Make it Happen!

Information Society and Government Study Group

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The digital government: Make it Happen!

The Netherlands has much to gain from a fast-pace switch to digital. The Dutch government can, and should, make a significant contribution to the switchover. There are many opportunities to carry out public tasks and services better and to increase the confidence citizens and businesses have in using new, innovative solutions. The key is for government to develop a new approach to digitisation. Politicians, directors and civil servants agree that digitisation is important, but not necessarily urgent, but this is precisely what needs to change. It needs to be an urgent priority because government digitisation can offer better services, increased economic growth and more transparent governmental operation. There is also a risk to government's proper functioning if the vital digital infrastructure is neglected.

If we want to realise this goal, both as public authorities and public implementing organisations, then a number of conditions must be met and a number of important steps must be taken.

This Study Group therefore proposes the following:
- Governmental digitisation requires a radical change of attitude. By definition, digital applications are never finished, we must abandon the notion of *first time right*. Digital development is in a 'permanent beta', iterative, experimental state and errors inspire new updates. Innovation will replace 'planning and control'. Full account must be taken of the feasibility and implementing organisations.

- Governmental organisations must understand, coordinate and be able to execute all their primary ICT processes without being dependent on third parties. Ambition: The government's expertise will be equal to that of the market; The government takes charge of developing and managing its own ICT. The conditions for this must be realised. Investing in knowledge: not only in technology, but also in the connection between policy and execution, including professional commissioning, giving space to experts and pioneers. A comprehensive staff transformation: having the confidence to reduce staff to make room for a significant increase in new digital talent, from the shop floor right to the top of the organisation.
- The basic digital infrastructure (Generic Digital Infrastructure, GDI) is considered vital infrastructure for the Netherlands. Funding, including for further development and innovation, will be structurally secured.
- Digital services such as websites and digital forms must be proactively adapted, differentiated according to circumstances and go hand in hand with individual needs and those of companies.
- In the long term, digitisation also offers the possibility of better quality at a lower cost per product, by focusing on a coherent infrastructure and services, rather than on separate facilities, ICT spending will remain the same, but the quality will be better and total cost of services and products per unit will be lower.
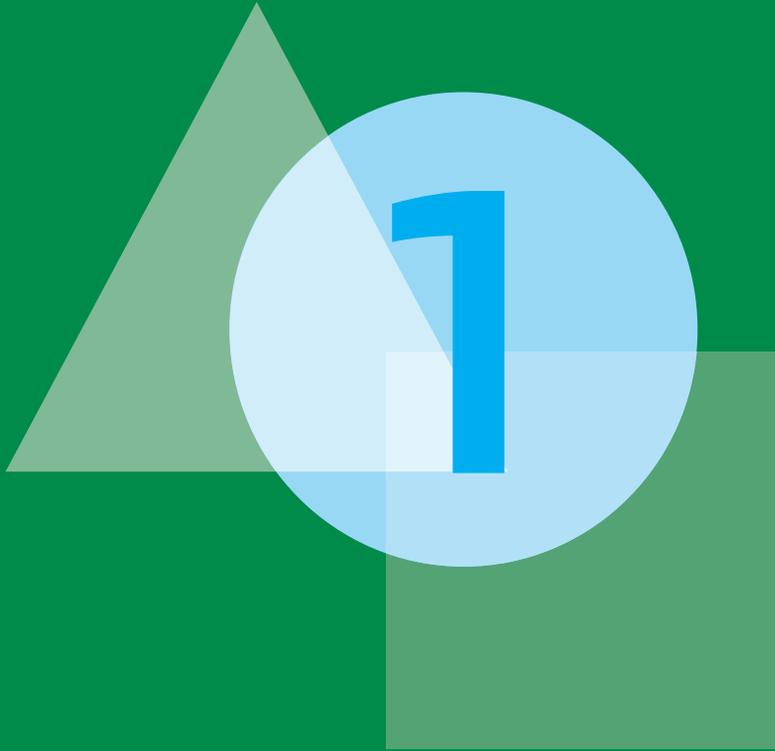
- All government officials and coordinators in local authorities must realise that ICT and digitisation is at the core of their primary processes. This is true in terms of care, security, infrastructure, in the social domain, etc. They must also realise that they are fully responsible for it.
- Further governmental digitisation can bring about 'one government,' in terms of service and execution to, and for, citizens and businesses. Digitisation is therefore a task for the authorities collectively; it is an intergovernmental responsibility. Development and decision-making will have to take place in collaboration with municipalities, central government and other authorities.
- Digital government is a *board room decision*. The local authorities and the government set the right example: a ministerial commission for digitisation 'plus', chaired by the Prime Minister with the relevant government officials plus the leaders of local authorities. The remit is broad: on a programmatic basis, to bring together how the economy and the government can be digitised as productively as possible while safeguarding public interests.

With the challenge being to *Make it Happen!* This Study Group is making a hefty demand on sitting and future administrators at political and official level, with all authorities. We realise that. All this requires recognition from government agencies (starting with the Ministry of the Interior and Kingdom Relations) of the need for transformation and overhaul, and the ambition to invest. This report provides a basis for the setting up of a programming cycle, a multi-annual, government-wide programme with annual updates and digitisation programmes for content domains. It sets out concrete actions for the development of Digital Government. Preparations will begin intergovernmentally and interdepartmentally as soon as possible for the next government.

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1

The Need to Change

1.1   Digitising Almost Everything

Both our lives and our work are becoming much more digital. People plan their train journeys using an app on their smartphone. If there is a delay, they ignore the information screens and check their smartphones instead. Books, clothing and groceries: we buy these products online and expect them to be delivered to our home within a day. We watch films, read news and listen to music everywhere and at any time. Companies monitor the sale of services and products to customers and their chains of suppliers in real-time so that they have an accurate an idea as possible of what is required and can replenish their stock in a timely manner. Even government services are becoming increasingly digital. The Sociale Verzekeringsbank offered MijnSVB.nl to provide insight into the AOW (general old-age law pension provision), child benefit and personal budgets. Contact with local authorities too, for example, applying for a parking permit, building a dormer or filing a complaint is all done digitally. Digital channels are increasingly popular with residents, entrepreneurs and governments. Internet traffic has grown exponentially for years and this trend is only set to continue.

But, for a long time, it has not only been people and organisations who are digitally connected. More and more physical things have been computerised, from cars and tractors to lanterns, fridges and bridges. And already these physical things are communicating with each other, and with their users, which also makes the internet "smart". Aircrafts register their flight data automatically, which is then carefully analysed after landing. Windmills automatically indicate when maintenance is required. Smart meters can tell us how much energy we have used by recording our heart rate and the amount of movement we do each day. Cameras in public places can recognise faces and patterns of movement. With the advent of this 'internet of things' the distinction between the digital and physical world is becoming ever more blurred and a whole new reality is being ushered in at a very fast pace. This process is further accelerated by continuous feedback loops and the analysis of large-scale data files (big data analytics). This 'hyperdigitisation' is characterised by huge data growth, its storage in the cloud, real-time data availability over the internet

and the ability to analyse and deploy it in the most diverse processes.

