

OCTOBER 2018

 THE DANISH GOVERNMENT

# World-class Digital Service

Ministry of Finance



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# Preface

Today, Denmark is at the forefront in regard to public sector digitisation. In fact, Denmark is nothing less than the best in the world. This summer, Denmark was ranked first in the United Nations e-Government Survey 2018. The digital solutions have made life easier for citizens, who have embraced *NemID* (the Danish eID/digital signature solution), tax assessment notices on *skat.dk* (the website of the Danish Customs and Tax Administration), and other digital solutions. However, Denmark must adapt to the fast digital transformation in society, like the rest of the world, and more speedily address the new opportunities and challenges.

As part of the Coherency Reform of the public sector, the Danish government is now launching the digital reform initiative *World-class digital service*. With the Coherency Reform, the government wants to create a more coherent public sector with citizen-centric public welfare. And digital solutions play a pivotal role in this effort. Digital developments offer new opportunities to develop public services to be of ever greater benefit to citizens. We must be much better at exploiting these opportunities.

The government will therefore raise its political ambitions for the digitisation in the public sector. We propose a number of focus areas and initiatives to provide citizens and businesses with even more up-to-date and coherent digital services. With these initiatives, the government aims to strengthen the links between public services, so that citizens and businesses experience an easier and simpler encounter with the digital public sector.

Naturally, it is essential for the government that digitisation takes place within a clear framework, and that respect for the individual's privacy is maintained. Also in the digital world. Therefore, the Danish government will ensure greater focus on data ethics and a more transparent use of data in the public sector. The aim is to increase the citizens' level of trust in how the authorities use and share data in the public sector.

Public sector digitisation is a shared responsibility. As a result, the government will take digital services to the next level by making a digitisation pact with municipalities and regions that obligates all parties to collaborate on providing *World-class digital service*.

Minister for Public Innovation  
Sophie Løhde





# 1 World-class Digital Service

Denmark is an international frontrunner in digital government. Nevertheless, the political ambitions need to be even higher if the public sector is to keep up with the expectations from citizens and businesses. Consequently, the Danish government is launching the digital reform initiative *World-class digital service* which will accelerate public sector digitisation efforts and contribute to better and more coherent welfare.

Since the beginning of the millennium, public administration and service provision for citizens and businesses have undergone a digital transformation. Today, citizens take digital communication with the public authorities for granted. This is not necessarily the case in other countries, even though these countries are comparable to Denmark. Citizens are keen users of *NemID* (the national eID/digital signature solution for authentication and signature), *Digital Post* (a digital letter box for official communication with authorities), and digital self-service solutions on, for example *borger.dk* (the national citizen portal) and *skat.dk* (the website of the Danish Customs and Tax Administration). This is why Denmark has taken the lead in international benchmarkings – in other words: Denmark provides world-class public digital service.

The fact that Denmark has come such a long way in digitisation is no coincidence. It is the result of difficult political decisions as well as strong and continuous collaboration in the public sector between central government, regions, and municipalities.

The digital transformation has made the Internet the primary gateway for citizens to the public sector. This applies regardless of whether they are dealing with tax assessment notices, reading letters from their municipality, or applying for a government education grant or unemployment benefits. Digital self-service solutions are accessible 24 hours a day, prescriptions and *NemID* can be accessed via a mobile phone, and citizens no longer receive envelopes in their ordinary mail box. Most tasks can be done from home whenever they fit into people's everyday life. Consequently, the Danish public welfare has become better, easier and more flexible.

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## Citizens are heavy users of public digital services

**760 mill.**

NemID transactions made by citizens in 2017.

**91%**

of citizens of 15 years of age and above are registered with Digital Post provided by government.

**86%**

of the population between 16 and 89 years of age have searched for information on public websites within the last year.

**126 mill.**

messages were sent through Digital Post to citizens and businesses in 2017.

**34 mill.**

visited borger.dk in 2017.

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Source: Statistics Denmark and the Agency for Digitisation.

The digital transformation has been a huge success because citizens have been quick to embrace and use the digital solutions provided by authorities. However, the large use of public digital solutions obligates the public sector.. Expectations are high, and they are increasing as citizens are already used to the high standards they experience in the best private sector solutions. These include everything from online shopping and delivery of food and clothes to payment in shops by swiping right. Using digital solutions has become a matter of course, and in many cases good service has become synonymous with digital service. We – the public sector – must therefore raise our ambitions in order to keep up.

An open and inclusive process in preparation of the Coherency Reform of the public sector Reform has also highlighted that digital services can be developed even further. As part of the Coherency Reform, the government created a number of panels consisting of 13 senior executives with extensive experience from the public as well as the private sector. One of the key recommendations stressed by the panels was that Danes should meet a coherent digital Denmark that sets ambitious objectives for digital services.

The Minister for Public Innovation has also visited all 98 municipalities, five regions, and a number of central government workplaces in Denmark to gain knowledge on how to renew the public sector.

In May 2017, the government created the Disruption Council which was asked to submit proposals on how to address the potentials of the technological development and maintain



and develop a labour market that can keep up with pace of digital transformation of society. Among other things, the Disruption Council decided to focus on emerging technologies and business models as a central theme, and on addressing related issues, for example data ethics.

The government has taken note of the recommendations of Council. If Denmark is to have a public sector with world-class digital service in the future, it is necessary to have high political ambitions as well as concerted and targeted efforts across the public sector.

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## Denmark to be a member of D7

Denmark has long been recognised as a digital frontrunner in an international context. The Danish government will apply for membership of "Digital 7"; a network of seven digitally advanced countries that in different ways have made their mark as frontrunners in public sector digitisation.

The government wants Danish digital public services to remain among the best in the world. Therefore, it is only natural that Denmark share its experiences and learn from experiences from other digital frontrunner countries.

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With the broad political *Agreement on digitisation-ready legislation* from January 2018, the government wanted to make Denmark one of the first countries in the world to ensure that new legislation were prepared for digital administration as part of the legislative process in the Danish Parliament. The agreement lays the foundations for further public sector digitisation in the years to come. Furthermore, as part of the negotiations on new EU regulations, the government will focus on establishing a good framework for further digitisation of both the public and private sector.

Building on previous experiences, three major challenges and barriers have been identified:

*Firstly*, it is important not to compromise the citizens' trust in the public sectors use and processing of data-. Citizens should continue to trust the way in which public authorities use and process their data. Therefore, it should be easier for citizens to access their own data, and it should be more transparent which data is shared by public authorities. Moreover, it should be easier for citizens to consent to how public authorities share their data, for example when vulnerable citizens need one action plan across both the employment and social sectors rather than – in this case – two separate action plans. One action plan that addresses all the citizen's challenges and ensures coordinated initiatives requires that relevant authorities share information about the citizen. Citizens should be in no doubt that the sharing of data is secure and conducted with the consent of the citizen.

*Secondly*, current digital services are characterised by the fact that digital solutions are still structured according to the responsibility of each authority instead of organising the solutions according to the present situation and needs of citizens and businesses. This places great

demands on citizens and businesses to navigate a complex public sector with many digital solutions and entrances. For example, when losing a relative, the citizen has to find information about both the funeral, administration of property, property tax, access to *Digital Post* and perhaps apply for survivor benefits and funeral benefits as well.

*Thirdly*, the public sector is too slow to incorporate emerging technologies and digital welfare solutions. This is despite the fact that emerging technologies and digital welfare solutions, such as robotics and artificial intelligence (AI), offer opportunities to link the various parts of the public sector closer together and create better and more secure services. For example, emerging technologies allow citizens to receive treatment in their own home and receive the necessary support when they are no longer able to manage on their own.

The government is of the opinion that Denmark has to overcome these three challenges if public digital services are to remain among the best in the world.

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With the Coherency Reform of the public sector, the government has set four national objectives for the development of the public sector in the years to come. The objectives are based on the many inputs received as part of the preparatory work on the Coherency Reform. They will help set the overall direction for development of the public sector.

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## National objectives for the development of the public sector

- Citizens should be met by a cohesive public sector.
  - More freedom and time for welfare.
  - Denmark should have a public sector that ensures welfare of the highest quality.
  - Attractive public-sector workplaces with trust in professional competencies and a citizen-centered approach to service.
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The *World-class digital service reform* has particular focus on the objective that Denmark is to have a public sector that ensures welfare of the highest quality.

The government wants to be held accountable for achieving these objectives. Therefore, measurable indicators will be developed for each objective, so that everyone can follow the progress. The reform will also focus on monitoring citizens' confidence in public sector processing of personal data as well as on providing citizens with a better overview of the information that public authorities have on them. Confidence and transparency are the keywords for future developments – citizens need to be on board and feel confident.

