesses

6. Activities for digital inclusion to be strengthened

Public services must be accessible to all. Therefore, digitally challenged citizens must be offered the help and guidance necessary to be able to navigate confidently in the digital public sector. In addition, the support persons who provide digital assistance must be given the right tools to be able to take the proper means of action and be adequately equipped to help. This must help to ensure that all Danes can easily and safely use digital services.

7. Coherent case flow through data sharing

Vulnerable citizens, and especially those with complex cases, must be guaranteed more coherent case flows and services. This particularly applies to vulnerable children and young people and their families, whose cases cut across municipalities, the healthcare sector and central-government authorities. This requires, among other things, improved data sharing in cases that cut across authorities and sectors. This work must clarify the legal framework and counteract barriers to efficient and responsible data sharing between authorities.

8. Easy and secure administration of consent

It must be easy and safe for citizens to give and withdraw consent for data to be shared across public authorities. The development of a consent solution will help ensure coherent case flows and will also be a crucial step towards giving citizens a simple and trustworthy way of giving consent for their data to be shared with public authorities. Common standards and a coherent consent infrastructure must therefore be established.

9. Easy and secure use of powers of attorney

It should be easier to give and receive powers of attorney and thereby easier to use the self-service solutions when in contact with the public sector on your own or on your relatives' behalf. Common standards and infrastructure for digital powers of attorney in the public sector should therefore be established.

10. A comprehensive and personalised overview for citizens through development of Mit Overblik (My Overview)

Citizens must have a single and more targeted overview of their key information and dealings with the public authorities on Mit Overblik. Mit Overblik on the website borger.dk will be expanded to include more targeted information and guidance tailored to the individual citizen's situation.

11. Improved service and communication via Digital Post

It should be easier to communicate and interact with the public sector, for example when authorities send important messages to citizens or businesses. A more user-friendly and action-oriented digital post box must be created to enable citizens to act directly to messages from public authorities, e.g. book an appointment, and to make the authorities' case processing less resource-intensive.

12. Mit Virk app – help to meet requirements and deadlines

With the Mit Virk app, businesses – especially SMEs – get a comprehensive overview of deadlines and cases at their fingertips and they get notifications when they need to respond to communication from the public authorities. This will make it easier for businesses to interact with the public authorities, which can give them more time to develop their business and minimise the risk of being fined for missed deadlines. At the same time, the authorities will spend less time on reminders and follow-up.

VISION 3

More time for welfare through increased use of new technology

13. More and better welfare through wider use of new technologies

Digital solutions, automation and optimised use of new technologies and data can help solve societal challenges, such as addressing labour shortage by freeing up resources, improving the quality of public services or contributing to the green transition. The public sector must accelerate the use of new technologies such as artificial intelligence and a fund of DKK 140 million will be provided to support the implementation and dissemination of concrete technology solutions across central government, municipalities and regions or in individual sectors.

14. Video communication with the public authorities

In a busy everyday life, citizens must have access to more flexible services such as video conferencing when they need to interact with the public sector. Increased use of video communication creates a more accessible and modern public sector. The first step is to collect experience of using video communication in public authorities to be able to offer video communication as a supplement to physical meetings in more areas of the public sector.

15. Strengthened Danish language technology

The development of Danish language technology must be strengthened. This initiative is to support Danish businesses in developing artificial intelligence in Danish and thus contribute to growth and innovation and the development of solutions that target the Danish market.

16. 10-year plan for new technologies in the public sector

New technological solutions must free up time and labour in the public sector. A long-term, targeted effort is therefore being started to expand new technology in the public sector in order to free up more time for citizen welfare, equivalent to 10,000 full-time jobs over a 10-year period, and to help to solve labour shortage in the public sector. The government will discuss the plan with Local Government Denmark and Danish Regions.

17. More digital innovation and new solutions through the National Centre for Public-Private Sector Innovation (CO-PI)

CO-PI is a national centre that has been established to strengthen public-private sector cooperation on innovative solutions, e.g. by collecting and disseminating knowledge on public-private sector cooperation, innovative and flexible tendering and by creating increased dialogue between public authorities and private businesses. CO-PI must focus on green transition, sustainable construction and technology that support welfare.

