
Status Report 2017 for the Common Public Sector Digital Strategy

Good progress for the common public sector Digital Strategy

In May 2016, the Danish government, Local Government Denmark and Danish Regions launched the common public sector Digital Strategy 2016-2020. The strategy has established a clear direction for continuing digitisation of the public sector across central government, the regions and the municipalities. The strategy builds on the strong foundation laid by the previous digitisation strategies.

Whereas 2016 was about getting the strategy off to a good start, in 2017 the initiatives in the strategy have delivered the first results that will help establish even more secure, user-friendly and cohesive digital public services for individual citizens and businesses.

A key goal in the common public sector Digital Strategy is to develop the digital infrastructure for the whole of the public sector so that citizens and businesses can continue to communicate safely and securely with the public sector. In 2017, the tender documents for the *MitID* (the next-generation eID) and *Digital Post* (a digital letterbox solutions for official letters) shared solutions as well as operation of *NemLog-in* (a single-sign-on solution) were published, while the tender documents for development and administration of *NemLog-in* were published in February 2018. Together, the solutions form the foundation of digital communication with the public authorities, and publication of the tender documents is an important milestone in work on a new tendering procedure and further development of the solutions so that the digital infrastructure can fully satisfy future demands for security, user-friendliness and flexibility.

The Digital Strategy will also help ensure that the public sector ICT infrastructure and the digital solutions are more cohesive so that the same data is not collected again and again, but instead is shared and used across authorities. In 2017, the adoption and launch of the white paper on a shared public sector digital architecture was an important step towards a public sector that is digitally bound together much more strongly. On the basis of eight architecture principles, the white paper outlines the practical framework for sharing data across authorities and it supports efforts by the authorities to work together on cohesive digitisation of the public sector. Initially, the white paper will be applied by all relevant initiatives in the Digital Strategy, but central government, Local Government Denmark, and Danish Regions have agreed to discuss later whether the architecture should be utilised more widely in the public sector.

Work to use digitisation as a tool to make it easier to be a citizen or business will continue in other areas too. Among other things, this will be by exploring the possibilities for increasing the scope of data retrieval and sharing across authorities. Or, it will be by using digitisation to establish more cohesion across authority borders and to take steps towards using entirely new and innovative technologies. Therefore, under the Digitisation Strategy, a number of analyses over a wide spectrum of areas were completed in 2017 to form the basis for the next great step. For example, there were analyses of opportunities to automate selected business-oriented reports from businesses to the public authorities; the need to establish a shared public sector infrastructure for positioning and navigation data as well as the possibilities to promote Smart City solutions in Denmark. Analyses have also been completed of the possibilities to improve efforts across authorities for citizens with mental health disorders and addiction, and how better and more coherent user journeys can be established for private individuals and businesses when their service needs go across authorities. The latter analyses were based on how citizens experience their meeting with the public authorities in different life situations such as moving home and divorce, so that, in accordance with wishes expressed by citizens, actions perceived by them as connected are more linked together digitally across authorities, channels and self-service solutions. All of the analyses completed make a good decision base for future work and initiatives to be implemented over the next few years up to 2020.

With increased digitisation and the high utilisation by citizens of both private and public digital services, the question of how we can ensure that the individual acts safely has move towards the top of the agenda. Therefore, work under the strategy has aimed at increasing awareness of information security among citizens, businesses and public employees. This has also been made necessary by the ever-increasing threat of ICT crime. Therefore, information campaigns have been conducted aimed at citizens and businesses, and training packages in information security have been developed for public employees. Efforts to improve knowledge about information security and to enhance digital security will continue in the years to come with new campaigns and measures.

Work under the common public sector Digital Strategy has led to a number of specific results in 2017. The following pages describe individually the results of the work completed by the 33 initiatives in the strategy over the course of the year, as well as planned initiatives for 2018.

More coherent user journeys (initiative 1.1a)

The aim of this initiative is to secure better and more coordinated services for citizens and businesses when their requirement goes across the authorities' digital solutions. This will be through analyses and subsequent improvements in selected user journeys. In 2017, the initiative completed a survey of as-is user journeys and identified possible improvement measures (to-be) for the three user journeys: 'moving home', 'starting a business', and 'closing a business'. Furthermore, in 2017 a survey of the current user journeys (as is) was completed for 'divorce', 'become a digital citizen' (LAAK (see below), 15-year-olds who are to have digital post for the first time) and 'service for foreign businesses'. Suggestions for improvements to these user journeys will be drawn up in 2018. With regard to the user journey for moving home, a conceptualisation of a moving guide was also initiated in 2017. This work will be completed in the first half of 2018. With regard to the other five user journeys, as soon as possible after the analyses have been completed, prioritisation and planning will be carried out for specific optimisation initiatives, including financing decisions as well as designating the authorities responsible for any more detailed analyses and further implementation and follow-up. For the 'starting and closing a business' journeys and 'become a digital citizen', initial prioritisation of initiatives will be in early 2018, and work to realise these will commence as soon as possible after this.

LAAK - Easier use and administration of common government components (initiative 1.1b).

The objective of LAAK - Easier use and administration of joint government components - is to ensure that citizens and businesses experience more cohesion across the upcoming infrastructure solutions: *MitID* (next generation eID), *Nem-Log-in3* (single-sign-on), and *Next generation Digital Post*.