In 2017, figures from Statistics Denmark showed that 83 pct. of the citizens to some degree or to a high degree trust the authorities with regard to processing their personal data. As many as 37 pct. of citizens had a high degree of trust. Thus, there is already fundamental trust in public sector processing of personal data. However, maintaining and strengthening this confidence even more is essential for the development of the public sector.

The government will therefore be measured as follows:

- More citizens should be confident that their personal data is processed securely by the public sector. By 2024, 90 pct. of citizens should trust public sector data processing, and 60 pct. should have a high level of trust. At the same time, citizens should have a more comprehensive overview of the most relevant personal information kept by public authorities.

As part of the reform, the government proposes ambitious initiatives for more coherent, and transparent user- and/or business-centric digital services, to maintain trust in the digital transformation. Based on the three overall challenges for public sector digitisation, government work on digital services will be realised within the three following focus areas.

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## Focus areas for government work on digital services

### Knowledge, overview and transparency

The government will provide citizens with a considerably better overview of their current cases and benefits, as well as easy access to the authorities' information about them. Processing of citizens' information should be transparent, and focus should be on ethical questions regarding the use of data enabled by technological developments.

### Digital services on the terms of citizens and businesses

The aim of the government is to create a more coherent digital service, so that services are based on the terms of the citizens and businesses. The government will also start working on developing digital IDs so that users always have their ID with them on their mobile phones. To begin with, this will be by developing a driving licence app that can supplement the physical driving licence.

### Technology and new welfare solutions to benefit more users

The government will accelerate the dissemination of new technology and digital welfare solutions so that more people can benefit from tried and tested digital solutions. With all of us using new technologies, Denmark will continue as a digital frontrunner in the future.

**The government will make a digitisation pact with Local Government Denmark and Danish Regions that commits all parties to the three focus areas and that ensures world-class digital service.**

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The initiatives will cut across the entire public sector and require strong cooperation between central government, regions, and municipalities. The government will therefore enter into a digitisation pact with Local Government Denmark and Danish Regions in which central government, regions, and municipalities will be obligated to collaborate on the direction established in *World-class digital service*.







# 2 Knowledge, Overview and Transparency

Good public service is very much about knowing the needs of the citizens and adjusting the service accordingly. This requires that relevant information be used across public authorities. However, there should be a clear framework, so that citizens can have trust in the way public data is used. The government will therefore ensure greater transparency, so that citizens have access to a comprehensive overview of their pending cases with public authorities and the most relevant information and data that the authorities have on them. Furthermore, the government will set up a data ethics council to make recommendations on how to deal with ethical dilemmas and support a broad public debate on data ethics.

Data is a key factor in a coherent and up-to-date public sector that creates value for the individual as well as for society as a whole. Data about societal matters, such as traffic and the environment, and data about the individual citizen are necessary for services provided by the public sector.

For instance, when citizens are to receive housing benefits or pensions, data is shared between authorities. This is a great advantage to citizens, as they themselves do not have to submit the same data twice. Access to high-quality data also forms the basis on which citizens can receive good and safe treatment across the healthcare sector. Moreover, municipalities use data about education and age, for example, to target individual employment efforts, so that unemployed individuals find a job faster. This is positive for the individual as well as for the economy.

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## Citizens are satisfied with public digital solutions

92%

of users are either satisfied or very satisfied with borger.dk.

88%

of citizens between the age of 16 and 89 who have used public digital services think they are easy to use.

84%

of users are either satisfied or very satisfied with Digital Post.

87%

of the users are either satisfied or very satisfied with NemID.

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Source: Statistics Denmark and the Agency for Digitisation.

We can advance even further through better and more qualified use of data across authorities. However, increased use of data and more sharing of data between authorities also call for stricter requirements on the public sector to process data about citizens in the right manner. Therefore, a clear framework for how public authorities use the new possibilities to organise good and coherent services on the terms of citizens is necessary.

The debate on the Data Protection Act in the spring 2018 has shown that not knowing what information and data authorities share and for which purpose can create insecurity. This is a very legitimate concern that must be taken seriously. Public use of data must always respect due process and individual privacy.

The public sector must therefore deliver in three areas:

- *Firstly*, public authorities must at all times comply with the regulation on how and when data may be collected and used.
- *Secondly*, public authorities must protect data about citizens so it does not fall into the wrong hands.
- *Thirdly*, procedures must be transparent, so that citizens can access the most relevant data used by the authorities.

According to the General Data Protection Regulation, which entered into force this spring, all public authorities must comply, and document their compliance, with the Regulation's principles on processing of personal data. Based on the government's proposal, a fine has also been introduced for public authorities that do not comply with the rules in the Regulation. The Data Protection Act and the Regulation have increased public-authority focus and awareness

of data processing, and will help ensure that citizens trust the way in which their personal data is processed. This is a considerable task that challenges public authorities, businesses, and associations.

Moreover, following the Danish Cyber and Information Security Strategy, which was also published this spring, the government will strengthen data security across the public sector. Among other things, the strategy imposes requirements for adequate monitoring of the critical systems in central government, and more focused work on development of skills and competencies, so that employees and managers can process data in a secure manner. Furthermore, the strategy imposes that the critical sectors – telecommunications, financial, energy, healthcare, transport, and maritime – launch targeted security measures.

And there is a lot to be done. There is currently no overview of the individual citizen's data or pending cases with public authorities to ensure the necessary transparency. *borger.dk* and other public websites and self-service solutions have data about citizens and information about pending cases, for example applications for a government education grant or housing benefits. Most often this information is fragmented, and focus is usually on the data and cases processed by the individual authorities themselves. Citizens therefore have to look in several different places to obtain information about e.g. their cases or payment of their benefits. This is both tiresome and non-transparent – and is far from being aligned with the government's ambitions of world-class digital service in the public sector.

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## Overview of own information increases trust in the public sector

62%

of citizens would feel more confident if they knew for which purpose their data are used.

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Source: Dansk IT.

Citizens should be in no doubt that data is used responsibly and appropriately. Using the digital public sector should be easy and quick, but also secure. It is therefore crucial that public sector use of data is transparent.

Consequently, the government is launching targeted measures to ensure greater transparency and trust in public sector use of data. At the same time, data should be used better to adjust and personalise the public service to the individual citizen. A working group is examining options to delete data and other possibilities to strengthen citizens' trust in public sector data processing.

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## Knowledge, overview, and transparency

### The government will implement the following initiatives:

#### Strategy for data in the public sector

The government will prepare a strategy for the use of data across the public sector so that – within a clear framework – it becomes better at using data in order to provide citizens and businesses with a more coherent and targeted service. Moreover, the strategy will help businesses create value for society by enabling them to reuse public data which are non-personal.

#### Establishment of a data ethics council

In order to support an informed public debate on issues and dilemmas regarding data ethics, the government will set up a data ethics council to make recommendations on data ethics and support broad public debate on issues regarding data ethics.

#### Citizens should have access to their own data and cases

The government will ensure that citizens get a better digital overview of their pending cases with public authorities. This overview should be improved considerably in close collaboration with municipalities and regions, so that it is easy for the individual citizen to keep up with information in one single place. This includes the following:

- An overview of benefits granted, pending cases, digital post, deadlines and relevant information about the citizen will be established up to 2024.
  - Access to Information about authorities that regularly access information about the citizen.
  - A brush-up of *borger.dk* to improve user-friendliness and visual expression.
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## 2.1 Strategy for data in the public sector

Public sector data is vital for many of the welfare services provided by the public sector. Data includes knowledge about all societal matters imaginable as well as knowledge about individual citizens and businesses. Some data is personal, such as health data, and this has to be processed within a clear framework, while a very large percentage of the data concerns matters about society, and is not personally identifiable data. Public data makes it possible to provide high-quality services efficiently – provided we know how to use data in the right way. At the same time, public data on societal matters can be used by businesses in new solutions.

However, data is currently not being used optimally by the public sector. The various sector areas have different approaches, and citizens can still encounter a public sector in which services have not been coordinated. If we want to improve public services and make them more efficient, up-to-date and cohesive, we need to break away from the silo mentality.

Secure and coordinated use of data can help authorities create customised solutions for citizens. For instance, if patients need to be monitored more closely by the healthcare sector, we can use health data to predict the likelihood of e.g. an acute admission, and thereby provide an early preventive intervention. Earlier and more accurate treatment will be a clear benefit for patients. Similarly, citizens should feel that they encounter one single coherent public sector, where it is not necessary to submit the same information and data several times. The government has already taken significant steps to ensure better use of data in the healthcare sector with its initiative *Sundhed i fremtiden – bedre brug af data til gavn for patienten* (Health in the future – better use of data for the benefit of patients).