18. National plan for movement data

A movement data plan will be prepared to ensure an optimum foundation for automation and real-time planning in Denmark. In order to realise automation across sectors – such as agriculture, transport and public services – we need good data on things that move. This initiative must support the deployment of autonomous vehicles and drones in society.

VISION 4

Increased growth and digital SMEs

19. Automatic business reporting

It must be easier to do business in Denmark and share data with the public sector. By automating the SMEs' accounting processes, up to DKK 3 billion can be saved on bookkeeping and reporting to the authorities.

20. SME-friendly tendering system (MitUdbud)

As part of the process of strengthening public-private cooperation, it should be easier and more straightforward for SMEs to submit tenders for public contracts through the development of a national procurement system. This will, among other things, make it easier to find relevant tenders, increase re-use of data and reduce the number of IT systems that businesses need to use.

21. ESG data (MinBæredygtighed)

The amount of reporting for green businesses must be reduced through the development of a digital guidance universe for the businesses' sustainability work and for stating ESG data, e.g. through the use of the climate compass. At the same time, businesses will be able to show their sustainability performance through standardised ESG data.

22. A more automated climate compass

A more automated and advanced climate compass will make it more accessible and easier for SMEs to calculate their climate footprint, to plan and initiate CO2-reducing actions and easier for businesses to focus their sustainable transition.

23. Strengthened digital transformation of Danish businesses through SME:Digital

SME:Digital will be continued and reinforced to accelerate digitalisation, automation and e-commerce in SMEs in Denmark. A reinforced SME:Digital consists of the following four parts: 1) grants for procuring private consultancy on digital potentials, solutions and implementation, 2) investment aid, 3) skills and management development and 4) knowledge and guidance on digital business development.

24. Digital green product data (MinGrønForretning)

Green product data is continuously standardised and digitised and an efficient IT infrastructure will be established for sharing green product data between businesses, reporting to authorities, etc. This will allow automatic handling of green data in the systems and value chains of various parties, thereby supporting green and circular transition and reducing administrative costs for businesses and public authorities.

25. SMV:Robot

Automation is a Danish position of strength that generates growth, export and new business opportunities. However, SMEs experience various barriers when investing in new robot solutions. Accordingly, businesses should be able to test robot solutions by borrowing a robot for a short period of time and get advice on how to deploy robots. An online directory will be developed to provide businesses with an overview of robot solutions and guidance on applications targeted at different industries and tasks.

26. National technology transfer

It should be easier for SMEs and entrepreneurs to get access to and use new knowledge and technology from public research. Accordingly, transfer of technology from universities to businesses and entrepreneurs must be strengthened. More specifically, a national effort is to support strategic development work across universities with close involvement of private sector players, focusing on e.g. developing new models for efficient contracting and trading of IP rights as well as developing and providing fast-track contracting for collaborative and contract research. The concrete actions must be based on the recommendations of the Partnership for Knowledge and Growth to strengthen the innovative ecosystem around universities and businesses.

27. Intelligent, data-driven and coherent prevention of fraud

Actions against fraud must be strengthened through increased use of new technology to identify businesses intending to commit financial fraud. Based on the Danish Business Authority's intelligent control platform, security, technical, and legal requirements for strengthened cooperation across authorities on data exchange and technology for advanced data analysis aimed at a more proactive and effective fight against financial crime will be considered and tested.

28. Cross-disciplinary digital and business supervision

Supervision must keep track with the digital development and be based on data, automation and advanced digital solutions. An inter-governmental cooperation will be established, which will apply common methods and tools as part of the supervision effort. This will also ensure more an efficient public control through common digital solutions and data sharing.

29. Flexible and efficient framework for public procurement

This initiative aims at ensuring a more flexible and efficient framework for public procurement, so that private businesses do not have to spend unnecessary time and resources on submitting tenders. Furthermore, through the development of a national SME-friendly procurement system, this initiative must address digital procurement challenges that mainly affect SMEs.