Digitisation has many positive effects on the functioning of society and can make a significant contribution to productivity, employment and social welfare (OECD 2017). Resources are deployed more efficiently, transactions are faster, and products and services are better suited to what people want and need. However, there are also negative effects, job loss being one of the most visible (Van Est and Kool 2015). For example, banks and insurers are continuously reducing the number of offices with customer service desks, which reduces the need for service staff by many thousands in a short space of time. This development also affects governmental organisations on all levels. In addition, digitisation also creates new risks, such as information security and cybercrime.

The opportunities and vulnerabilities of digitisation also bring many challenges, for residents, entrepreneurs, governments and many other parties. For example, a new balance is needed between privacy, a value that is of critical importance to a democratic society, and the potential benefits offered by open data. Another consideration is the security of digital applications versus their ease of use. New ways will also be sought to make people and technology work better together, especially in public sectors where human contact plays a major role (Went et al. 2015) and/or where decisions have a major impact on people's lives (WRR 2016). Digitisation also affects all aspects of government, with cybersecurity, the digital economy and the digitisation of its own core tasks being important areas of focus. Digitisation has a potentially disruptive character, and this also applies to its impact on the government.

1.2   But the Government Is Lagging Behind

This report focuses, in a narrow sense, on what the OECD (2016a) describes as the challenge of the 'digital transformation' of the public sector. How must the government itself change in order to effectively address its role in the information society? The report is based on the finding that the Dutch government has missed many opportunities over the last few years in global digitisation, causing it to lag behind in some areas. If we cannot get a handle on the situation, the course of pursuing future possibilities will instead be an impetuous leap in the dark.

The digitisation of the Dutch government has a respectable history that goes back to the introduction of the first computers at the end of the 1950s, the automation of business operations and the steps that were taken to also make the government visible on the internet.[1] During this first phase of digitisation, existing processes were automated and the government's organisation and processes could largely remain unchanged. However, since then, a new era has begun, one that has crept up largely unnoticed. A period in which digital resources not only support task execution, but have also become an integral part of it. From policy making to implementation and contact with citizens and companies: this is no longer possible without digital means. This fact requires a full reconsideration and adaptation of the organisation and method of governmental operations.

For the time being, the Dutch government remains ill-equipped for this digital transformation. The major social impact of digitisation has not sufficiently sunk in with directors and politicians and it forms no integral part of their thoughts and actions (AWTi 2015). The conspicuous absence of digitisation in the various party programmes for the elections to the Dutch House of Representatives in 2017 is testament to this. What digitisation can accomplish is too often simply not recognised, let alone acted upon. A major obstacle is the belief that digitisation is just a way to increase business management efficiency, with a focus solely on concrete cost-reductions. This perspective is too simplistic. Digital resources are a vital part of the government's core tasks. One of the reasons for this is that investments are beneficial, even if that benefit cannot always be measured directly in monetary terms (OECD 2005). A second, related misconception, is that digital technology is only a tool and that it has little or no influence on policy effectiveness (WRR 2011). As a result, opportunities are missed and vulnerabilities don't get the attention they require. Thirdly, fear of projects getting out of hand threatens to scupper innovation. That's understandable, but more importantly, a pity. The right digital technology offers the government an excellent opportunity to continuously improve processes, to structure organisations in a new way, to collaborate more effectively in public and public-private chains, and to find new methods that better meet the needs and preferences of residents and entrepreneurs.

In practice, we see that major steps are being taken, but rarely in a way that is future-proof. Digitisation is still, to a great extent, a matter for individual ministries, implementing organisations and municipalities, which mainly automate their own processes. This results in duplication, unnecessary amounts of money being spent and the creation of cluttered and inefficient operations. This complicates the often essential cooperation of various organisations to effectively address social issues. The concern with digitisation is that it results in the creation of countless connections which are needed to connect public organisations with one another. Therefore, instead of a highway, it's more like a maze. In addition, governments are normally inclined to demand that digital applications be perfect right from the start and that the products are usable, even for the least computer-savvy citizens. As a result, custom-made solutions are chosen while cheaper, standard solutions remain on the shelf. A large audience could instead be reached at a very low cost and the surplus funds could be used for those who need special attention.

For more than twenty years, the policy has been that a well-func-tioning public sector requires a number of commonly used digital building blocks, such as reliable digital source files and digital identity. When these building blocks are missing and separate government entities go their own way in their use of digital resources, crucial improvements for citizens and businesses are

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[1]   The Ministry of Defence website was one of the first government websites that went online at the end of 1996. Source: Central Government Web archiving. Erfgoedinspectie (State Inspectorate) November 2016, p.7

not implemented, not least for the government itself. Creation, further development and renewal (ICT rapidly becomes obsolete!) however, implementation of these building blocks is slow. Too slow, given the needs of citizens and businesses and considering the pace of technological progress. By the time a particular building block has become more or less commonplace, the technology used has already become obsolete and new demands are being made. The fact that some of the central government's ICT projects are not working well was noted by the Temporary Committee on ICT (2014). According to the committee, the accountability and decision-making structure of ICT projects is inadequate. The central government's ICT knowledge is falling short and - perhaps most urgent - the central government lacks the learning capacity in the field.

A crucial digital building block is adequate identification and authentication of citizens. This building block allows for the exchange of confidential information. The DigiD service was developed for this purpose. DigiD has become more vulnerable in recent years because it was the only way to access government digital services and the underlying technology quickly became obsolete. Also, the original DigiD was inadequate for the intensive exchange of medical data that recent policy was hoping to achieve, as better security was required. What just a few years ago was a major innovation is now presenting a serious obstacle to the further digitisation of the public sector.

1.3 The Consequences

Addressing the current situation is important and urgent. It is now beyond dispute that digitisation contributes positively to productivity and employment (see OECD 2017: 14 for an overview of relevant studies.) The *use* of digital resources pays off particularly well (Dialogic 2014). The government can, and should, make the most of this opportunity. The public value of the digital government is difficult to determine because appropriate methods of measurement are missing (Savoldelli et al. 2013). Indirect evidence is, however, available. It is clear that countries with a highly developed digital government score well on competitiveness (UN 2016: 126), and the Netherlands should aim to remain one such country. Additionally, digital government stimulates the creation of new business models and the overhaul of business sectors. This allows for innovation in the public and private sectors and stimulates economic growth in the long term (Schwab and Sala-i-Martin 2015). For the Netherlands' open economy, it is very important that national digital infrastructures can communicate with each other and also that cross-border digital services are functioning optimally. By doing it the smart way, we limit our social transaction costs to only those that are strictly necessary, with the competitive advantages that that brings (WRR 2003). An example is the greatest possible standardisation of business reports (Standard Business Reporting), in which the Netherlands seeks to be international leader.

The "public value" of the digital government is ultimately in the provision of high quality services (availability, user satisfaction, respectability, cost) and in achieving desirable objectives for the entire population such as economic growth, better health, less poverty (or improvement of living conditions) and consolidating confidence in public institutions (Kearns 2004, cf. OECD 2017).