If we are to be better at personalising solutions to the individual citizen and ensure coherency across the public sector, it is imperative that citizens trust that personal data in particular is processed securely and responsibly, so that due process and respect for the individual's privacy is maintained.

Businesses are already using public data on e.g. addresses, properties, and geography in various solutions used by many Danes. Today, geographical surveys, addresses, etc. form the basis for innovation and development of services such as insurance offers. Moreover, when buying a home, it is easy to find information about noise pollution from surrounding streets, or whether there is a risk of flooding during a cloudburst. Technological developments will enable businesses to develop even better and more customised solutions for society. In its *Strategy for Denmark's Digital Growth*, the government has therefore launched several initiatives to enhance businesses' opportunities to use public data for growth and new solutions.

The Disruption Council has addressed how Danish businesses can use data in an ethically responsible manner to generate growth. This large amount of strong public data thus plays an important role in ensuring that Denmark makes the most of technological developments.

The government's ambition is more transparent, secure and efficient use of data, so that the public sector can provide the services that citizens are entitled to expect, and where relevant public data can form the basis for new, useful private solutions. The vision is coherent services that are available when citizens need them – safely and securely.

Therefore, the government will prepare a strategy for use of data in the public sector.

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### The strategy for data in the public sector must...

- Create more coherent and targeted services through data.
  - Ensure a clear framework, so that data can be used safely and securely for citizens.
  - Ensure broad use of and benefit from data – for private services too.
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*Firstly*, the strategy will enable the public sector to use data to a greater extent to develop, improve, and strengthen coherency in services for citizens in the years to come. Citizens should meet *one* public sector, in which data relevant for their case is known by the relevant employees, regardless of the authority. This includes the municipal case officer and the municipal home carer. Broader use of data will enable more efficient efforts that are customised to the individual's needs. Among other things, this requires public authorities to keep track of data and to coordinate processing of data.

*Secondly*, authorities must protect citizens' personal data, and data should always be used with respect for citizens' privacy and personal safety. The new General Data Protection Regulation and the Danish Data Protection Act set the legal framework for authorities' use of personal data. The strategy will therefore also contribute to ensuring a clear political and ethical framework for the use of data in the years to come. In order to achieve this, the strategy sets out principles for the use of public data. Moreover, the government will examine whether the scope of what is considered sensitive personal data can and should be expanded, or whether it is otherwise possible to introduce specific protection measures for personal data typically considered private, but currently categorised as ordinary non-sensitive personal data.

*Thirdly*, the strategy will support use of public sector data by the private sector. Developments are moving towards private players offering services, such as individually customised house and contents insurance, through the use of various data, including address data, environmental data and map data. Similarly, with the citizen's consent, banks can obtain data on income from the tax administration, so that citizens are not required to provide pay slips and tax documents. The strategy will help make services for individual citizens better, more efficient and coherent, regardless of whether services are provided by public authorities or private players. Thus the strategy will supplement the initiatives in the government's *Strategy for Denmark's Digital Growth*.

## 2.2 Creating a data ethics council

Technological developments create new opportunities to use data for more targeted welfare services, more efficient treatments in the healthcare sector, digital solutions, and rapid public sector administration. The same applies to the business community, where technological developments hold great potentials for growth and innovation. However, developments also raise ethical questions about how we utilise these new opportunities.

The debate on use and protection of personal data is important. This was clear in connection with adoption of the Data Protection Act and the launch of the Danish Cyber and Information Security Strategy.

Under the Disruption Council, the government has set up an expert group on data ethics. The expert group has discussed the ethical dilemmas and issues raised by data and the use of new technologies. The overall purpose is to support Denmark's vision of being a digital front-runner by ensuring continued trust in the digitisation of the public sector and the businesses through ethical and responsible use of data.

On this basis, the government will set up a data ethics council which, among other things, will make recommendations and participate in the public debate on dilemmas and issues regarding data ethics in society. Moreover, the council will discuss how data ethics initiatives can improve competitiveness in the business community.

The council will be set up when the final recommendations from the expert group on data ethics under the Disruption Council are available.

In this connection, it is crucial that citizens have a place to express their concerns about public-authority processing of personal data. Consequently, the government will set up a special mailbox at the Danish Data Protection Agency, where citizens can contact the agency if they suspect personal-data security breaches or are concerned about an authority's use of data, even in cases where the report is not an actual complaint. Reports in the mailbox can also support discussions on ethics by the upcoming data ethics council.

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### Creating a data ethics council

The government will create a data ethics council which, among other things, will make recommendations for, and contribute to, continuous and informed public debate on issues and dilemmas regarding data ethics. Moreover, the council will ensure that Denmark navigates appropriately between new opportunities and challenges.

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## 2.3 Citizens should have access to their own information and cases

Today, it is difficult for citizens to obtain an overall picture of what information and data public authorities collect and use – and of who has access to which information and data. This may create confusion as to what citizens' information and data is in fact being used for.

It is also difficult to gain an overview of pending cases with public authorities. Even though an application for housing benefits or a state student grant can be submitted via a digital self-service solution, it is often difficult to subsequently gain an overview of pending applications or other cases. Today, citizens need to find information from several different places and create their own overview.

The government will therefore launch initiatives in several areas. Access to the most relevant information and cases should be much easier for citizens. Furthermore, the government wants individual citizens to gain insight into which authorities are accessing information and data about them. In addition, citizens should meet up-to-date and simple digital services on *borger.dk*.

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### Efforts must deliver in three areas:

- Citizens must have access to data on themselves and on ongoing cases.
  - Citizens must have insight into which authorities are accessing information about them.
  - *borger.dk* to be an up-to-date entrance to the public sector.
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*Firstly*, the government will launch significant efforts in the coming years to provide citizens with greater insight into and a better overview of information and cases across central government, municipalities, and regions. As part of this, the government will develop *Mit overblik* (My Overview) on *borger.dk* to gather a citizen's most important cases and information in the public sector in one single place. *Mit overblik* will also be developed as an app to provide citizens with easy access to their overview.

The aim of the initiative is to prevent citizens from having to navigate many different public systems, and instead gather the different entrances in one place. Moreover, the aim is to make the most relevant information available in one single overview.

With *Mit overblik*, the government will also set up a personal calendar that shows the citizen's appointments and most important deadlines, e.g. appointments with public authorities or deadlines for payment of property taxes. The calendar will also send automatic and personal reminders and notifications to help citizens keep track of their cases. In other words, it will be much easier for citizens to keep track of appointments and important obligations.

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## ***Mit overblik* (My Overview) gathers citizens' contact with the public sector in one place**



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Note: *Mit overblik* will provide citizens with one single access point to the public sector. This will make it easier for citizens to gain an overview of their cases, digital post, deadlines and benefits from the public sector, as well as insight into the most relevant information registered on them by public authorities.

Today, *Min side* (My page) on *borger.dk* provides access to a number of basic information, and entrances to various self-service solutions, e.g. change of address and government education grant applications. However, after using the self-service solution, information about the case can only be obtained at the relevant authority. *Mit overblik* (My Overview) provides citizens with one single entrance to information about the course of their case.