VISION 5
The digital healthcare of the future

30. New technology and citizen-reported data

New technology, digital solutions and use of healthcare data, including the citizen-reported data, hold great potential for boosting treatment quality and capacity in the Danish healthcare sector. Strategic work will therefore be initiated to ensure better framework conditions and to increase the use of new technologies for treatment, early detection and efficient organization of the healthcare sector. Similarly, a national guide to healthcare apps must be implemented so that citizens and healthcare professionals can easily find relevant apps that they can safely use in their treatment. A direction should also be outlined for technical solutions and regulatory frameworks for how the healthcare sector can and should handle data reported by citizens during their treatment.

31. More treatment at home

Citizens must be offered more treatment in or close to their own home as well as high quality treatment regardless of geographical location. This means increasing the use of telemedicine solutions, such as virtual consultations, home monitoring and patient-reported information especially for vulnerable citizens and chronic patients who are often and regularly in contact with various areas of the healthcare sector. More specifically, the aim is to introduce these technologies in all geographical areas and within all relevant areas of the healthcare sector.

32. Modernising digital messaging in the healthcare sector

Fundamental elements of the joint public-sector digital infrastructure will be strengthened and modernised in order to support coherence in the healthcare sector and continued digital development. This implies modernising the technological basis for digital messaging in the healthcare sector in order to support the current need for health professionals to be able to share relevant healthcare information in connection with transitions between the practice sector, municipalities and hospitals.

33. Increased coherence and single point of access to healthcare data

Increased coherence and single point of access to healthcare data will be provided to make it easier for citizens, relatives and healthcare professionals to access and get a better overview of information. Based on common principles for displaying healthcare data across different digital solutions, more healthcare data must be made available to both citizens and healthcare professionals through the healthcare record (Sundhedsjournalen) on the website sundhed.dk.

Strategy for Life Science (April 2021)
38 initiatives aiming to ensure that Denmark holds a strong position in the global competition in the life science industry, and that the life science industry to an even greater extent works to the benefit of patients, welfare society and the Danish economy.

The government's proposal for healthcare reform (March 2022)
The government's healthcare reform sets a new direction for prevention, strengthens the quality of local healthcare offers and frees up more time for the individual patient, for example by promoting treatment in the patient's own home, strengthening the development of a comprehensive patient overview and strengthening efforts to use data from local healthcare offers.

VISION 6

Acceleration of the green transition through digital solutions

34. Climate adaptation – Water from all sides

Comprehensive data-driven approach to climate adaptation that informs decision-makers of timely and socio-economically optimised investments that minimise the scope of damage, support green transition and digital transformation of the water sector. Consists of six actions that strengthen the hydrological data basis and contribute to socio-economically appropriate climate adaptation and risk reduction.

35. Data-driven transition to a circular economy

Denmark has come far in terms of collecting and using data on waste and other material flows. However, in order to exploit the potential of the circular economy and to ensure maximum recycling in waste treatment, a circular data bank will be established to collect valid data on waste, materials and product content and make them available across value chains and material flows. This will provide a basis for private businesses and the public sector to make material consumption more efficient, minimise waste and implement initiatives that support new material cycles.

36. Establishment and operation of a Utility Digitisation Programme

Through cross-sector collaboration on data and digitalisation in the utilities sector, Denmark will be able to realise the green transition more cost-effectively, quickly and in a way that creates value. A Utility Digitisation Programme will therefore be established to drive progress towards a coherent green utilities sector that makes better use of resources and infrastructure across value chains and supply types.

37. Data support for flood warning system in Denmark

In order to prepare ourselves for future climate change, the first steps will be taken to establish a warning system for extreme weather events in Denmark.

38. Monitoring groundwater and ensuring clean drinking water

Denmark aims to continue to base our drinking water supply on decentralised extraction of clean groundwater. This requires valid, accessible groundwater and drinking water data. The national database for groundwater and drinking water (JUPITER) will therefore be reformed to ensure the necessary knowledge on the quality and quantity of groundwater and drinking water.