In short: if the digital transformation of the public sector is insufficient, and the government is unable to respond in a timely and adequate manner to the opportunities and vulnerabilities of digitisation (also in a European context), all of society is affected. If the government is not doing this, then it is not fulfilling its duty, both in the sense of public expenditure and in terms of serving its electorate.

1.4   Focus of this Report

The government recognises the significant social importance of digitisation. At the same time, the government acknowledges that it cannot be taken for granted that the Netherlands can hold or even expand its position as a highly digitised country without a targeted, strategic agenda. For this reason, on 16th November 2016 the Information Society and Government Study Group was set up (see Appendix 3). The Study Group was instructed to advise on the government's digital transformation. The task was specifically focused on 'the further development, funding and governance of the generic digital facilities' and 'the continued development and the necessary knowledge and skills for delivering digital government services to citizens and businesses'. In its request for an opinion, the government identified three areas of focus, namely the role and position of the local authorities, responsible data use, and standard setting and supervision. In conformity with the above task, this report addresses the basic digital infrastructure, the digital services and government's digital leadership. In terms of services, we are targeting, in this report, services to both citizens, entrepreneurs and companies.

This report draws on research reports and policy recommendations published over the last decade on digital government. It also draws on scientific research, complemented by the expertise of key players in the field.[2] For scientific research, we used existing research into digital government. That research proved somewhat sparse, apart from publications on sub-aspects such as privacy, security and big data. Surprisingly, the research was from about ten years ago when research into digital government saw a brief peak of interest. Since then, attention has lessened somewhat, although there has been a growing interest in the use of digital technology by city councils. We also conducted some new investigations to gain insight into the policy instruments, the ways of dealing responsibly with data within the government and the way in which the management of digital government is organised in various countries.[3] The hands-on expertise we were able to use

was from people from public administration, social organisations, business and science. Conversations, workshops on the topic and work visits provided us with insight into how governments utilise digitisation in their policy processes, and how large companies make the transition to a digital organisation.

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[2]   See Appendix 3.
[3]   SEO (2017) Pluses and minuses. Social Cost-Benefit Analyses in the field of ICT mapped, Amsterdam; PBLQ (2017) Internationale vergelijking Governance: i-beleid (International comparison of Governance: i-Policy), The Hague; and Leenes, Taylor and Van Schendel (2017) Public sector data ethics: from principles to practice, Tilburg. The studies are available at: http://kennisopenbaarbestuur.nl

2

Government and Digital Technology: Dominant Trends

2.1   Introduction

Digitisation is an umbrella term that encompasses different technologies and is the subject of regular hype. One characteristic is that the technologies are constantly under development, as is currently the case with the internet of things, big data analytics, artificial intelligence and blockchain (OECD 2016b). Another characteristic is that there is international, global development. A country like the Netherlands has only limited influence on what is happening and is playing catch-up in many areas. The EU is very active in this field and the creation of a *digital single market* is a key priority in the Commission's policy, and for good reason. Digitisation does not, however, stop at the EU's borders.

The application of these technologies results in a range of new possibilities, which, in principle, have a positive effect on the economy and society. However, it would be going too far to describe the great societal impact of these technologies, especially since this impact is still unknown and, apart from the technology itself, is also dependent on how we handle them in practice. In any event, these technologies, and the capabilities they bring, will be of major importance to the Dutch government both in its role, and also in its organisation and working methods. According to various international rankings on digitisation, the Dutch government seems to be doing well. Nevertheless, there are many different causes for concern about whether the government is sufficiently able to incorporate the current technological dynamics in its policies and policy implementation and to achieve public value for citizens and businesses.

2.2   Digital Technology

In strict terms, digitisation involves converting data of all kinds into a binary code, resulting in series of zeros and ones (Shapiro and Varian 1998). This process has gained momentum owing to soaring internet usage and the strong growth of connectivity, with the Netherlands at the forefront internationally. Through cheaper and more powerful computers and robotics, the internet has been 'expanded with senses (sensors), hands and feet (actuators), and thanks to machine learning and artificial intelli-

gence, the internet has become 'smart' (Van Est and Kool 2015). Brynjolfsson and McAfee (2014: 57-70) have talked a great deal about 'the digitisation of almost everything'. This development has a number of features and manifestations, which we will take you through below.

2.2.1   Datafication

First of all, explosive growth is taking place in the amount of data, which, in combination with new ways of storing, processing, sending and analysing data, is a major resource for the development of new knowledge and for innovation. Data is either collected deliberately (e.g. mandatory registrations), by a device (e.g. a sensor) or system, or is given voluntarily as a by-product of using systems, devices or platforms, such as financial transactions and use of social media (Kitchin 2014: 87-98). In the third quarter of 2015, 2.5 million devices communicated wirelessly with one another in the Netherlands (CBS 2016: 75). Because of these developments, internet traffic has increased dramatically.

Volume of Internet Traffic Using AMS-IX and NL-IX[1]
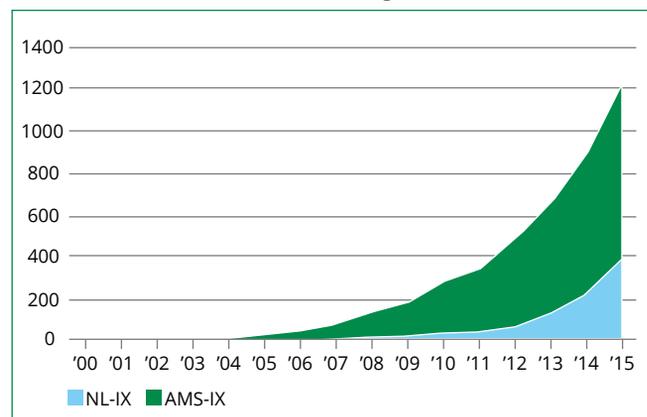
Source: AMS-IX, NL-IX.
[1] AMS-IX: measured in the month of December of the given year.
   NL-IX: measured in the fourth quarter of the given year, except
   NL-IX 2015 which was measured in the third quarter of 2015.

As a result of datafication, digital is penetrating ever deeper into physical reality. Conversely, the digital world also becomes a more detailed representation of the real world. Through the continuous feedback loops between the digital world and physical reality, both become increasingly intertwined, and the distinction between digital and non-digital becomes obsolete. Every process, service or product will include digital components in the near future, and will all, in some way, be connected to a digital network.

The benefits are high, and vary from a better and cheaper schedule of maintenance of roads, windmills, dikes and aircraft; better medical treatments; more plentiful harvests, the reduction of files and - as mentioned above - personalised services (Klous and Wielaard 2014). The enormous growth of applications in this field has, in addition to the availability of ever smaller and cheaper computers and better sensors, also resulted in the special character of digital information. Digital information never runs out. In the language of economics: digital information is non-competitive, non-exclusive and can reproduce at almost marginal costs (Kitchin 2014: 10-11; Brynjolfsson and McAfee 2014: 62; OECD 2014). The enormous amount of accessible data, and high-growth analytic possibilities raise, inter alia, the question of how to harness data usage for public interest purposes while protecting the privacy of citizens. Authors like Greenwood et al. (2014) consider this such an urgent and fundamental issue that they advocate a 'New Deal on Data'.