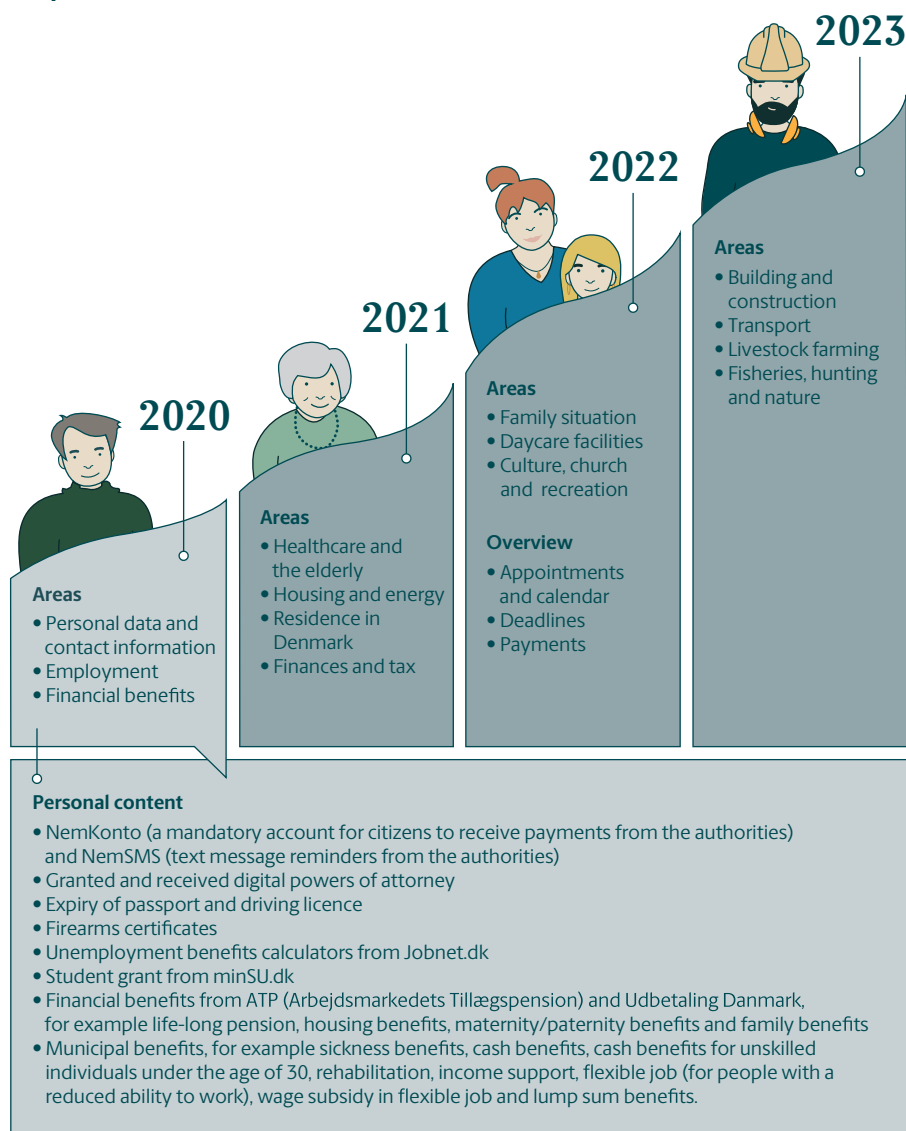
This also applies to information about the individual citizen held by the authorities. Today, citizens themselves have to find information at every single authority. *Mit overblik* will present the most relevant information from many different authorities in one single place, so that the information is clear and accessible.



This is an ambitious vision requiring close collaboration between central government, municipalities, and regions. In 2018, as part of an overall digitisation pact for the public sector, the government will agree on a specific plan for increased transparency with Local Government Denmark and Danish Regions. The digitisation pact will establish a framework for future targeted efforts to provide citizens with greater insight into their own data and a better overview of digital services. The plan will be implemented in "waves" where areas will gradually be included in *Mit overblik* (My Overview) over the years to come.

The first "wave" in 2020 will provide an overview of sickness benefits, social benefits, housing benefits and more. The specific areas for the waves after this will then be established on an ongoing basis in collaboration with municipalities and regions. Up to 2024, it will be possible for citizens to get an overview of the most relevant information across authorities on *Mit overblik* (My Overview).

**Mit overblik (My Overview) will continuously be refined and expanded with more areas**



Note: On *Mit overblik* (My Overview), citizens will be able to see their cases, deadlines, and benefits from the public sector as well as an overview of the most relevant information and data registered on them by the public authorities. *Mit overblik* will not be fully established from day one, but will be developed continuously over the years up to and including 2023. The plan for the development will be implemented in "waves", where more areas gradually will be included in *Mit overblik* over time.

*Secondly*, the government wants individual citizens to be able to see what authorities have accessed their information. This will enhance transparency in public sector data processing even more. We already know this model from the healthcare sector, where citizens can access *MinLog* (MyLog) on the health portal *sundhed.dk* and, *e.g.* see what medication data is registered on them and who has been accessing this data.

The government will therefore conduct an analysis to examine the possibilities to provide citizens with a better insight into what public authorities are accessing their data.

It is crucial that there is confidence that unauthorised persons are not accessing information about the individual citizen. Consequently, the government will examine the possibility of requiring that a log be established for all systems with personally identifiable data to provide citizens with insight into whether unauthorised persons have accessed the data. The government will also explore the need to require a separate data security policy for employees at the relevant authorities.

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## The government will provide insight into the use of information about citizens

Individual citizens should trust that public authorities use their data in secure ways. Moreover, individual citizens should gain a better insight into what authorities have accessed their data. The government will therefore conduct an analysis of the possibilities to establish a log display, where citizens can see what information public authorities have accessed.

An example of a similar current solution is the Shared Medication Record, where medication data about the citizen is stored, so that relevant employees at hospitals, in eldercare and GPs can see which medication a citizen is receiving. On *sundhed.dk* (the national health portal), citizens can access their own medication record and see which authorities have accessed their information.

With the 2019-budget agreement for the regions, the government agreed with the regions that, by the end of 2020, all patients should be able to access a digital display of log data from the hospitals' electronic patient records.

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*Thirdly*, the government will give *borger.dk* a more modern look. *borger.dk* is the primary gateway for many citizens to handle their affairs with the public sector. Therefore, it is important that *borger.dk* is accessible, user-friendly and simple, so that citizens also trust the public sector's digital platforms.

The development of *Mit overblik* (My Overview) will also give *borger.dk* a more central role as the primary gateway to the public authorities. This places great demands on the solution. User-friendliness is crucial, and the visual expression on *borger.dk* must support the objective for citizens to have simple access to insight into their data, cases and benefits.

Development of an app for *Mit overblik* (My Overview) will also make it easier for citizens to gain an overview. With the app, citizens will always have access to public sector solutions.





# 3 Digital Services on the Terms of Citizens and Businesses

Technological developments offer new opportunities for smoother and more coherent services. But also new expectations for more flexible and accessible solutions. The government will ensure that citizens experience coherent digital services that fulfil their needs – regardless of the authorities involved. The government's vision is also that all relevant public IDs in time will become digital, so that citizens always have their ID at hand. The first step is to develop a driving licence app.

Denmark is well advanced in digitising communication between the authorities, and citizens and businesses. During the past 10 years, outdated paper forms have been replaced with online self-service solutions, and communication between citizens as well as businesses and public authorities is now mainly digital. This has made life easier for citizens and businesses in Denmark, because it is possible to deal with the municipality, *Udbetaling Danmark* (Payment Denmark - the Danish authority for payments of benefits etc.), the Danish Customs and Tax Administration and many others digitally. At the same time, procedures have been streamlined, money has been saved, and resources released to other areas.

However, the current design of public digital self-service solutions is very much the result of the traditional sectoral structures and organisational borders, rather than being based on the needs of citizens and businesses. This means that digital public services *as a whole* do not live up to the expectations from citizens of a coherent and up-to-date digital service – even though most public digital solutions function well *separately*. This is a problem.

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## Need for more coherent services

56%

of citizens needed to contact other entities or authorities in connection with their situation.

77%

of those who have been in contact with several entities or authorities did not find that the authorities were good at creating coherency.

21%

of the citizens who have used several single online self-service solutions indicate that they are "highly satisfied".

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Source: Rambøll and Statistics Denmark.

In the same way as public digital services should be more coherent and based on the needs of citizens, the authorities should also be better at providing digital solutions that live up to expectations from citizens for flexibility and accessibility. The use of ICT is already extensive, and still increasing. Today, almost nine out of ten citizens own a smartphone, and the phone has become the focal point for many tasks. Hence, it should be a priority to give citizens access to digital solutions; even when they are on the move.

Therefore, the government will launch targeted efforts to create better coherency between the public digital services and to ensure that the digital solutions are accessible and based on the needs of citizens.

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## Digital services on the terms of citizens and businesses

The government will implement the following initiatives:

### Coherent digital user journeys

The government will ensure that self-service solutions and other digital services become more coordinated across authorities, so that citizens and businesses experience a coherent digital service that fulfil their needs. The government will achieve this by establishing coherent user journeys for ten important life events for citizens and ten important situations for businesses by 2021.

### IDs at your fingertips

A digital driving licence is the government's first step towards making relevant IDs digital, so that citizens have the public digital solutions at their fingertips. Specifically, an app will be developed to supplement the physical driving licence no later than 2020. Applications and case processing for driving licences are paper-based processes, and therefore, in addition to developing a driving licence app, the government will digitise and simplify driving licence administration to provide citizens with up-to-date and efficient case processing.