39. Better transition to electric cars and alternative fuels through open and standardised data

In order to promote the use of alternative fuels in Denmark and help make it easy to drive green throughout Denmark, an IT solution will be established that enables receiving, displaying and distributing standardised data from publicly available infrastructure for the transmission of fossil fuels and alternative fuels.

40. Experiments with intelligent transport systems

In order to improve traffic flows, reduce congestion and optimise traffic management by using real-time data and machine learning, an experiment with intelligent transport systems will be initiated to strengthen coherent, coordinated and digitalised traffic management.

41. Incentive-driven use of the road network

In order to ensure less congestion and better mobility on the roads, technical and administrative solutions needed to implement incentive-driven use of the road network will be developed. Specifically, this must be done through a development trial with road pricing for passenger cars.

42. Green data processing and storage

We must ensure that the public sector takes the lead in reducing the adverse climate and environmental impact of digitalisation. As a first step, mapping will be undertaken to test and extend the EU's green public procurement criteria for public procurement of data processing and storage.

43. Danish Agency for Data Supply and Infrastructure

The foundation for the green digital development must be strengthened and future-proofed, for example by gathering regulatory responsibility for localised information, basic data, movement data and telecommunications in a new Agency for Data Supply and Infrastructure.

VISION 7

A strong, ethical, and responsible digital foundation

44. A comprehensive data road map for public data

It should be easier for businesses, researchers and authorities to find and re-use public data to drive innovation, development and value. A single overview of available public data will be established. The data road map will offer a searchable overview across the many platforms that host public data.

45. Future-proofing Basic Data as the cornerstone of the public data foundation

Funds will be earmarked for consolidating and developing Basic Data as the key cohesive data foundation for digital Denmark. This will ensure that both authorities and businesses continue to have an authoritative and cohesive data foundation on which to make decisions and create new digital solutions.

46. Strengthening of the Danish Data Ethics Council

As data becomes increasingly important in the continued digitalisation of society, a need exists to address and discuss ethical issues and dilemmas. The Danish Data Ethics Council will therefore continue and be strengthened. The council aims to provide a permanent forum for discussing data ethics issues in the junction between use of new technologies and the citizens' fundamental rights.

47. Continuation of action on business-oriented data ethics

Data ethics and responsible use of data are key topics for many businesses since data ethics is crucial for trust in the businesses' use of data and a prerequisite for developing innovative and responsible data-based solutions. The action on business-oriented data ethics will therefore continue to put focus on data ethics in the use of artificial intelligence and businesses' use of tracking technologies on their websites and in apps. The work to provide guidelines should be based on Virksomheds-guiden's (Business Guide) theme on data ethics.

48. A stronger Danish Data Protection Authority serving a proactive function in society

Today, the Danish Data Protection Authority plays a key role in ensuring citizens' rights in a digital society. The Danish Data Protection Authority will therefore be strengthened to be able to undertake a more proactive societal function for the benefit of Danish authorities, businesses and citizens.

49. Strong digital foundation for the public sector

Citizens and businesses should be offered a more coherent digital service through a strong common foundation for public IT solutions. Common architectural principles and widespread standards are to create greater coherence in our systems and make them easier to maintain, develop and replace on an regular basis in the future.

50. Renewed focus on managing central-government IT tasks and spending

An up-to-date and stable digital infrastructure is essential for providing stable and good digital services in the future. At the same time, central-government funds must be spent where they provide the most value when developing IT. Analysis activities must map out central-government IT tasks and spending with a view to making recommendations for improving the management of the central-government IT spending.

51. Continued focus on digital-ready legislation

Legislation must be easy to understand and simple to manage digitally. The work to prepare legislation for digitisation must therefore be continued and strengthened. This will ensure that legislation can be translated into digital solutions in an efficient, secure and ethically responsible way.

52. Regulation that promotes the use of new technology

Businesses often encounter administrative costs or unclear and outdated rules when they want to test new technologies and turn them into commercial products. An initiative is therefore being launched to promote the use of new technologies in businesses. The initiative is to help avoid unnecessary barriers in new rules and help businesses that encounter unclear or outdated rules in relation to new technologies so that rules do not become a barrier to innovative businesses.