2.2.2   Artificial Intelligence
The great advance in artificial intelligence is another technological development that will be increasingly important in the coming years. Through artificial intelligence and *machine learning*, computers can work in an even more intelligent manner. In addition, they are often fast and accurate, they never get sick (although, of course, they do break down), they work 24 hours a day and no payment contributions need to be made, which makes them cheaper than employees. Large technology companies are accelerating investment into the development of artificial intelligence and the development of smart personal assistants like Siri (Apple), Google Now (Google) and Cortona (Microsoft).

The general consensus is that human intelligence will not be matched, but that algorithms will surpass humans in more and more domains (Stichting Toekomstbeeld der Techniek 2017).

> An algorithm is a finite set of instructions that determines how to make a decision. Computer programs are basically nothing but complex algorithms. In self-learning algorithms (machine learning), a computer does not execute pre-programmed rules but looks at how a particular outcome is best achieved.

Insurers use algorithms for risk profiles, large municipalities use them to distribute the few places available in secondary schools, regulatory bodies use them to trace abuses, operational agencies use them to fight fraud and the police use them to try to predict crime. Algorithms are essential for self-driving cars and translation software. In short, the boundary between man and machine is shifting fast. Artificial intelligence is becoming a feature of the entire ecosystem to an ever greater extent in which data is collected, stored, analysed and used (Stichting Toekomstbeeld der Techniek 2017). As a result, it's hard to even think of a field now in which all decisions are still only the product of human activity. However, the use of algorithms and artificial intelligence also raises questions. The use of algorithms requires permanent evaluation and correction to lead to useful outcomes (O'Neil 2016). The most pressing question, however, is what we want to let computers do and what the minimum level of human involvement must be in order to retain humane treatment or accountability (Kool et al., 2017).

2.2.3   Platforms and Ecosystems
Thirdly, we have seen a huge increase in online platforms, on which an ever-increasing share of socioeconomic traffic is taking place. These platforms make new connections between users and providers possible and have a common feature, which is that they allow a large number of different parties to perform the same operations (Parker et al., 2016). Think of Youtube, Facebook or a payment platform like iDeal, on which all online businesses can process their payments, or online shops like bol.com which

display the offers of many different suppliers. Platforms not only bundle supply and demand, but also enable other parties to develop new products. Platforms therefore generate great innovative dynamics. People often speak of 'ecosystems'. The internet and the appstore are frequently quoted examples but, in principle, this dynamic can occur wherever parties set standards and the market is big enough to attract new investment and innovation.

Because of the large role platforms are playing in many areas, we are now living in what is called a 'platform society' (Van Dijck et al., 2016). The platforms and ecosystems that have developed around it are constantly expanding by entering new domains in which digitisation plays a growing role. If cars are becoming more like computers on wheels (electronics now represent 40% of the cost of a car), it makes sense that technology and patented software is taking an ever greater share of the profit, and the market therefore becomes more attractive to technology giants (Schwab 2017). The same development can be seen in care, a domain that companies like Apple, Google and Samsung see as a potential growth market.

2.2.4   Customisation
Digitisation offers the ability to serve users better and to deliver customisation. Products and services are increasingly becoming more and more tailored to the user, whether it's a person, a public organisation or a company. Users are intensively consulted either implicitly (by analysing their data trails) or are explicitly (by asking user groups) involved in the design and delivery of the service. Their expectations are therefore partly redefined by how they experience a particular product. As a rule, profiles are used to divide potential consumers into different groups based on, among other things, their click behaviour, their use of social networks and data that provides insight into their social position, preferences and spending patterns. A large share of this data is provided by users themselves by adding content to social media platforms, writing reviews of services and products and what users search for in search engines.

This development results in a gradual, continuous change in the relationship between users, on the one hand, and the providers

of products and services on the other. Users are becoming more aware of their own position in the information landscape by demanding ever more from it (e.g. network speed, response rate from service providers) and by becoming producers as well as consumers. Users are no longer satisfied with general solutions and the more successful companies are doing everything they can to make things as easy as possible for the users

> Price comparison websites make it possible to compare prices, the quality of services and product performance. Customers can easily jump from one brand, service or provider to another with a simple click or swipe. The downside is, however, that internet companies now know almost everything about us. They collect huge amounts of data to sell on to other parties, which then, in turn, use the data to offer new services and place targeted advertising.

On the other hand, users, aside from being consumers, are often themselves the product of many internet companies, and are prepared to provide their information free of charge for convenience, without benefiting directly from the revenue. And if these organisations have not implemented sufficient security measures, then this enormous quantity of personal data is at risk and there is nothing that people can do about it.

2.2.5   Commoditisation
Finally, commoditisation is important (Brown et al., 2014: 105-114). For a long time, a separate system was created for each problem. Hardware and certain software were tailored to the specific situation for which they were intended. Meanwhile, for a growing number of applications, a standard solution is available for sale everywhere you look. Or the solution can often be downloaded from the internet, where it is free for everyone to use (*open source*). Software-as-a-service (SaaS), for example, enables organisations to achieve their goals quickly, while established companies are being overtaken because, with all their *legacy*, they are unable to keep up with the changes. In other words, digitisation has become a matter of *plug-and-play*. Organisations needlessly makes rods for their own backs when

they try to distinguish themselves with the kind of technology they offer. Nowadays, it's more about how smart and fast they succeed in giving a new service or product a broad scope of application. For example, it took the mobile phone 16 years to get 100 million users worldwide. Facebook took only 4 years and 5 months and WhatsApp only 2 years and 4 months. Finally, Candy Crush reached this number in just over a year.

Digitisation and Hypergrowth

Digital technologies are spreading faster and faster.
The time taken to reach 100 million users worldwide.
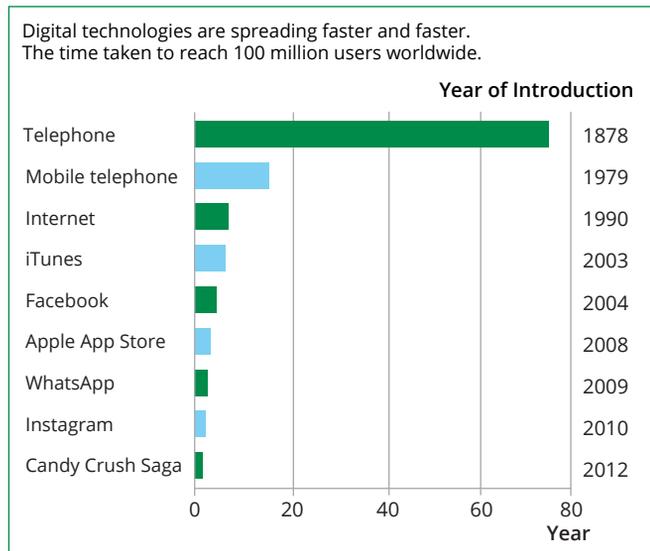
Source: OECD (2015).