The initiative has completed two analyses that suggest solutions that will ensure more cohesion for businesses in some of the areas in which we know there are challenges at the moment. The analyses concern making it easier for new businesses to establish contracts with the public sector. The analyses also provide input to determining how the migration of businesses from current to future infrastructure solutions can be made easy and understandable. The initiative has supplied a design document to use in the upcoming infrastructure solutions, which translates user-friendliness to proposals for specific design requirements. Responsibility for implementation of the solution proposals has been transferred to the project for a tendering procedure for development and administration of *NemLog-in3*. The initiative has supplied the agreed deliverables, and therefore it was completed as planned at the end of 2017.

Better digital communication (initiative 1.2a)

In order to ensure more user-friendly and up-to-date digital solutions, work by the initiative will result in differentiated common government requirements for self-service solutions, infrastructure components, and portals. Furthermore, the initiative will ensure regular collection of knowledge regarding utilisation and user-

satisfaction with the digital solutions. This knowledge will be used to further develop the solutions. In 2017, the initiative reached an important milestone with completion of version 1.0 of a shared reference architecture for public sector self-service solutions. The reference architecture will improve the user experience for self-service solutions by, among other things, focussing on taking users by the hand in an introductory preparation of the solution and then taking them on to a rounding off in the solution and, where applicable, by establishing a framework for improving the links between self-service processes across authority areas. The initiative has also completed an analysis with recommendations for how the authorities can collect knowledge about user satisfaction and utilisation of the authorities' digital self-service solutions. In 2018, the data to be collected will be clarified as well as the extent to which data is to be shared to ensure further development of solutions. Furthermore, work will continue to define digital-solutions requirements for the whole public sector.

Common government contact registry (initiative 1.2b)

The current *Digital Post* solution already contains user-authorized contact information, e.g. e-mail addresses and telephone numbers linked to citizens' and businesses' registration numbers (CPR and CVR numbers). This contact information could be used more widely than at present. The aim of the initiative is to establish a joint government contact registry for citizens, and a more detailed analysis is to be prepared of the possibilities for how contact information on businesses should be managed in a joint government context and whether businesses should be able to use the register.

The foundation for the first part of the project on the contact registry for citizens was approved in autumn 2017. Legal clarification has been completed and the authorities' information needs have been identified. In 2018, work will continue on the needs of citizens, the financial potentials, as well as on how contact information on businesses should be managed.

Overview of own interactions with authorities and benefits (initiative 1.3)

This initiative will contribute to making the public sector more transparent by enhancing citizens' insight into their own cases, applications and data held by the public sector. This will be through the development of a reference architecture to make it possible for the authorities and the shared portals to create relevant user-oriented overviews of citizens' and businesses' interactions with the public sector and their benefits from the public sector. In 2017, the initiative started preparation of the reference architecture, and this is now being tested in a number of pilot projects. Among other things, the pilot projects are testing the addition and transformation of data from the authorities for display on the relevant user interfaces. These tests will qualify and support the objective of the reference architecture to provide a complete overview of interactions with and benefits from the whole public sector. The pilot projects will be completed in mid-2018, after which the reference architecture will be completed at the end of 2018 on the basis of the experience gathered.

Better technical support for citizens and businesses (initiative 1.4)

By gathering support services for a number of the shared infrastructure components and portals, this initiative will ensure that both citizens and businesses have an even better support experience when they encounter problems, e.g. with Digital Post or *virke.dk*.

The analysis phase for initiative 1.4 was completed in mid-2017, and it was decided to gather all end-user support for *MitID*, *NemLog-in*, *Digital Post*, *NemKonto* (a registry with citizens' and businesses' bank account numbers to which public authorities are allowed to transfer money to), *borger.dk* (national citizen portal) and *virke.dk* (national business portal) in one place. The Danish Business Authority already supplies support for *virke.dk* and *NemLog-in*, and the authority will now be responsible for bringing together the other support services and for operation of support tasks. The first task to be transferred to the Business Authority is support for *borger.dk*, and this will take place on 1 June 2018. Another task for the Business Authority will be to mature the combined support tasks for later exposure to market mechanisms.

In 2018, initiative 1.4 will also have continued interaction with tendering procedures for *MitID*, *Digital Post* and *NemLog-in3* in order to ensure the right preconditions for good and efficient end-user support.

All communication from the public sector is digital (initiative 1.5)

At present, authorities and large enterprises face a challenge in distributing digital letters received from *Digital Post* internally. This means that they have to implement additional manual procedures to distribute the letters, which often has sensitive personal content. Initiative 1.5 will work to use data for better and more secure internal management of *Digital Post* at public authorities and large enterprises.

In 2017, the pilot authorities involved gathered experience with labelling batches with metadata in the Digital Post solution. Three batches are under production and more are on the way. Other pilots have decided to withdraw and not label their correspondence batches.

Work will continue in 2018, and it is hoped that more will label and receive/distribute batches and then test batch distribution. In 2018, an important activity will therefore still be to test how better labelling of digital letters can benefit the recipient authorities.

Furthermore, communication and implementation activities will be completed that aim at suppliers too, and experience will be passed on to Next generation Digital Post.