### Uniform digital communication

In order to ensure a uniform framework for uniform deployment of digital communication for new areas, the government will introduce an authority in the Public Administration Act to ensure that digital communication is deployed with continued support for citizens with difficulties in using digital solutions. A style guide will also be prepared to help make self-service solutions more user-friendly and uniform, so that more citizens encounter recognisable solutions across authorities.

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## 3.1 Coherent digital user journeys

In the future, digital services in the public sector will be more cohesive and based on the citizen's overall situation and needs. Today, citizens and businesses have to navigate a complex public sector with many digital solutions and entrances. For example, when losing a family member. In such situations of grief, the relatives need to find information about the funeral, administration of the estate, estate tax, funeral benefits and survivor benefits and changes in their own conditions such as housing benefits or pension.

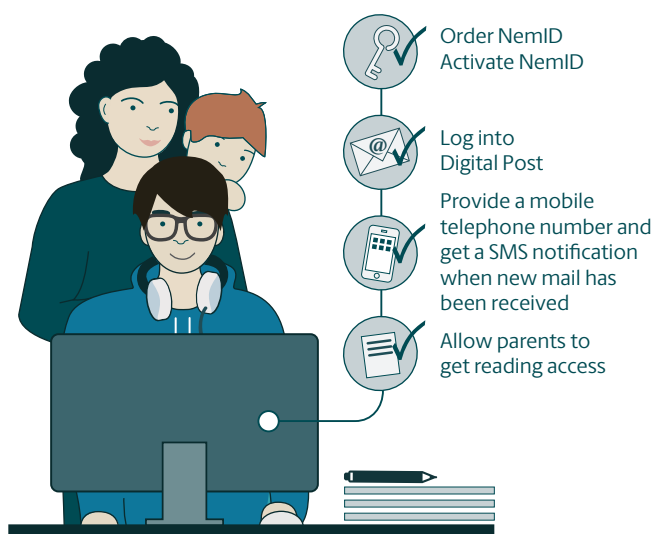
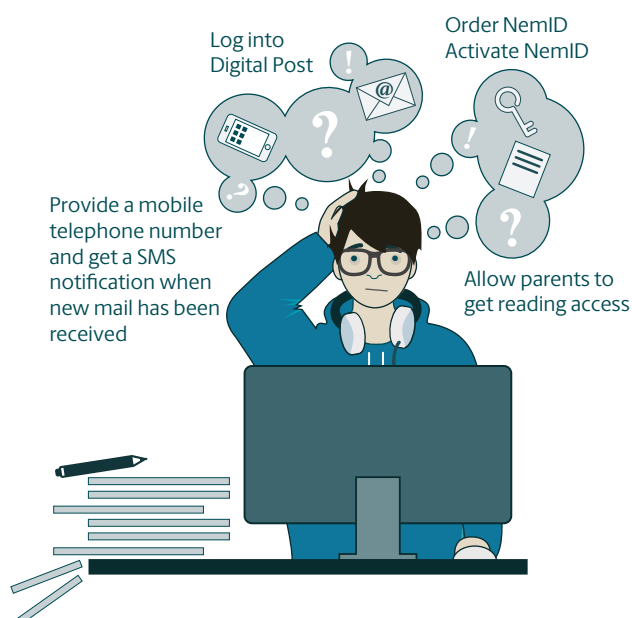
This is an example of how the organisation of the public sector can complicate the situation for citizens. This is why the government will work to create coherent digital services that fulfil the needs of citizens and businesses across authorities.

The government will ensure that digital services become coherent in the ten most important life events that citizens are likely to experience and in ten of the key situations that businesses are likely to experience. This will be achieved by creating an overview of all the tasks relevant for the specific situation to make these tasks easier to manage, and to prevent people from forgetting to notify a change of address or apply for a benefit to which they may be entitled.



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## Better user journeys - digital citizens



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Note: Sometimes it can be difficult to manage contact with the public sector in the middle of major life changes. For example, when citizens turn 15 years, they have to register for digital communication with the public authorities. Today, the process of applying for a *NemID* (the national eID/digital signature solution) and logging on to *Digital Post* for the first time can seem complicated. With a coherent digital user journey, the government will ensure that young citizens receive the information they need and that their parents are equipped to help in the best possible way.

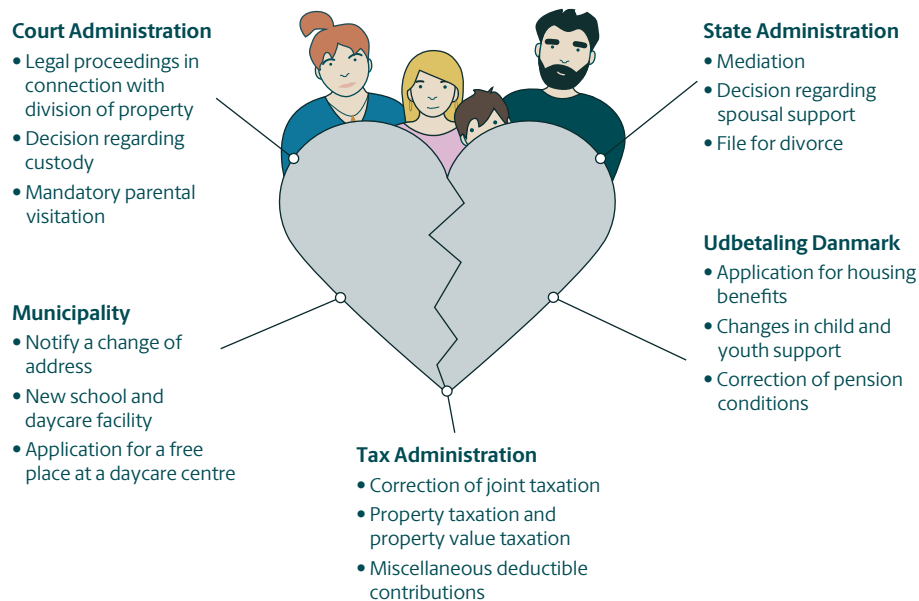
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For example, when turning 15 years and thereby becoming a digital citizen, many young citizens experience having to deal with a lot like signing up for *NemID*, *Digital Post*, tax card, etc. For many young citizens, this is confusing, despite the fact that they are digital natives, using public digital solutions is difficult for many of them. Therefore, this is one of the first situations that the government will address in its work on coherent user journeys. At the same time, a separate campaign will be launched to generate focus on the situation and make young individuals better digital citizens.

Coherent user journeys will provide citizens with one single entrance to all relevant tasks. At the same time, it will be possible to receive notifications and reminders about any outstanding matters or the status for cases. This will help individuals to deal with their own matters without having to contact several authorities.

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## Better user journeys – divorce




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**Note:** A family break-up involves radical changes for everyone. There are many things that must be done, but always more that could be done. It is easy to lose track of which authorities can help with what, and what benefits are available. A coherent digital user journey helps you keep control of the situation when you are under pressure and provides clear and relevant information. It also helps couples who are willing and able to handle things themselves.



Work on developing coherent user journeys will proceed until 2021 with extensive involvement of citizens, businesses, employees and other parties important for understanding and improving the digital services in the specific situations. The initiative is a step towards achieving the government's ambition to ensure that all citizens and businesses are offered coherent services across the public sector.

Under the digitisation pact, the government is aiming for an agreement with municipalities and regions about coherent digital user journeys. Coherency should cut across the entire public sector, and consequently, it is essential that all public authorities are involved in the work on user journeys. The first steps have already been taken with the Digital Strategy 2016-2020, but the government wants to raise the level of ambition even more and accelerate efforts.

The government's vision is for user journeys to become so coherent over time that citizens no longer perceive organisational borders as a problem. Citizens and businesses should experience digital services that address their core needs in one cohesive user journey.

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## Coherent user journeys in ten important life situations for citizens

Situation	Number of citizens
Becoming a digital citizen (15-year-olds)	66,835 15-year-olds in 2017
Starting an education programme	89,758 applicants for higher education in 2018
Moving	896,531 moves in 2017
New parent	61,397 births in 2017
Getting divorced	15,169 divorces in 2017
Getting a new job	700,000-800,000 job openings a year
Losing a job	14,844 notified redundancies in 2017
Moving abroad	21,095 Danish nationals moved in 2017
Losing a family member	53,261 deaths in 2017
Retiring	60,000 new pensioners a year

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Similarly, in the business area, ten user journeys will be identified for businesses to forge more coherency by the end of 2020. This may be in connection with hiring new employees or dealing with sickness in a one-man business. In close collaboration with selected businesses, and based on the businesses' needs, the government will decide which areas to include.