53. Solution for digitisation of legislative geography

A model and methodology will be developed for extending Retsinformationssystemet (Legislative Information System) with a solution for digitising geography in legislation to create a more accurate basis and promote rule of law in respect of citizens and businesses. Digital legislative geography will make managing and resolving disputes more accurate and efficient.

VISION 8

Denmark at the centre of international digitalisation

54. Active Danish participation in EU digital programmes

By participating actively in the EU, we will be able to shape digital development and repatriate significant funds from EU programmes. Targeted action is therefore being taken to increase Denmark's involvement in the EU's digital initiatives. This initiative aims to strengthen Danish involvement in the digital agenda for Europe through the establishment of a subsidy fund to repatriate funds from the EU's Digital Europe Programme and the establishment of European Health Data Space.

55. Safeguarding Danish interests in the digital agenda for Europe

EU legislation is gaining increasing importance in the digital area and it is crucial that Denmark plays an active role in ensuring that the legislation matches the good experience and solutions created in Denmark. A strengthened effort to impact the digital regulatory agenda and increase involvement in the digital industry policy will be initiated.

56. Better attraction of foreign businesses in new digital growth areas

Denmark is in fierce competition with other countries to attract foreign investment. Efforts are therefore being intensified to attract knowledge-intensive foreign businesses, investors and talent to Denmark to support Danish positions of strength in new technologies.

57. Strengthened exports and internationalisation of Denmark's digital solutions

Denmark is a frontrunner when it comes to public digitalisation and Danish businesses are among the most digitised in the EU. Several countries are facing major investments in digitising their public services, and there is a great interest in Danish digital solutions. That creates new export potential. To promote the export of Danish digital solutions, a cross-sectoral task force consisting of public and private sector players will be established to support the export potential, e.g. through authority cooperation. Danish digital solutions must also be showcased in Denmark to strengthen exports and attract talent.

White Paper on big tech and tech diplomacy (June 2021)
The government's white paper *Towards a Better Social Contract with Big Tech* is intended to stimulate debate in this area. It sets out nine principles for a more responsible and fair society with big tech that each springs from a major societal challenge. Based on the White Paper, the government is working on a wide range of measures to meet the challenges.

Strategy for Denmark's Tech Diplomacy (February 2021)
This strategy focuses on ensuring that big tech lives up to their social responsibility, that the global digital ground rules are based on democratic values and human rights and that technology supports Denmark's security and safety.

VISION 9
A population ready for a digital future

58. Technology in primary education

In a digitalised society, students must be able to relate critically and constructively to digital technologies and be prepared to navigate a digital society. A framework for technology in primary education will be created to promote a more practical school and to support the introduction of this proficiency in primary education, the development of teachers' competencies and other implementation actions.

59. Technology as a proficiency for teachers

Technology in primary education calls for a strong research, knowledge and teaching environment capable of realising the potential for children, young people and others to become much better equipped in a future digital world. Funds will be earmarked to develop the new proficiency, capacity building, competence development of teachers in the teacher education programme, etc.

60. Digital boost for higher education

To strengthen the digital knowledge, understanding and skills of graduates and the workforce, funding is being earmarked to boost higher education. This effort can include both regular higher education and supplementary and continuing programmes where the effort can be targeted at skilled workers and specific sectors/fields. Specifically, the effort involves competence development of teachers with a view to strengthening their digital perspective and understanding in conjunction with their proficiencies and incorporating it into their teaching as well as developing courses and modules with relevant digital content.

61. Digital equipment fund for vocational education and adult vocational education

Robot systems and digital technologies such as virtual reality (VR) and augmented reality (AR) offer the opportunity to create more practical teaching in vocational education and adult vocational training to strengthen the link between school and training/workplace. Funds will be earmarked for a digital equipment fund to allow investment in the latest technology such as VR, AR, simulation, 3D and competence development for teachers. Knowledge centres can apply for funds to acquire new digital technology and equipment in 2023.

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