The other track in the initiative is to analyse the remaining physical post and the channel chosen by public authorities for their internal dialogue. This work is planned to commence during 2018.

Clear legal framework for digital government (initiative 2.1)

The standing committee on clear legal frameworks for digital government will collect, screen and prioritise cross-sectoral legal challenges in digital government and then design solution models. The committee will help ensure that the cross-sectoral legal frameworks and the digital agenda are in tune as much as possible, and that due process is secured for citizens.

In 2017, the committee issued two extensive legal analyses. The first is an analysis and a solution proposal for central authority to impose requirements on citizens and businesses regarding digital communication with the public authorities. The committee has agreed with a recommendation that a central authority provision be inserted in the Public Administration Act for online self-service. This work has been completed, and the recommendations of the committee have been forwarded to the Ministry of Justice.

Furthermore, the committee has analysed a large number of solution models to digitise and streamline case processing in consultations of the parties by the public authorities. The committee took its outset in the challenges indicated by a number of authorities that in practice consultations with the parties take place in a digital reality. The recommendations for models for consultations with parties were approved by the committee, with some reservations, in January 2018.

In 2018, the committee will commence analyses of other legal issues related to digital government, among other things the decision concept.

Progress with good basic data (initiative 2.2)

Work on creating good public sector basic data continues. In parallel with completion of the Basic Data Programme in 2018, an analysis will start to explore opportunities to expand the Basic Data Programme to encompass new data areas and develop new common solutions and business services for the basic data area.

In 2018, work is also planned to establish a permanent governance structure such that public authorities can continue their work on establishing reliable and cohesive high-quality basic data. This initiative is expected to be formally launched under the Digital Strategy in mid-March 2018.

Correct payments and better data on the individual (initiative 2.3)

Work by the public sector to prevent incorrect payments and fraud will continue. Simple and evidence-based control processes, harmonisation of concepts, high data quality and smooth cross-government collaboration will contribute to ever more efficient and effective efforts to prevent incorrect payments and fraud.

In 2017, the initiative completed an evaluation of the *Den Falles Dataenhed* (a data unit to help collaboration between municipalities on control work) under *Udbetaling Danmark* (“Payment Denmark” - the Danish authority for payments of bene-

fits, etc.), a catalogue with the initiatives addressing the challenges of *eIndkomst* (an income registry on earnings of citizens) was prepared, and analyses of the concepts of cohabitation and wealth, respectively, were commenced. The analyses are expected to be completed in the first half of 2018. Central activities for 2018 also include follow-up on pilot projects for impact assessment of control and inspection efforts by the municipalities and *Udbetaling Danmark* for fraud and incorrect benefits payments.

Cohesive welfare pathways for citizens (initiative 3.1)

One of the focus areas in the strategy is about cohesion in the way citizens meet the public sector. Initiative 3.1 is therefore to implement measures to cut the red tape and establish more cohesion in a number of selected case processing and citizen pathways. Initially, track 1 of the initiative will analyse three pathways in welfare areas in which measures go across authorities and therefore require collaboration and coordination. In 2017, two of the three planned analyses were completed. These were 1) analysis of collaboration on orders to take education between job centres, educational guidance centres and educational institutions, and 2) analysis of cross-sectoral, coordinating interventions for citizens with concurrent substance abuse and mental health disorders. The reports are being finalised to present a number of recommendations, which the parties can agree to implement to ensure better cohesion between the authority measures involved, for example.

Furthermore, work on the final analysis planned for the initiative, which deals with incarceration at institutions under the Danish Prison and Probation Service and subsequent reintegration into society, was initiated in the winter 2017/18. When this analysis has been completed in mid-2018, on the basis of an evaluation of experience from the first three analyses, a decision will be made on whether analyses of other processes are to be made.

For track 2 of the initiative, in 2017 there was work on pilot projects for data sharing in the health and social areas respectively. In the health area, the framework for cross-sectoral sharing of agreements has been established. Regions, municipalities and suppliers to general practitioners have been recruited, and there has been work to secure citizens' contact to the parties in the pilot tests and associated data-sharing needs. An evaluation design has also been developed. A large part of the work on pilot tests of cohesive citizen pathways for vulnerable children and young people has been completed. Information needs and wishes for an overview of the cross-cutting processes and activities have been analysed and a prototype for exchanging data has been developed that covers the cross-authority information needs. In 2018, an external supplier will develop a demonstration model for data exchange, and this will be tested in 2018.

Better data about disabled and marginalised adults (initiative 3.2)

This initiative will secure support for more uniform and better structured shared municipal documentation practices in the disabled and marginalised adults area.

The goal is not to develop one joint method or one joint ICT system, but rather it is to ensure that specialist methods and ICT support in the area support shared municipal concepts for functional capacity, social interventions and impact measurement at authorities, at practitioners and across municipalities in employability profiling and in follow-up of the effects of the interventions. In 2017, among other things the initiative completed an analysis of practice for use of the adult elucidation method (*Voksenudredningsmetoden* (VUM)) at 88 municipalities, an analysis of the barriers to successful citizen-focussed co-operation between practitioner and authority at 67 municipalities, and an analysis of ICT suppliers to the social area. On the basis of the analysis of ICT suppliers, in mid-2017 development of a catalogue of concepts for functional capacity was commenced, as well as a joint municipal catalogue of interventions and a cross-disciplinary documentation practice. Up to the end of 2018, the development phase will ensure that the deliverables described above support citizen involvement, municipal methodology and cooperation practices, and that they realise local benefits in the disabled and marginalised adults area.