## 3.2 ID at your fingertips

The public authorities have been good at developing digital solutions. However, in the future, digital solutions should be far more accessible to citizens, wherever they are. Digital solutions should be right at your fingertips - also when you are on the move.

Smartphones have become the focal point in almost all daily activities. Citizens are used to having their smartphones with them wherever they go, whereas wallets are becoming increasingly redundant. Most plastic cards have already been replaced by, or supplemented with, digital solutions. For example, credit cards, season passes, youth travel passes, boarding passes, parking and gym memberships can all be accessed from a smartphone. The *NemID* key app, an app developed in collaboration between the government and the financial sector, has made it much easier to use all the services using *NemID* for authentication.

However, other important public IDs, such as the driving licence, have not yet been digitised. The same applies to the health card. Physical plastic cards must still be presented to traffic police when driving or at GP consultations. This is not the future. Therefore, the government will launch initiatives to make all relevant public IDs digital in the long term.

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### The code app makes daily life easier and improves security

Five million citizens have *NemID*, and every month they use the solution 65 million times. The *NemID* key app can be used for all services requiring authentication with a code card, for example to check online banking, access services on *borger.dk* or to shop on the Internet. The app has already been downloaded more than 900 000 times.

In addition to making life a little simpler, the code app is easier to keep track of, because the app is on your phone - right next to you. Almost 30 000 users lose their code card every month. Furthermore, many people make the mistake of taking a picture of their code card with their mobile phone, thus compromising security. Installing the code app on your mobile phone is both easy and secure.

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Digitising IDs is not easy. With the Coherency Reform of the public sector, the government will take the first step and develop a driving licence app. The aim is for citizens to be able to access their driving licence from their mobile phones from 2020.

This will make life a little bit easier for all citizens, as they will no longer have to have their physical driving licence when driving a car or when documenting their identity at a citizen service centre. The digital driving licence will supplement the physical licence and will be valid in Denmark. The app will thus be an option for all citizens who want to use a digital solution. Simultaneously with developing a driving licence app, the government will also explore the possibilities for digitising other relevant public IDs, such as the health card.

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## A driving licence app will make life easier for citizens

The government will develop a driving licence app as a first step towards digital IDs. After downloading the app, Citizens will no longer have to have their physical driving licence with them when driving a car or to prove their identity in Denmark. The driving licence app will be a supplement to the physical driving licence and it is an option offered to citizens who prefer a digital solution.

### Digitisation of the driving licence administration

Furthermore, the government will take the initiative to explore the possibilities for digitising driving licence administration to provide citizens with efficient and digital services in this area as well. Currently, the driving licence application procedure is as follows:

- A paper form is completed by the citizen, driving instructor, physician, driving examiner and the citizen service centre
- A physical medical certificate, first-aid certificate and photo ID are enclosed with the application
- A photo of the citizen is signed when the physician issues the medical certificate
- A master record is completed by the driving examiner and is used by the municipal citizen service centre to order the driving licence

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An analysis of the possibilities to digitise the driving licence administration will be launched in connection with work on the driving licence app. The aim of the analysis is to identify how case processing within this area can be digitised and to pave the way for gradually converting the existing paper-based processes into faster and digitised procedures.

### 3.3 Uniform digital communication

Citizens communicate digitally with the public authorities in an ever increasing number of areas. Digital self-service has made it easier for citizens to apply for housing benefits, renew their passports or change to a new GP.

Today, more than 100 areas are covered by mandatory digital self-service. Digital communication between the public sector and citizens has so far been realised through four legislative acts implemented in stages in the period from 2012-2015. The acts are based on a number of common principles according to which, as a starting point, all citizens should use digital self-service. At the same time, support will be provided to citizens who are digitally challenged.

The government wants the new digital self-service solutions to follow the same homogenous and recognisable rules. People who cannot use the digital solutions should have the same opportunities to receive help and guidance or to handle their affairs in some other way. Many elderly citizens have embraced digitisation and are keen users of digital solutions. However, some citizens still find it difficult and need continued support and assistance as digitisation moves into new areas.

Therefore, the government wants to establish homogenous requirements for digital communication in line with the concept introduced with the four digital self-service acts implemented in stages in the period 2012-2015. This will benefit citizens and make things easier for the authorities. Specifically, the government will propose an amendment of the Danish Public Administration Act, enabling digital communication to be implemented uniformly in new areas, and ensuring that citizens will still be offered alternative methods of communication if they cannot use digital solutions.

The deployment of digital self-service solutions can also make it easier for relatives to help a family member during a period of illness, if *e.g.* digital powers of attorney have been incorporated in the solutions. Through the common governmental power-of-attorney solution, citizens can issue a digital power of attorney so that relatives can deal with applications, benefit, and appointments with public authorities online on behalf of the citizen. At present, a digital power of attorney can be given to access medical records at the sundhed.dk portal to the health services, to apply for housing benefits, or to notify a change of address. This makes it considerably easier for relatives to help a family member safely and simply, without having to show up in person at various public authorities, and without unnecessary involvement of their family member.

Furthermore, the government will also take initiative to develop a common development guide for authorities' self-service solutions. The guide will provide a framework for user-friendliness and quality in the solutions, and thereby help ensure consistent and recognisable self-service solutions across authorities.

Thus, the government wants the development of digital communication between citizens and the public sector to be uniform and recognisable across solutions, making it easy for citizens to handle their affairs online.





# 4 Technology and New Welfare Solutions to Benefit more Users

High-quality welfare and services from the public sector for citizens and businesses call for renewal and innovation. The government will therefore improve the public sector's capacity to accelerate testing and application of new technological possibilities and digital welfare solutions, for example by establishing an investment fund of DKK 410 million. Furthermore, the government's vision is to make Denmark a front-runner in the use of artificial intelligence (AI).

Emerging technologies such as robotics, artificial intelligence and digital welfare solutions offer opportunities to link the various parts of the public sector closer together and provide better and more secure services to citizens and businesses. Furthermore, technological developments raise new expectations from citizens and businesses for more flexible public-sector solutions that can keep up with the private sector.

Emerging technologies and digital welfare solutions can save time for the core task. One example of this is when software robots perform simple repetitive tasks, such as sorting e-mails. Similarly, telemedicine for patients with severe lung diseases enables citizens to measure their weight and oxygen saturation in their own homes. Health-care staff can continuously monitor patients, and deterioration in their condition will be detected early, thus avoiding the need for acute admissions. Ultimately, this will give citizens a sense of security and freedom and enable them to take action themselves if their medical condition deteriorates.



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## A telecom agreement can pave the way for new welfare solutions

In May 2018, the government made an agreement on top-class broadband and mobile coverage, with support from a large majority of the Danish Parliament. The agreement will help ensure growth, efficiency improvements, welfare, and workplaces throughout Denmark. Good mobile coverage and fast infrastructure will support the deployment of welfare solutions, for example.

The agreement involves an increase of the broadband funding pool targeting low population density areas, and a strengthening of the framework conditions for implementing digital infrastructure in rural areas in Denmark. Furthermore, a telecom sector forum will be established, focussing on promoting 5G rollout in Denmark.

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However, the process of testing and deploying emerging technologies and digital welfare solutions in the public sector is often too slow. As a result, we can miss obvious opportunities to raise the quality of public services and ensure continued focus on efficiency.

Therefore, the government will undertake targeted efforts to improve the ability of the public sector to deploy emerging technologies and digital welfare solutions more rapidly than today.



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## Technology and new welfare solutions to benefit more users

The government will implement the following initiatives:

### Investment fund for emerging technologies and digital welfare solutions

The government will establish an investment fund of DKK 410 million in the period from 2018-2022 in order to accelerate testing and deployment of emerging technologies. To ensure that projects are locally anchored and to increase the total investment volume, there will be a co-financing requirement on project owners.

### New solutions for more users

The government will make sure that digital welfare solutions that have been tested and have proven successful more easily is made available throughout the public sector, all the while we become more familiar with **emerging** technologies. The following initiatives will support this work:

- A new strategy for the National Centre for Public Sector Innovation (COI) will give the centre a new role with more focus on testing and deploying **emerging** technologies and supporting innovation in public-private collaboration. An agreement will be concluded with the regions and municipalities to strengthen deployment of digital welfare solutions.
- An award will be instituted for best reuse of digital solutions already tested.
- An effort will be launched to promote use of cloud technology.
- A governmental analytics network for deployment and development of technological solutions will be established.
- An effort will be launched to enhance collaboration with tech businesses about new solutions.