The keyword in commoditisation is standardisation. Governments have played an important role in this field world-wide and are still doing so today. At the same time, standardisation indicates a maturity of market growth and is making inroads into ever higher regions of the value chain. As a result of the eternal game of supply and demand, exotic solutions disappear when their price/performance ratio is lower than that of competing products and services. What remains is infrastructural applications with the widest possible use. When two people purchase the same application, both cost and exclusivity are extremely high, but if millions of people purchase it, the costs gradually become negligible and the application acquires an

everyday character. This pattern is also characteristic of digitisation. The development of digital infrastructures is therefore less surprising than people think and it is quite obvious how some parties can profit from this understanding (Wardley 2014).

2.3   Implications for the Government

There is broad agreement about the fact that digitisation offers many opportunities to optimise government operations but, at the same time, it also requires major modifications (e.g. Pollitt 2010). We define the Digital Government according to the OECD definition, 'the use of digital technology, as an integral part of strategies to modernise the government for the purpose of creating public value.' The digital government relies on an ecosystem of government parties, non-governmental organisations, businesses, civil society organisations, and individuals who contribute to the production and access to data, services and content through their interaction with the government. The functioning of this ecosystem determines the extent to which government can use digital technology and deploy it for citizens and businesses (see Homburg 2015).

2.3.1   A Good Starting Point?
The Netherlands scores high on international rankings. In the United Nations eGovernment Survey (2016), the Netherlands is ranked 6th in the world and 4th in Europe behind Sweden, Finland and the United Kingdom. In the European Commission's (2016) eGovernment Benchmark, the Netherlands is in the leading group of countries whose governments are the furthest ahead in terms of digitisation and have therefore made the most progress between 2012 and 2015. However, the Commission noted that performance is beginning to lag behind citizens' expectations and what the private sector offers. According to the most recent Digital Economy and Society Index, the Netherlands is ranked 4th in Europe in terms of eGovernment behind Denmark, Finland and Sweden respectively.[4]

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[4]   http://digital-agenda-data.eu/charts/desi-components#chart= { "Indicator": "DESI_5A_ EGOV", "breakdown-group": "DESI_5A_EGOV", "unit-measure": "pc_DESI_5A_EGOV", "time-period": "2016"}

UN E–Government Development Index 2016 – Top 10 Countries	
Country	Place
United Kingdom	1
Australia	1
South Korea	2
Singapore	3
Finland	4
Sweden	5
The Netherlands	6
New Zealand	7
Denmark	8
France	9

Source: UN (2016).

However, these types of rankings tend to have limited meaning. They measure a limited number of aspects of the digital government, which makes it impossible to judge the success of a policy pursued. In addition, a clear, causal connection between high or low scores and government initiatives is lacking. Greater use of digital facilities, besides having the effect of providing easy-accessibility to digital services, can also, for example, be associated with a large number of internet connections, meaning that the number of digital interactions with the government is, by definition, high. This reasoning can also be turned on its head: if there is insufficient investment in the wider digital infrastructure of the Netherlands, the digital government will inevitably fall behind in the international rankings.

UN E–Participation Index 2016 – Countries top 11	
Country	Position
United Kingdom	1
Japan	2
Australia	2
South Korea	4
The Netherlands	5
New Zealand	5
Spain	6
Singapore	7
Canada	7
Italy	7
Finland	7

Source: UN (2016).

2.3.2 From Outside In, and not the Other Way Round
In the first phase, the government digitised existing processes and documents. Digitisation has, to date, been an internal process associated with cost reduction and efficient manage-ment. This development supported organisational tasks but left the design and method largely untouched. It led to lower costs and also often more effective execution of tasks. In the next phase, the government turned its attention outwards and addressed the needs of citizens and companies. The government created websites and started to communicate with its end users online.

Now a further step is required in which the government adapts its organisation and method to the digital age and takes advantage of the opportunities presented. This task differs fundamentally from the previous digitisation layers. 'Digital transformation' cannot be implemented without major adjustments, as noted by several authors: 'Ultimately, digital transformation means reimagining virtually every facet of what government does, from headquarters to the field, from health and human services to transportation and defence', W.D. Eggers (2016: 10) quote from a book about the digitisation of governments worldwide. Brown et al. (2014: 75), which mainly focuses on the digitisation of the British government, emphasises the 'symbiotic relationship' between institutional change and digitisation, and comes to a similar conclusion: '(D)igital transformation actually requires redesigning and re-engineering organizations on every level – people, process, technology and governance.'

The Netherlands is, therefore, not the only country facing this challenge - it is an international issue. But it is also an issue that has featured on the Dutch agenda many times before (for a brief summary see Wetenschappelijke Raad voor het Regeringsbeleid (WRR) 2011: 29 (The Scientific Council for Government Policy)). Research recently commissioned by the Ministry of Economic Affairs and the Ministry of the Interior and Kingdom Relations (GfK 2015) concluded that 'the biggest challenge (...) seems to lie with the government, not with citizens or companies. If the government makes sure that everything is in order, communi-cates this and clearly expresses its preference for this route, many citizens and companies will likely follow.' In short: such

signals have been repeated time and time again and for various aspects of digital government, but with little impact.

2.3.3   A Closer Look at the Challenges

What are the specific challenges now? All public organisations are facing the same challenges, but they are, to an ever lesser extent, able to engage individually. Firstly, digitisation enables them to adapt themselves to the expectations and needs of citizens and businesses, rather than to their own internal processes and rules. This has been the fundamental principle of the policy of digital government since the turn of the century, but it is very difficult to put it into action.

In recent years, bit by bit and policy by policy, an information government has been formed, 'without the need for an overriding vision or monitoring on the level of the political leadership' (WRR 2011: 194) A lack of proper organisational and institutional embedding can cause problems requiring a great deal of attention, time and money from the government. Consider, for example, persistent errors in information flows, unsafe systems, faltering services and the wasting of taxpayers' money due to lack of ICT expertise (Temporary Commission ICT 2014: 201). In addition, when the government fails to set clear frameworks or long-term goals for digitising society, it can also damage public confidence in the government as a reliable and proper adminis-trator and user of information.

Time and again, new services prove difficult to realise. The current way the government operates is at odds with how digital solutions can be best developed. Political decision making involves many steps and focuses on preventative risk manage-ment: everything must work perfectly right from the start - and for everyone - (ICT 2014 Temporary Committee). In many places, a completely different approach has now been experimented with, one in which the development of digital solutions consists of a continuous process of small steps (Brown et al. 2014; Stephen et al. 2011). This hypothesises another form of risk management, in which the possibility of interim adjustments is the fundamental principle. The scaling of successful products is also limited because it encounters a fragmented public administration in which the various governing bodies and policy columns each have

their own competencies and responsibilities (Public Management Study Group 2016).