Further deployment of digital welfare solutions (initiative 3.3)

This initiative aims at preparing for and accelerating further deployment of solidly documented and efficient digital welfare solutions in the social and healthcare sectors. This will be by completing analyses of the deployment of locally tested digital welfare solutions that can later form the basis for budget decisions regarding nationwide deployment. The description of initiatives states that eight digital welfare analyses are to be completed up to 2020, and a decision will be taken regarding nationwide deployment of around four solutions. A successful deployment requires that several authorities follow the same time schedule. Three of these analyses have been completed. These are 'telerehabilitation', which was completed in 2016, as well as analyses of 'telemedicine solutions for pregnant women with complications' and 'digitally supported work with early detection', both of which were completed in 2017.

As part of the 2018 budget agreement for the regions, an agreement was made to deploy nationwide telemedicine solutions for pregnant women with complications, and these will be deployed in all maternity departments throughout Denmark before the end of 2020.

It has also been decided in the 2018 annual budget agreement with municipalities and regions to carry out a service inspection in of the deployment of digital welfare solutions.

With outset in previous experiences, this inspection will identify how deployment of solutions can be improved. It has been agreed to follow up on the inspection, including implementation of any relevant initiatives, at the annual municipal and regional budget negotiations for the 2019.

Digital learning and teaching (initiative 3.4)

Children and young people should benefit from digital learning at school and digital opportunities should support work at schools. The initiative therefore encompasses a number of measures in the area, among other things the implementation of a user portal initiative. This is a digital gateway to municipal primary and lower secondary schools. In 2017, the municipalities and Local Government Denmark ensured that primary and lower secondary schools have a digital learning platform that allows pupils and teachers access to teaching plans for individual pupils, digital learning tools and materials, and other content that pupils work with and that teachers can use in planning teaching and courses. In 2017, another analysis was completed investigating how ICT standards in post-secondary education can best support the exchange of data so that schools' digital platforms and learning materials can interact. In 2018, as part of the initiative, an evaluation of the lower and upper secondary school area will be completed that will describe schools' utilisation of digital learning tools and materials and learning platforms, and that will collect knowledge about how ICT is used and experienced in practice at schools. The analysis will also identify initiatives that could support and develop schools.

Digital competencies for public employees (initiative 3.5)

Public employees in the education sector must be qualified to tackle the demands of the digital future. The task of initiative 3.5 is therefore to follow up on the digitisation targets of Danish university colleges, and specific efforts will be made to enhance digital teaching skills among teaching staff at primary and lower secondary schools. In 2017, a process was organised to support improvements to ICT skills in primary and lower secondary schools as regards ICT didactics. The process involves schools and municipalities as well as university colleges offering teacher and pedagogue training. A total of 26 sub-projects have been organised at university colleges with different courses that together will contribute to supporting practice-oriented skills development. In 2018, the sub-projects will be completed and assessed, among other things to identify the methods which have the best effect for future development of ICT didactics at university colleges.

Automatic business reporting (initiative 4.1)

This initiative will contribute to more automation and data reuse between authorities and businesses. The aim is to prepare a specific basis to automate business reporting and thereby nurture efficiency improvements and new business opportunities for Danish businesses.

In 2017, in collaboration with the Danish Customs and Tax Administration (SKAT) and Statistics Denmark, the Danish Business Authority completed a number of analyses that have identified opportunities to automate selected business reports and have identified barriers in relevant legislation. On the basis of the analyses a pilot for automatic submission of the annual reports has been developed, as well as instructions on how the Financial Statements Act etc. should be amended to realise this. A potentials assessment has been prepared for easing the administrative burden for public authorities and businesses, and this shows a posi-

tive effect. Finally, an analysis has been completed to examine the digital readiness of businesses for automation.

In 2018, this will be followed up with, among other things, consolidation of the current analysis results, amendments to the Danish Financial Statements Act, and a survey of the technical requirements for implementation of full automation of selected business reports to the Danish Business Authority, SKAT and Statistics Denmark will be initiated.

Digital tendering and procurement procedures (initiative 4.2)

This initiative will analyse the frameworks that can support the development and use of more efficient digital tendering and procurement procedures from announcement to invoicing. This will promote growth and competition as far as possible, and establish a foundation for how and to what extent a more digital and efficient tendering and procurement process can be developed and implemented. In 2017, the initiative completed the analysis of the tendering and procurement process, as well as a subsequent analysis of the business economic consequences of implementation of the agreement that was established in connection with the annual budget agreements for municipalities and regions for 2018 (ØA18). The analyses will form the basis for further work on digitisation of the tendering and procurement process agreed in this context. Among other things, it was agreed in ØA18 to introduce requirements to use common standards for eOrders and eCatalogues in eCommerce, and a common standard for e-offers will be developed. Moreover, there is also an agreement in ØA18 on the need to strengthen enforcement of the standard for eInvoicing, and that the government will seek backing for e-commerce through the use of e-orders in certain procurement categories.