### Denmark is to be a front-runner in artificial intelligence

The government wants Denmark to be a leader in the area of artificial intelligence (AI) by 2025. Therefore, the following initiatives will be launched:

- A national AI strategy will be developed, covering both the public and the private sector and ensuring a better framework for using AI, while at the same time formulating a set of principles for such use, for example in relation to privacy, security, justice, etc.
- AI will be tested by setting up a number of signature projects.
- A Danish language resource will be developed, enabling the use of speech technology, for example.

## 4.1 Investment fund for emerging technologies and digital welfare solutions

Emerging technologies and digital welfare solutions offer great potential with regard to improving public services. Currently, the public sector makes only limited use of new technologies, such as software robots and machine learning, and deployment of thoroughly tested welfare solutions, such as telemedicine or digital solutions for rehabilitation, is currently too slow.

Consequently, the government will establish an investment fund for testing and deployment of new technologies and digital welfare solutions in municipalities and regions, and DKK 100 million has been set aside for this fund. The fund will allocate resources to test solutions and technologies which often involve start-up costs and risks, but which also have the potential to bring significant benefits in the long term.

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### Investment fund for emerging technologies and digital welfare solutions

The government will establish a new investment fund of DKK 410 million in 2018-2022. The fund will support testing and deployment of emerging technologies and digital welfare solutions in municipalities and regions.

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As part of the 2019 budget agreements, together with Local Government Denmark and Danish Regions, the government established a fund for joint prioritisation of digital solutions for the health area. The government earmarked DKK 70 million for this initiative. With co-financing from the municipalities and the regions, the fund's total investment volume amounts to DKK 210 million.

The government wants to raise ambitions and is therefore allocating another DKK 100 million to the fund. Furthermore, the fund will cover a broader scope and support initiatives in all welfare areas.

The investment fund will target testing technology locally and deploying solutions nationwide after thorough testing. The aim of the investment is to contribute to developing innovative solutions that can free-up human resources for services aimed more directly at citizens. The initiatives will be anchored locally, and therefore, the government is encouraging co-financing from municipalities and regions. The fund will therefore amount to DKK 410 million in 2018-2022.

As part of the annual budget agreements, the parties will agree on emerging technologies and digital solutions to be deployed, and in this connection, the parties will set up specific targets for the deployment.

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## Examples of new technologies ...



Software robots

RPA (Robotic Process Automation) is software that imitates the administrative performance of tasks by an employee. The software is particularly suited to automate repetitive workflows requiring no human decisions and can speed up case processing which benefits the citizens. The technology operates on the existing ICT landscape and across systems and documents.



Artificial intelligence

Artificial intelligence (AI) is a common term for technologies that imitate human cognition and are able to make decisions by identifying patterns in vast amounts of data, thus enabling processes such as image, speech and text recognition. Furthermore, artificial intelligence can create prediction models for risk assessment or early detection of diseases, for example.



Blockchain

Blockchain is a technology for registration of information that provides a high degree of certainty that the information is correct. This is because information is stored in millions of copies distributed on the Internet, and the majority of the copies then determines what is correct. Consequently, it is almost impossible to make unauthorised changes to the information because millions of copies have to be changed at the same time. Blockchain is particularly well suited for information about series of events, for example transactions or case procedures. For each new event, a new block is added to the chain of information. Each block in the chain consists of a box comprising the actual information and a reference to the previous block. In this way, all events can be traced back to their starting point and thus be used for quick and secure verification of ownership.



Cloud

Cloud technologies provide easy and cheap access to computational power and storage capacity without any need to purchase and operate ICT equipment. The technologies provide an opportunity to develop digital solutions faster and more in line with citizens' needs than current digital solutions that are often acquired through long tendering procedures. Furthermore, cloud technologies are very much a precondition for continued work on artificial intelligence, as cloud solutions give access to massive computational power and the advanced tools necessary.

## 4.2. New solutions for more users

As part of the initiative to ensure faster deployment of tested solutions, the National Centre for Public Sector Innovation (COI) will be given a new role, focussing more on supporting deployment of new technologies in the public sector.

Faster deployment of emerging technologies requires a coordinated effort across the public sector. For example, it is essential that relevant experience with emerging technologies is collected and shared among public authorities to avoid parallel projects and investments. Moreover, cross-authority barriers to applying emerging technologies need to be addressed. There is also a need to enhance innovation collaboration across the public and private sectors.

Consequently, as a follow-up on the agreements on the 2019 budget for the municipalities and regions, the government will discuss a new strategy for COI with Local Government Denmark and Danish Regions. The strategy will enter into force from 2019 and can support more rapid deployment of new technologies in the public sector.

Furthermore, the government will institute an award for best reuse of digital solutions. The aim of this is to encourage more extensive use of solutions that have already been thoroughly tested. The award comes with a grant of DKK 100 000 for each of the three specific units and employees in the municipal, regional and central government areas implementing a digital solution based on previous experience from other authorities.

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### The National Centre for Public Sector Innovation (COI) will support faster deployment

Together with the municipalities and regions, the government will discuss a new strategy for the National Centre for Public Sector Innovation (COI). It is important that experience with emerging technology is used and shared among authorities, and consequently, the centre will play a key role in regard to deploying emerging technologies in the public sector.

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The public authorities have been good at testing new welfare solutions, but it has been difficult to deploy the thoroughly tested solutions all across Denmark, partly due to imbalances in economic incentives and lack of competences, and long-term evaluations.

Therefore, the government will also make sure that the public sector is quicker to deploy thoroughly tested digital welfare solutions. Solutions that work must be implemented as quickly as possible to benefit citizens, thus raising the quality of public services. To be successful, a targeted effort across the public sector is crucial. Consequently, as part of the digitisation pact, the government wants to make an agreement with the regions and municipalities to strengthen the framework for deployment of digital welfare solutions.

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## Agreement on faster deployment of digital welfare solutions

As part of the digitisation pact, the government will take initiative to implement a joint-government deployment agreement and will discuss this with Local Government Denmark and Danish Regions. The government proposes that the following themes are covered by the agreement:

- **Tools and skills development:** To enhance professionalisation in deployment projects, steering committees, project managers and project owners must have access to targeted and experience-based tools, and competency development courses for specialist should be prioritised to make digital solutions part of their professional toolbox.
  - **Joint evaluation model:** A joint evaluation model will ensure that the public authorities and the parties to the agreement evaluate the welfare solutions after the relevant demands, with risk assessment as the basis. This will mean that unnecessarily comprehensive evaluations can be avoided.
  - **Clarification of minimum content and process:** In the future, budget agreements with the municipalities and the regions concerning nationwide deployment of digital welfare solutions will contain any necessary clarification to keep the implementation phase from being unnecessarily long.
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Additionally, the government will increase the public-sector innovation capacity to make it easier for public authorities to deploy new technological solutions to benefit citizens and businesses. Thus, the government's ambition is to use cloud technology to give public authorities access to the newest technologies for developing and operating efficient and innovative digital solutions. This is because testing and subsequent application of emerging technologies often presupposes access to secure and scalable cloud environments offering the required capacity to store and analyse data.

The government will promote public sector use of cloud technologies by establishing cloud environments for public authorities linked to the Danish Agency for Governmental IT, and a cloud computing guideline will be published in the autumn of 2018. Furthermore, as part of the initiative, in 2019 the government will perform an analysis of the possibilities to increase use of cloud technology in the public sector, and of how best to cope with important security issues. The aim of the analysis is to facilitate application of cloud technologies, while ensuring they are implemented securely.

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## Digital solutions improve local welfare services

### **Nyborg Municipality: Virtual home training programme for COPD patients**

Nyborg Municipality has focus on online home training for COPD patients. Virtual training options allow patients with motor challenges to stay at home for training sessions that improve their physical fitness and reduce their symptoms. This is a good example of how new technology makes it possible to offer new types of services for citizens on their own terms and with more dignity.

### **Odder Municipality: More flexible support through virtual visits**

Odder Municipality uses virtual on-screen visits for citizens receiving mentoring support or housing support (help to carry out daily activities). Virtual visits are independent of where the citizen is physically located, and citizens can receive support from their contact person even when they are on holiday, studying abroad or in the hospital. Virtual visits can thus enhance dignity and freedom in the citizen's life.

### **Ærø Municipality: Better welfare through telemedicine**

Ærø Municipality has focus on online medical consultations, known as telemedicine. This approach saves the island's citizens time and effort on transport, and is a good example of how to improve the situation for individual citizens. The new digital solutions give citizens much easier access to medical services, also in areas with long distances to hospitals.