Within the government itself, there is also a profound lack of digital knowledge and expertise. In general, policy makers underestimate the significance of digital technology, as well as the speed at which this technology evolves (AWTI 2015). This also applies, more specifically, to how policy makers approach the current information government (WRR 2011). On the one hand, there is great enthusiasm for ICT, which is considered a solution for all issues while, on the other, policy staff sometimes fail to realise the consequences of their policy proposals for the central government's ICT systems due to lack of knowledge (ICT 2014 Temporary Commission). There is also a significant degree of dependence on external ICT suppliers because the government itself lacks the requisite expertise in-house to properly manage and support the project. This lack of knowledge, insight and commitment to ICT is at odds with the great importance of digital government for citizens and businesses. Digital is crucial for carrying out the government's public tasks. This means that digital knowledge must be a core competency of government, at all levels of public organisations, from the bottom, right to the top. This competence, despite the efforts in recent years, has still not been sufficiently developed, with a detrimental impact on policy making and the commissioning and assessment of the digital components which almost all policy areas now include.

At the same time, progress has also been made. With the arrival of the Digicommissaris (the National Commissioner for Digital Government) in 2014 (Tweede Kamer (Second Chamber) 2014, 26 643, No. 314), a start has been made in embedding the digital government both organisationally and institutionally. Following the advice of the Temporary Committee on ICT, *ex ante* control of ICT projects has also been improved through the establishment of the Office of ICT Testing (BIT), which pre-tests the riskier central government ICT projects. In addition, the government is strength-ening the CIO system, making the role of CIO-Rijk an independent position and making CIO-Rijk responsible for BIT (TK 2014, 33 326, No. 13). The departmental CIOs have gained more power. A lot of work has also been done at different levels. Municipalities have intensified their mutual cooperation in the field of digitisation.

Nevertheless, the question is whether this will ultimately provide sufficient coherence between digital government strategies and governance on the objectives of the Digital Government (Digiprogramma 2015: 41). For example, several crucial building blocks for the digital government are still in development. Also, the public sector lacks a collective, strategic, long-term vision on the future of the current generic digital infrastructure (GDI), one which encompasses the whole sector, and regarding the applications in terms of policy development, service provision and enforcement which this GDI should support (Zegveld et al., 2016).

One of the building blocks is a easily-accessible, high-quality system of data registrations. Streamlined information management is needed for a government which wants to make best use of data. The government, however, cannot blindly follow the example of the major internet companies, which have obtained large amounts of data on almost every citizen without obtaining any explicit consent. It is precisely in the public sector - which makes use of very large amounts of data - that the government must set a good example through the responsible use of data (OECD 2014). A good example of multiple use of data is the pre-filled tax return which, apart from in the Netherlands, is also common in Sweden and Norway. We don't see enough of these types of services.

An important first step was taken for structural funding with the government's decision on 24th February this year concerning the implementation of the fundamental principles for sustainable financing arrangements for the GDI. However, for facilities outside the GDI, the overall view is that the funding is fragmented, *ad hoc* and insufficiently focused on the long term. This is detrimental to the management, maintenance and renewal of digital government facilities. In practice, each facility is funded separately, and often by many parties, all at the same time.

This is a time-consuming process that hinders progress towards digital government. In addition, there are insufficient resources for innovation while the pace of technological development remains high and government facilities run the risk of being overtaken on all sides, with the result being that the public function of these facilities may come under pressure (Sustainable Growth Study Group 2016).

For ICT companies, digitisation is still big business, and will remain so in the future (Pollitt 2010: 44). Over approx. the past ten years, the governments of economically advanced countries spent more than 1% of GDP on information technology (Dunleavy et al. 2006: 1). Market operators are important players in the further digitisation of the government. In the sixties and seventies, governments often pioneered digital applications and developed expertise. Nowadays, they are dependent on large, often multi-national, ICT providers (Dunleavy et al. 2006). This situation is a major obstacle to the digital transformation of the government. Public organisations are contractually bound to the parties who build and manage their (custom) systems. These actors autonomously dictate spending growth with multiple new software releases and substantial licensing costs. Public organisations are also obliged to carry out regular re-tendering. This complicates the transition to government-wide service sharing and the use of cheaper standard solutions that are currently available for sale on the market. Precisely these types of solutions carry the promise of better service at lower costs on average - even for the government (Fishenden and Thompson 2013).

3

Basic Digital Infrastructure

3.1   Introduction

Programs like DigiD and Digipoort are vital building blocks of the basic digital infrastructure and should be used across the full range of public services. Every service provider with a public task and every citizen and company must be able to connect. If such an infrastructure is lacking, is not working properly, or is based on obsolete technology, many public tasks are threatened and sometimes even society at large is disrupted as a result (CPB 2016). And this will be even more pronounced in the future (Munnichs et al., 2017). The government can only realise a breakthrough in the transformation of its services, when using the same digital building blocks throughout the public sector. This is even more true if public service providers are obliged to make substantial savings in areas such as youth care, tax collection, licensing and fraud prevention.

Nevertheless, agreements on these basic digital facilities have, in practice, only been implemented slowly and with difficulty. The image also persists that the creation of basic facilities is a one-off expense. Considering the rapid pace of technological development, the development of the ICT market, new functional requirements and changing security risks, these facilities actually require continuous upgrades.

3.2   Further Development of Basic Digital Infrastructure

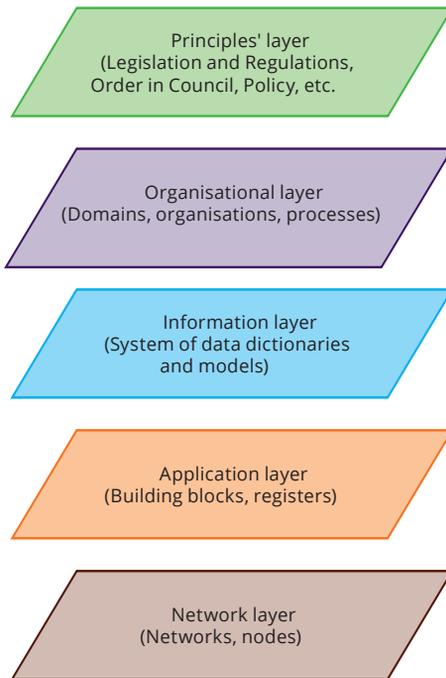### 3.2.1   The Generic Digital Infrastructure start 2017

The government's current Generic Digital Infrastructure (GDI) has come into existence for a number of reasons.[5] Initially, it was about a better quality of service, cost saving and fewer administrative burdens for residents and entrepreneurs. Complexity reduction was also a driving force: not everyone needs to reinvent the wheel, partly because of the scarcity of expertise.