The initiative has also completed translation of the UNSPSC codes. UNSPSC codes is an international classification system of products and services that is used to monitor consumption and simplify searches for products and services. The translation of the codes has been made available on a website here: <http://unspsc.gs1.dk/kort-om-unspsc/>.

With the above, the initiative has delivered the planned deliverables and therefore it has been completed. Follow-up will be carried out in continuation of the financial negotiations for 2018, where it was agreed to implement a number of initiatives for digitisation of procurement to support a more efficient procurement process. Implementation will be carried out on the basis of the analyses of e-commerce completed as part of initiative 4.2. Future work with the initiatives decided will be based in the steering committee for procurement strategic collaboration, which refers to the steering committee for the MEP (Modernisation and Efficiency Programme).

Cloud computing in the public sector (initiative 4.3)

The public sector should have the opportunity to use cloud computing where this creates value and is appropriate from both a commercial and a security perspec-

tive. Therefore, by virtue of initiative 4.3, the Agency for Digitisation has prepared a guideline for cloud computing describing the commercial, legal, and security considerations that public authorities should have prior to using cloud computing. Certain parts concerning legal considerations remain to be completed, but the cloud computing guideline is expected to be published in early 2018, after which it will be available at the agency's website www.digst.dk.

Open public sector data (initiative 5.1)

The overall aim of this initiative is to promote the display of public sector data and help to ensure that public sector data creates growth and new business opportunities for Danish businesses.

In 2017, the partnership on open public sector data (Open Data DK, Local Government Denmark, Danish Regions and the Danish Business Authority) established an analytical foundation, *e.g.* by identifying demand and market trends within the area of public sector data, mapping Danish and international experience on encouraging businesses' use of open public sector data and conducting a needs analysis among key players in authorities playing a central role with regard to promoting the open data agenda. Furthermore, several events and activities have been carried out in order to highlight the value of data, including the Fintech Open Data Challenge and an inspiration event with a data café. Finally, the partnership has launched collaboration with selected authorities to gather experience on what is required at organisational level to reach a point where public sector data can be identified and displayed. In 2018, the partnership will continue its work to ensure more quality data as well as competence development in the authorities. Additionally, focus will be on professionalising the dialogue between data owners and data users. A final focus point will be to explore and test new approaches to identify the commercial potential of data.

Smart City partnership (initiative 5.2)

This initiative will serve to promote the use of new digital technologies and exploitation of data to develop urban and rural districts. The initiative serves to prepare the ground for new business opportunities and to increase the efficiency of public sector administration and higher quality of public service solutions.

In 2017, the Smart City partnership (Local Government Denmark, the Danish Broadcasting Corporation (DR), the Agency for Digitisation and the Danish Business Authority) commissioned an analysis of potentials and barriers to scaling within and across a number of Smart City sectors. Furthermore, the partnership has established an advisory board with a broad representation of experts and stakeholders whose primary role has been to contribute to turning projects into scalable solutions. Finally, the partnership has carried out a field study of how case processing in a number of municipalities affects the progress of Smart City projects.

In 2018, on the basis of this analytical material and the experience gathered, the partnership will make decisions on the launch of activities that will help to promote the use of data-driven technologies.

Infrastructure for positioning and navigation data (initiative 5.3)

The aim of initiative 5.3 is to examine the possibilities of using new, accurate, and reliable GPS data (via the European Galileo satellite) to clarify and streamline authorities' and private businesses' task performance. Among other things, the initiative will help to ensure that accurate positioning is available for all parts of society, *e.g.* by establishing a shared public sector infrastructure through which positioning data is quality-assured and made authoritative. In 2017, an investigation was conducted to identify the need for establishing a shared infrastructure for positioning and navigation data to support the potentials of the use of data. The analysis forms the base of the continued work on pilot projects concerning smart regulation. The work consists of formulating guidelines and principles for the use of positioning data. This will help to ensure and mature the use of this type of data for control and regulation purposes. Furthermore, the work will be carried out in relation to developing and maintaining urban areas, *e.g.* with a view to exploring the potential for establishing common standards for collection and sharing of positioning data in the municipalities, and the use of accurate positioning data on smartphones will be tested.

Common data on topography, climate, and water (initiative 6.1)

The common data on topography, climate, and water initiative covers a broad data field, and the aim is to ensure more and better data, that is more coherent in relation to the hydrological cycle. A total of six projects have been planned, ranging from improvement of a shared public sector geographic infrastructure and enhanced access to data, to development of a method for better calculations of flooding by using several types of existing data. In 2017, three of the six projects were launched. The first of these, a catalogue of existing data to be used in municipalities' climate change adaptation, has been completed. With the completion of this project, an essential overview tool has been provided for municipalities and advisers working with climate change adaptation. In 2018, several of the planned projects will be launched, including improvements in the point source discharge system in the Danish Natural Environment Portal, and the establishment of a model with unique references to geographical locations of watercourses. Furthermore, a project on watercourse data will be launched, which aims to collect watercourse data and make it easily accessible. Finally, in 2018 we will see the formulation of a long-term cross-authority vision for a hydrological information and forecasting system.