### **Odense University Hospital: Safely at home sooner after premature births**

Odense University Hospital uses an app to ensure that parents of premature infants feel safe in the time after they leave the hospital. The app includes regular video conferences between parents and hospital staff, it has an option for entering information about the infant's nutrition and growth, and it contains small instruction videos on nursing and caring for premature infants. This solution allows parents to leave the hospital earlier and feel safe in their own home, while at the same time enabling hospital staff to monitor the infant's development and give the parents all the guidance and support they need.

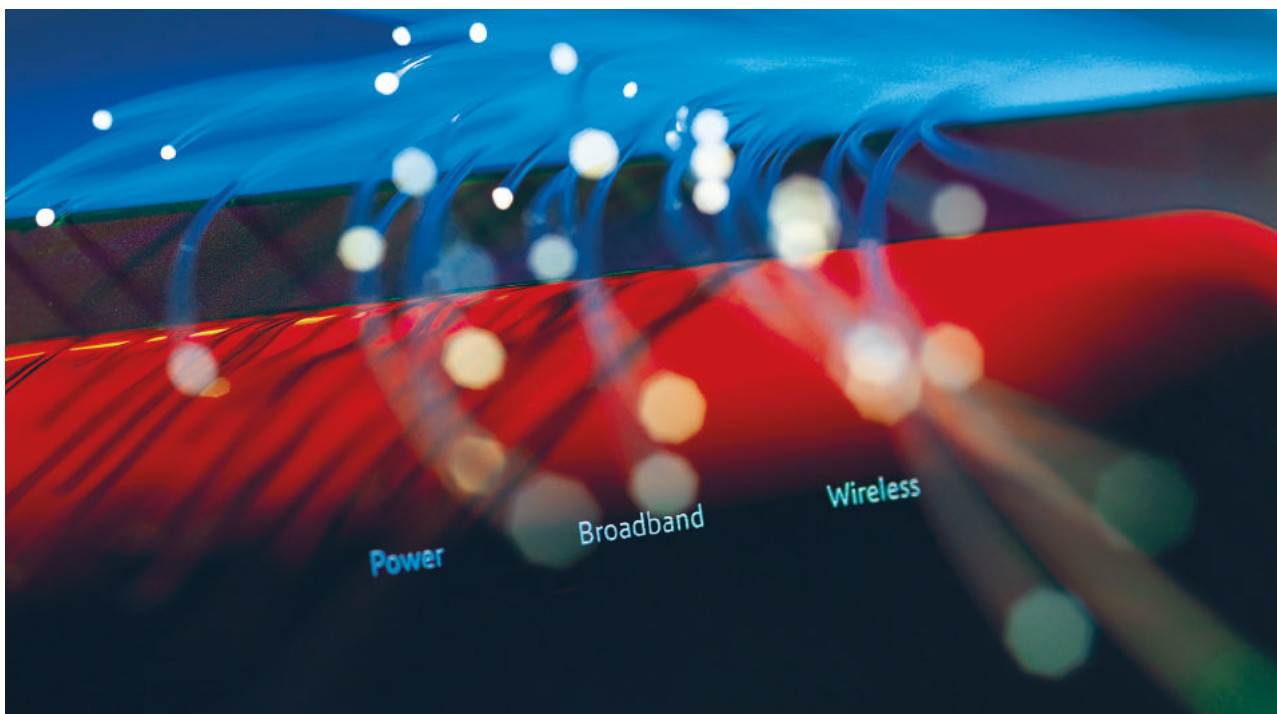
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Several central government authorities are testing the potentials of data analytics. For example, at the Danish Appeals Boards Authority (*Nævnenes Hus*) in Viborg in central Jutland, advanced data analytics will give case officers a faster overview of previous decisions and support them in deciding on citizens' cases more quickly. However, many public authorities find that they lack knowledge about the potentials of data analytics. Consequently, to enhance the use of new technology in central government, a network for sharing knowledge and practices on data analytics and new technological solutions will be set up between the central government authorities. The network participants will help each other to deploy existing solutions and to develop new ways of using technology.



Moreover, the Danish Agency for Governmental Administration has strong focus on developing software robots to automate simple and routine processes. The aim is to achieve advantages such as greater efficiency, lower costs, minimisation of errors, fewer routine tasks for employees and a better and more systematic analytic basis for continued work at the agency. To achieve these advantages, the Agency for Governmental Administration has set up a Robot Team. In collaboration with agency employees, the Robot Team identifies relevant tasks for the robots, and develops and implements these tasks.

Moreover, the government will launch an initiative to identify the potentials for enhanced collaboration between public authorities and tech companies on rapid and effective solutions to specific public-sector challenges, for example through innovation partnerships or other forms of collaboration.



## 4.3 Denmark is to be a front-runner in artificial intelligence

Artificial intelligence holds great potential for ensuring better service and more growth and innovation. For example, artificial intelligence supports physicians in making diagnoses, thus making it possible to trace the development of diseases early on and provide preventive intervention.

Artificial intelligence is used for several purposes in the private sector. In particular, large international companies use the technologies for image, text and speech recognition, and to predict service needs, customer churn, etc. However, only few public authorities use artificial intelligence, and only in certain limited areas. That is a shame, because artificial intelligence holds a great potential for improving services for citizens and making services more efficient.

In light of the significant technological developments, the government established the Disruption Council in May 2017. The Disruption Council focuses on the potentials of emerging technologies and artificial intelligence, and on how to ensure that everybody gains from these potentials.

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### Artificial intelligence can improve service for citizens and make it more efficient, for example by contributing to ...

- Faster and better diagnostics, prevention and treatment, for example when diagnosing cancer
  - More accurate prediction of risks of hospital admissions, prediction of flooding during cloudburst events and management of drainage systems
  - Faster identification of patients with heart failure by using advanced voice recognition for emergency calls
  - A more focussed and risk-based control efforts, for example to reveal corporation tax fraud
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The government's ambition is that by 2025, Denmark will be one of the world's leading countries in using artificial intelligence. This is an ambitious goal. However, compared to other countries, Denmark already has a clear advantage: Good data is a precondition for artificial intelligence, and Denmark has the best public-sector data in the world.

To accomplish its goal, the government will develop a national artificial intelligence strategy spanning both the public and private sectors. It is important that the strategy is widely anchored in society and that it sets a common course for ongoing and future artificial intelligence initiatives. The strategy will focus on providing an ideal framework for Danish businesses and public authorities to exploit the potentials of artificial intelligence. Moreover, the strategy will set up clear ethical principles for the use of artificial intelligence in Denmark. By coordinating and combining knowledge and efforts, the strategy should ensure that the potentials of artificial intelligence can be realised faster in all sectors.

Competent businesses, an agile public sector, strong research environments and quality education are preconditions for Denmark to utilise the advantages of artificial intelligence. Therefore, the strategy will consider the options for promoting the use of artificial intelligence by businesses and public authorities. For example, this could involve preparation and access to data, launch of test projects and investments in common infrastructure.

The strategy will be based on the most recent knowledge about artificial intelligence from Danish and international research environments, and on initiatives already launched by the government to promote education and research in digital technologies.

Furthermore, use of speech recognition and natural language understanding are crucial for developing artificial intelligence in more areas. However, as Denmark is a small language area, the Danish language resources have not been sufficiently developed. Consequently, the government will take initiative to develop a freely available Danish language resource to promote further development of artificial intelligence in Denmark.

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## Specific artificial intelligence initiatives

### A national strategy for artificial intelligence

The government will develop an artificial intelligence strategy covering both the public and private sectors. The strategy will provide an ideal framework for public authorities and Danish businesses to exploit the potentials of artificial intelligence. However, artificial intelligence must be used responsibly. Consequently, the strategy will also set up ethical principles for the use of artificial intelligence. The principles will ensure protection of privacy, security, transparency, justice, etc. when using artificial intelligence.

### World-class language technology

Speech recognition and natural language understanding can be used to support various types of tasks, for example support for processing environmental approvals, review of annual financial statements and audit reports, complaint procedures, support and emergency calls, email replies, etc. A significant barrier to efficient use of speech recognition and natural language understanding in Danish is that Denmark is a small language area.

Therefore, work will be commenced to establish a Danish language resource that will be freely available. This will give suppliers of speech and language technologies access to a common high-quality language resource allowing them to develop good speech recognition and natural language understanding solutions with high accuracy.

### Signature projects will provide specific experience

A number of signature projects will be launched to quickly collect specific, practical experience of the use of artificial intelligence in the public sector. The projects will be launched in areas deemed to hold a potential for enhancing the quality and productivity of public-sector core tasks through artificial intelligence; however, specific experience in these areas is currently insufficient. The signature projects will be funded through the investment fund for emerging technologies and digital welfare solutions.



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