The facilities in the current GDI are located in four clusters[6]. Every cluster has its own function: Digital identification and authentication (e.g. eHerkenning (eRecognition) and DigiD); data (basic registrations and associated system facilities); Interconnectivity (e.g. networks and coupling standards); and service provision (e.g. the digital ondernemersplein (entrepreneurial plaza) and the Berichtenbox (message box)). The GDI is ultimately not an isolated entity and forms part of a more comprehensive digital, national, European and even global infrastructure, consisting of an ecosystem of technologies, protocols, hardware, software and content. There are several ways to make this ecosystem more transparent, but the most common way is to distinguish between different layers, for which different layouts can be used (e.g. WRR 2015: 37; GCIG 2016: 5). Within the government, the Dutch Government Reference Architecture (NORA) is often used, which distinguishes five different layers at the national level. The GDI includes all layers in this model, excluding physical facilities such as hardware and cables.

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[5]   The launch of the GDI was formulated by the 2007 Wallage/Postma Commission's *the Moment of Truth* report which proposed a set of nineteen building blocks which would function as the preconditions for the electronic traffic between government, citizens and companies. Two national implementation programmes to develop and implement these building blocks followed the report (NUP 2009-2010 and iNUP 2011-2014). The 'vision letter' "Digital Government 2017" (TK, 2012-2013, 26643, No. 280) and the Digitaal 2017 programme contain the most recent ambitions in this area.

[6]   As determined by the government in collaboration with Digiprogramma 2015

Dutch Government Reference Architecture Layer Model

Principles' layer
(Legislation and Regulations,
Order in Council, Policy, etc.

Organisational layer
(Domains, organisations, processes)

Information layer
(System of data dictionaries
and models)

Application layer
(Building blocks, registers)

Network layer
(Networks, nodes)

Source: NORA (web), http://www.noraonline.nl/wiki/Vijflaagsmodel

The application layer and information layer together, in a certain sense, form the public face of the information society. These are the layers in which money is earned, people maintain social relationships, and citizens and companies come into contact with each other and with the government. The functioning of these two layers is ultimately dependent on networks and the physical infrastructures on which they run. Boiled down: no telephone cables and no telecom companies = no digital government.

3.2.2 Starting Points for Further Development

A new agenda for the further development of the basic digital infrastructure must be founded on a clear substantive ambition on the one hand and effective governance and long-term financing arrangements on the other. We begin with the first of four starting points:

- Thinking on a coherent and future-proof system of generically useful digital facilities is still very much at the development stage. It goes without saying that, in the case of further development, current facilities are not taken as the sole starting point.
- The issue is also not only about how technology can help improve the functioning of government equipment in terms of quality and cost. It is more about whether the Netherlands needs a basic digital infrastructure for society as a whole or not and, if so, how it should relate to the Generic Digital Infrastructure that the government has developed for the public sector in recent years.
- In addition, the further digitisation of cross-border services and securing the interoperability of national and international infrastructures will need to be taken into account in order to ensure that the systems of the different European Member States can communicate. The European *digital service infrastructure* is already under construction and regulations affecting the digital government are coming from the internal market, such as the eIDAS regulation, which obliges Member States to accept each other's nationwide approved authentication tools.
- Finally, the further development of generically useful digital facilities is set against the background of the trends outlined in the previous chapter. Above all, commoditisation means that there are more and more standard solutions. The question is therefore what the government still needs to develop itself or, if necessary, have developed, and what, under certain conditions, it can buy on the market, just as more and more private companies are doing nowadays.

3.2.3   Work is Never Finished

DigiD has perhaps become the best known example of the GDI: the default solution for verifying a person's digital identity. With DigiD, citizens have been able to log in to government websites, including health insurers (for their legal duties) for more than 10 years. DigiD ensures that the right services are also available to the right people. In 2016, approximately 12.5 million people used DigiD more than 250 million times. All forecasts are that growth will not level off for some yet.

Despite this undeniable success, it is necessary to critically review these, and other building blocks, of the current GDI. The digital infrastructure is an unending work in progress (Digiprogramma 2016: 4). It turns out that citizens and/or companies do not use many of the building blocks, and some are evidently meeting a more limited need than originally thought (Kanne et al., 2016). But even regularly used building blocks require constant modernisation. This may be because the requirements change, but also because they are not sufficiently connected to other building blocks.

In addition, there are new technological developments, which, on the one hand prompt the question whether existing specific government building blocks are still needed, and on the other, whether new building blocks should be added. For instance, the fast-growing ability to analyse large amounts of data (big data and data analytics) for medical prevention, crime prevention or sustainability issues presupposes a huge computational power. It is mainly the big internet companies that have this computational power. The question is whether having access to substantial computing power as part of a digital infrastructure (partly) provided by the government is clearly in the public interest. A different, yet striking, example is the unstoppable rise of mobile devices. The share of households with a PC in the Netherlands has been declining for years whereas laptops, mobile phones and tablets are starting to dominate the field when it comes to accessing the internet. CBS (2015) succinctly summarised the trend in their article, 'Tablet verdringt bord van schoot' (Tablet ousts plate from lap). However, according to the European Commission (2016: 40), European governments, including the Dutch government, have been slow to adopt to mobile technology

as a means of enabling citizens to navigate easily through information about public services and government organisations. This is also true of 'our' Dutch GDI.

Share of Households with Devices with Internet Access
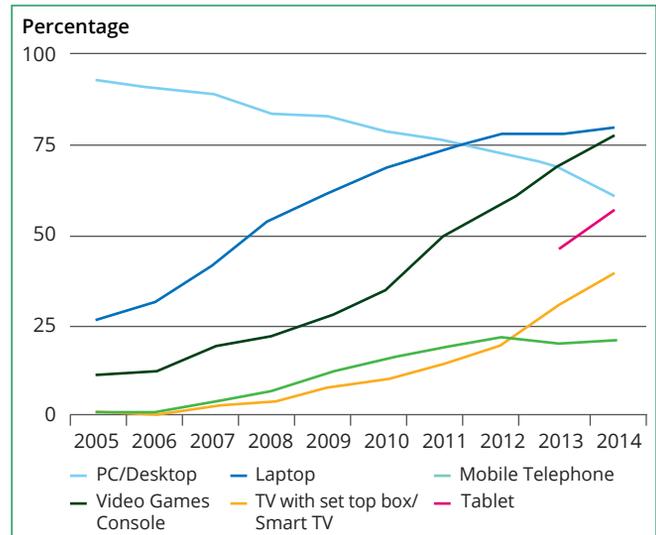
Source: Statistics Netherlands (2016).

One last point to mention here is that in some areas the digitisation of the government is based on images that are still at the development stage. In the Digital 2017 programme carried out in recent years, an important objective of the digital government has been to respond to citizens and companies as a 'single government'. However, conversations with citizens and experts show that there is little support for a fully integrated government: "If a 'single government' means: one closed system, both at the front and back, then the answer is that it is neither feasible nor desirable. If a 'single government' means: 'no wrong door', 'customised information' (funnel model) or 'a single government portal', then this is generally considered desirable and also - in the longer term - feasible by the experts." (Kanne et al. 2016: 70)

3.2.4 Scope

The current GDI has been developed for general use throughout the public sector. In practice, however, only limited use has been made of it so far. The increased use of GDI's current basic digital basic facilities means its limited scope cannot be hidden. The facilities are mainly used in the social/tax area; examples include allowances, insurance and tax returns. Usage in areas such as education, care and mobility, is considerably lower. This can, in part, be explained by the fact that such domains can generally said to be slower to digitise in some areas than they need be and therefore miss opportunities (OECD 2016c; see Krijgsman et al. 2016). But in other areas such as Security and Justice, only marginal use is made of GDI facilities. It is important to find out the specific reasons for this, because it is then easier to determine the extent of the problem and what needs to be done about it. The previously summarised objectives, from which the current basic digital infrastructure has arisen and upon which the development must take place, form the starting point for such an analysis.