Open data on energy supply (initiative 6.2)

This initiative identifies the possibilities to support the display and use of data to promote energy savings in buildings. As part of the initiative, a project was launched in 2017 to survey use of data and barriers to data use in connection with energy efficiency improvements in municipalities and regions (the Danish Energy

Agency in collaboration with the Danish Agency for Data Supply and Efficiency (SDFE)).

Furthermore, the SDFE has carried out a project on the use of 3D city models, focusing on energy efficiency improvements, as well as a project concerning a data model for the indoor infrastructure for buildings. Based on the results, initiatives will be developed in 2018. These seek to further clarify whether improved frameworks can be established for display and communication of data that may promote energy efficiency improvements in buildings.

Exchange of data on underground infrastructure (initiative 6.3)

Initiative 6.3 aims to refine the Register for Cable Owners, so by mid-2019, it is capable of exchanging and collating standardised cable data. This refinement will make it faster and more effective for businesses to plan excavation work and maintain underground infrastructure in Denmark, and to reduce any nuisance to society caused by excavation work. In 2017, a monitoring group was set up whose primary aim was to involve the Register for Cable Owners stakeholder group in implementation and realisation of the initiative. Among other things, the monitoring group has contributed input to amend the Register for Cable Owners Act, requirements for cable data and requests for a common excavation module. A revised the Register for Cable Owners Act was adopted by the Danish Parliament at the end of 2017. Parts of the Act entered into force on 1 January 2018, thus ensuring the legal basis for further development of the Register for Cable Owners. In 2018, the common excavation module will be developed and commissioned, and a tendering procedure will be carried out prior to concluding a contract with a supplier for further development of the Register for Cable Owners and operation of the system.

Overall IT architecture for data on waste (initiative 6.4)

This project concentrates on mapping, describing and analysing waste data generated and shared at central governmental and municipal levels. The aim is to ensure valid and easily accessible data, which is suitable for planning, oversight and development of waste management efforts. A working group has been established with representatives from the Danish Environmental Protection Agency, the Danish Energy Agency and Local Government Denmark. The project was launched in January 2017 and was completed in December 2017.

The project deliverables are a comprehensive analysis of how data from systems across the municipal and central governmental levels can be used best to support task performance at both levels. Furthermore, any technical, legal and financial barriers, as well as barriers in terms of IT architecture, that prevent smart exchange of waste data across systems, have been identified. Recommendations for improvements and solutions have been presented in the project reports.

In the beginning of 2018, the working group will prepare a proposal for an action plan for an overall IT architecture for waste data based on the deliverables mentioned above. The upcoming task of preparing an action plan is beyond the scope of initiative 6.4 and should be considered a derived effect of the initiative.

Well-managed information security in all authorities (initiative 7.1)

This initiative includes a large number of activities aimed at supporting information security in different ways in both the central, local and regional governments, so that citizens and businesses can feel safe using public digital services. In order to help and inspire authorities to specify general security requirements, for example in connection with procurement procedures and the conclusion of IT contracts, a catalogue with the title “*Sådan stiller du krav til leverandører om informationsikkerhed*” (How to make demands on suppliers with regard to information security”) was published in December 2017. Furthermore, in 2017, an analysis and a questionnaire survey concerning information security were carried out to follow-up on authority implementation of the international ISO27001 information security standard. In continuation of this, a conference is planned to take place on 1 March 2018 to follow up on the preliminary work on the ISO27001 standard. Finally, guidelines will be published in 2018 on how public authorities can incorporate data protection into the design and development of their digital solutions.

Common standards for secure exchange of information (initiative 7.2)

The aim of this initiative is to specify proposals for replacing existing healthcare standards with joint standards for the whole public sector, including descriptions of financial consequences and consequences for collaboration as well as input for migration considerations for review by the National Board of eHealth. In 2017, an analysis of use scenarios was conducted. Following this, objectives were established, describing how the joint standards (OIO-IDWS) can support secure exchange of health information. Finally, the first draft profiles (specifications) of relevant OIO-IDWS standards for the health area were prepared, and requirements were specified for tools to support this in order to adapt shared tools. In combination with tools and guidelines, the profiles will assist system suppliers in the health area to implement joint and international standards. In 2018, the tools will be adapted to the requirements identified, and the standards will be tested in a regional IT system, a municipal IT system and an IT system at a general practitioner. More specifically, the systems’ communication with two national healthcare services will be tested. Testing will require changes to the systems involved and to the national infrastructure and national services. Experience collected through the tests will be used to provide input on migration to the National Board of eHealth.

Digital identities and rights management (initiative 7.3)

Initiative 7.3 aims to generate confidence in public-sector digitisation and guarantee that solutions, systems and data can only be accessed by the right persons.

This will be safeguarded by means of correct assignment of digital identities and rights, and by preventing misuse of identities.

In 2017, several activities were completed: A complete overview of citizens' NemID status has been implemented through the Registration Authority (RA) portal. Furthermore, analysis of valid identities (registration of administrative civil registration numbers) has been carried out, and the authorities involved have agreed on the organisation of continued work. Businesses' need for simpler procedures when issuing and administering digital powers of attorney has led to changes in the FBRs component in NemLog-in. An analysis of authorities' need for digital consent and an analysis of EU/EEA eIDs in Danish digital infrastructure have been conducted. Finally, a number of guidelines have been published, e.g. on how to issue a digital power of attorney.

In 2018, the conclusions from the analysis on digital powers of attorney and digital consent will form the basis of continued work, and the extent to which joint guidelines can be formulated for management of non-Danish eIDs will be addressed. Furthermore, work on valid identities will be followed up on.

New generations of NemID, NemLog-in and Digital Post (initiative 7.4)

Initiative 7.4 in the Joint Government Digital Strategy covers the work on the new generations of NemID, NemLog-in and Digital Post, for which new tendering procedures will be held in order to ensure continuous development of the solutions, thus safeguarding their continued useability, security and capacity to meet the needs of citizens, businesses and authorities. The following sections describe work on Digital Post, MitID and NemLog-in, respectively.

Digital Post

The analysis phase of the Next Generation Digital Post project was completed in 2017, and the procurement phase was commenced. The risk assessment of the project was conducted by the Danish Council for IT Projects in the first quarter of 2017. The analysis did not result in any recommendation for any further review. Therefore, the preparation of procurement documents has been a major task in 2017. The work involved extensive participation of the common governmental project working group, and the market has been checked through meetings with suppliers, prior to the procurement procedure.

The procurement documents were approved by the steering committee for procurement shared components in November 2017 and they were published the same month.

In 2018, the procurement procedure will continue to take up a major part of the project resources. At the end of January, three suppliers were prequalified, and their deadline for submitting procurement is in early March. Subsequently, negotiations with the suppliers will be commenced, and in the autumn, the final pro-

curements will be evaluated. Finally, a contract with a supplier will be entered into by end of the year.

In parallel with the procurement procedure, work on implementing the solution was commenced. To begin with, the aim was to clarify the nature of changes due to the procedure with the authorities. As the procurement procedure progresses, this work will become more specific. For example, workshops with the municipalities will be arranged in order to prepare them and their suppliers for the future solution.

NemID/MitID

The project on procurement and abolition of the next generation of NemID will be carried out as a partnership between the public sector and the Danish banks. The partnership will ensure that the replacement of NemID, which will be named MitID, can be used across the public and private sectors.

In early 2017, the Danish Council for IT Projects conducted a risk assessment of the MitID project, and during 2017, procurement documents were prepared by the project. A broad group of stakeholders from the public sector and the banks were involved in preparation of the documents. The partnership published the procurement documents in December 2017.

The procurement will be completed after negotiations. Four suppliers were prequalified, but one of them subsequently withdrew. The partnership will enter into a dialogue with the suppliers during 2018, with a view to entering into a contract with a supplier in early 2019. The process of moving users from NemID to MitID is likely to be initiated in the second half of 2020.

NemLog-in3

NemLog-in plays a central role in Denmark's digital infrastructure, as it enables citizens and businesses to log onto public-sector self-service solutions. A new tendering procedure will be held for the solution, as the current contract expires in 2019.

The project is divided into two separate tenders: one concerning the operation of NemLog-in3, and one concerning development and administration of the solution. In early 2017, the Danish Council for IT Projects conducted a risk assessment of NemLog-in3, and subsequently, procurement documents were prepared by the project. The central, regional and municipal government parties were involved in preparing the procurement documents.

In early November 2017, documents for operation of the solution were published. Subsequently, the four suppliers who had submitted applications for prequalification were all prequalified, as they all complied with the requirements described in the contract notice. The deadline for receipt of procurements from the four suppliers prequalified for operation of NemLog-in3 is in February 2018. Subsequently, the Agency for Digitisation will start negotiations with suppliers who want to submit a procurement. The Agency for Digitisation expects to enter into a contract for operation of NemLog-in3 in mid-2018.

The procurement documents for development and administration of NemLog-in3 were published in February 2018. Like the procurement for operation, this procurement will be in a negotiated procedure. Four suppliers will be prequalified, and the Agency for Digitisation will start negotiations these suppliers during 2018, with a view to entering into a contract with a supplier for development and administration of NemLog-in3 at the end of 2018.

Secure ID solutions for children and young people (initiative 7.5)

As the use of digital solutions increases, a need arises for a more secure identification solution for children and young people who do not yet have a NemID, but who requires a higher degree of digital confidentiality in the context of using login at school. Initiative 7.5 identifies needs and requirements for the design of such an identification solution. In 2017, two sub-analyses were carried out, partly to identify use scenarios, and partly to identify solution concepts. Two additional analyses were initiated, aimed partly at mapping the devices (PCs and mobile units) available in educational settings, and partly at mapping the specific patterns of use, which may call for more secure solutions for children. In 2018, these two analyses will be completed, and subsequently a plan will be drawn up for continued work in this area, possibly including how a specific solution can be established.

Good data and efficient data sharing (initiative 8.1)

This initiative will contribute to developing a shared business and IT architecture that provides a framework for sharing data between authorities, thus contributing to stronger cohesion between public-sector solutions. A shared business and IT architecture will support user-friendliness and sharing of data, and ensure more cohesive processes across authorities.

In 2017, a white paper on a shared digital architecture was adopted and published by the central, regional and municipal government parties. Through a number of architecture rules, this white paper establishes the framework for designing digital solutions in digitisation projects under the Joint Government Digital Strategy 2016-2020. The white paper and other materials about the shared digital architecture is available on the arkitektur.digst.dk website.

As a central element in the shared architecture, joint rules for concept modelling and data modelling have been prepared and adopted. The model rules will help projects describe and document concepts and data, in order to enable sharing and re-use across IT systems. Furthermore, the architecture management, including governance, advice and reviews, has been established to support the use of the common architecture. Thus, the shared digital architecture and architecture management is off to a good start, and in 2018 the focus will be on the coordination and continued development of the system, as well as on deployment and providing a solid foundation for the architecture.

In 2017, the reference architecture for user management (developed under initiative 7.3) was integrated into the shared architecture, and three additional reference architectures are being developed for sharing data and documents (initiative 8.1), self-service (initiative 1.2) and overview of interactions and benefits (initiative 1.3). Further elements being developed includes a shared catalogue of datasets and guidelines for web services.

Robust operation of the common infrastructure (initiative 8.2)

The aim of initiative 8.2 of the Joint Government Digital Strategy 2016-2020 is to safeguard robust operation of the common infrastructure, including Digital Post, NemID, NemLog-in and borger.dk.

In 2017, the initiative published a live status report on the operation of shared services at www.digitaliser.dk. The live updates on the operating status improve transparency and ensure timely communication about the operation of shared IT services. At the end of 2017, the initiative set up its own steering committee under the Joint Government Digital Strategy, and in the future, the initiative will report to this committee.

The initiative is currently working on a visual mapping of critical and operational dependencies of central IT systems, and this mapping is expected to be completed in early 2018. The IT systems included in the mapping are NemID, NemLog-in, NemKonto, Digital Post, borger.dk, NemRefusion, virk.dk, CVR, eIndkomst, CPR, NSP and sundhed.dk. The mapping will be displayed to enable authorities responsible for system administration to assess the potential consequences of a breakdown in one system for other systems. This overview will help to support coordination of service windows and provide authorities responsible for system administration with a better foundation for assessing appropriate requirements for system uptime.

Digital skills for children and young people (initiative 9.1)

Children and young people must have the digital skills and etiquette required to cope in a digital world. Consequently, this initiative focuses on digital skills for children and young people. Activities in 2016 targeted daycare facilities, while the focus in 2017 was on primary and lower-secondary schools and upper secondary

education. In 2017, inspiration materials for use in regard to teaching were prepared to support teachers in primary and lower secondary schools and upper-secondary education in their efforts to prepare pupils for the digital society. The themes were: A civil tone in online communication, IT security, digital production and digital interaction with public authorities. The inspiration materials will be published in January 2018. Surveys have shown that one in four young persons aged 15–17 years do not log onto their Digital Post, and therefore the “*DigiTAL med det offentlige*” (Digital dialogue with public authorities) campaign was launched in 2017. The campaign featured a film targeting young people on social media, illustrating the ease of use of NemID and Digital Post. The film was followed up by witty tips and specific guidelines for young people and their parents. 2018 will see the launch of collaboration with DR Ultra, a children’s TV channel, focussing on digital skills and featuring a number of fact-based and fiction-based TV programmes.

Information and help for citizens and businesses (initiative 9.2)

The aim of this initiative is to ensure that individuals and businesses who find it difficult to use digital solutions and to communicate digitally with the public authorities, are given the necessary help and support. In 2017, a strategy was adopted to secure communication with and help for the IT-challenged target groups for the total strategy period. The strategy gives priority to efforts aimed at the IT-challenged. As part of this, films about digitisation in foreign languages have been produced as well as guidelines on the power of proxy solutions, reading access and NemID. The effort was implemented in collaboration with the Network for Digital Inclusion, which comprises 56 member organisations representing groups of citizens who may experience digital challenges. Digital contact persons at libraries have received skills upgrading. These contact persons are responsible for providing the digital help offered by the library to IT-challenged business owners. Furthermore, guides to the form-builder at Virk.dk (digital wizards) have been developed. In 2018, the initiative will include efforts to upgrade the information and help concerning information security provided for the IT-challenged. Furthermore, cooperation will be launched with the Neighbourhood Mothers organisation. The aim is to train neighbourhood mothers in teaching women with non-Danish ethnic backgrounds about digital communication with public authorities. Furthermore, there will be follow-up on efforts in relation to libraries.

High level of awareness of information security (initiatives 9.3 and 3.5)

The aim of this initiative is to raise awareness of information security and enable citizens, public employees and businesses to exploit the digital opportunities in a secure way. In 2017, an analysis of Danes’ digital behaviour was carried out. This analysis will form the basis of information campaigns for the rest of the strategy period. In November 2017, an information campaign called ”Vi holder hackerne

ude” (“We keep out the hackers”) was conducted, targeting Danish citizens (see more here). The campaign included six tips for increasing information security. Furthermore, work was initiated to develop a training package on information security for public employees and to design an e-learning training programme for public-sector managers and employees, respectively. This work is expected to be completed in the first quarter of 2018, and deployed in the second quarter. Finally, two efforts were implemented focussing on how IT security can be strengthened for small and medium-sized businesses by promoting secure digital behaviour among employees. In 2018, the initiative will include work to finish and deploy the training package for public employees, and to launch new campaigns and analysis of information security.