In terms of scope, the question regarding the extent to which use of the basic infrastructure should continue to be limited to public services only is also relevant. Regular requests are also made to make the use of digital traffic between companies and their customers, between residents and between companies possible. At the moment, there is generally no explicit line of policy.

3.2.5 Generically Useful Digital Building Blocks as Open Platform

The government role may also change due to the rapid development of technology and especially the development of the digital applications market. Commoditisation makes products and services more or less standard, making them comparable or even the same. If the government wants to secure certain functions, it can use facilities already available in the market. The speed at which commoditisation is taking place, and the associated price development, are so attractive that it's an offer no one could refuse. The government could, as the reasoning goes, in an increasing number of cases limit itself to specifying what it wants and to playing a supervisory role, determining whether market solutions meet these requirements and continue to do so. The rest can then happen privately, whether *in the cloud* or not.

The recent experiments that have been carried out using private authentication services to log in to the government services are a notable example of this. With this development, the government is currently focusing on well-equipped system accountability. The goal is to include approval of all public and private login resources under a single public law regime. The law will set out identical requirements which public and private resources need to satisfy for use in the public domain. This will ensure the creation of a less vulnerable, much more robust and innovative authentication infrastructure than the government would otherwise have been able to build using its own resources and at a reasonable cost. With private sector solutions permitted by the government, a digital infrastructure made available for wider use than just in the public sector will also be possible. It is not beyond the realms of possibility that, in the future, an entrepreneur will say to his or her customers that what's good enough for the government – a government-approved and government-controlled private solution – could also be good for transacting digital business with his or her company and that that is why he or she is also accepting those solutions

All innovations which take root will ultimately be commonplace And in the digital world, this process is often fast-moving. There would be many advantages if the government-developed digital infrastructure could develop, where possible, into an open platform of coherent, generically useful digital facilities. On this type of open platform, in principle, anyone could develop new services or develop existing services further, provided that certain conditions are met. Under the influence of commoditisation, the system of generically usable digital facilities would gradually transform into a programme of requirements, that would be drafted by the government in advance. These conditions would be a combination of, inter alia, functional requirements, privacy terms, security requirements, availability requirements and the like to ensure that the platform is capable of functioning compliantly and, in a governmental interpretation of a platform, that the products and services that are built on it guarantee public value.

This 'platform approach' of generically useful digital facilities is in line with how innovation takes place in the digital world (O'Reilly

2010; Kreijveld 2014: 39) In an early form, we are currently seeing this type of development in eRecognition. Various parties are advocating similar courses of progression into the future for MijnOverheid (MyGovernment) for citizens and companies and the associated berichtenbox (message box), including reference to arrangement systems such as the private Dutch QIY Foundation.[7]

Platforms have different dimensions, starting with a generic base layer, open (or at least widely accepted) standards and, where possible, open source software. Crucially, these platforms *bring together multiple* players from the demand and supply side and allow them to *interact* with each other: there is, therefore, in principle, no central control.

Platforms have the great advantage of encouraging innovation by providing a standardised environment that stimulates an ecosystem of parties (e.g. companies, knowledge institutions, but also civil society organisations or individual citizens). It stimulates the building of products and services, attracted by the huge demand that these platforms can generate, both inside and outside the public sector (Parker et al. 2016). In a certain sense, the government also acts as a *launching customer*. If it is not yet clear which solutions are the best, it is virtually impossible, and also unwise, for the government to make a definitive choice in favour of a particular product or service. Governments can then create better conditions and formulate ambitious goals to challenge companies and citizens to come up with innovative solutions and try out new methods (Kreijveld 2014). This is especially attractive for the digital building blocks that facilitate contact between government on the one hand and citizens, companies and civil society organisations on the other, all with the aim of supporting public services. The government, and the central government particularly, is often too distant from society to respond effectively to the different needs and preferences of people and businesses. In addition, a shift is now being made from direct services provided by the government, to service

through (private) intermediaries (such as administrative offices) and private package solutions. This means that, in the long run, the implementation of public services (through apps for example) will increasingly be carried out by market players and the government will become less obviously visible to citizens and companies.

> **Definition of a Platform**
> A platform is the common basis of technologies, technological, economic and social rules and agreements (such as standards) that allow multiple players to innovate and develop additional technologies, products or services (Kreijveld 2014).
>
> One example is the 'Standard Platform' started by the Ministry of Infrastructure and the Environment. This platform runs in a Government Data Centre, contains a growing number of reusable, generic components and supports automatic testing and deployment of applications. The generic Central Terminal component enables secure and easy connection to Databases and data exchange with other parties and systems. The Central Terminal currently has over 30 active connections, which are used not only by ministries but also by implementing organisations, municipalities and water authorities. Developing and offering applications and services on this platform is done by various parties inside and outside the government.

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[7]   QIY gives the user control over his or her own data. It focuses primarily on privacy on the internet and offers opportunities to do business safely and simply online. It also facilitates the different roles a user performs as a citizen, consumer, employee or patient. For further information see: https://www.qiyfoundation.org/about-qiy/

3.2.6 Supervision

In this longer-term vision of the development of the basic digital infrastructure, supervision is of great public interest. It is primarily a government responsibility to implement this supervision. It seems obvious to make this supervision more integral in character than has been the case until now.

> At the moment, for example, there is no government-wide supervision of private networks for public data exchange; everyone regulates themselves - or not. This produces a convoluted, highly fragmented and unnecessarily complex landscape.

As the government makes more use of private facilities in public services, it must ensure that these facilities meet the requirements and standards set up for that purpose. When public organisations make the transition from large-scale, in-house ICT systems to more flexible ICT architectures, for which a large percentage of services will be provided by other parties (SaaS, IaaS, PaaS), and they, for example, store their data in the cloud, it means that the broader ecosystem must also be put under government supervision. When these parties make mistakes, or their products show unintentional defects, there may be major consequences for government operations (Luiijf and Klaver 2015). Considerations about setting, shaping and terminating government supervision should be based on a clear analysis of the existing *governance* structure in a sector (WRR 2013). The supervision should also be broader than compliance monitoring alone. New services can also change existing relationships and have unintended side effects. Supervision therefore also needs to signal spillover effects and, if necessary, to repair them. It may also be the case that new developments necessitate the adjustment of the programme of requirements, for example, to developments in the field of biometric identification. Signalling these developments is also the task of the supervisor, who could report on this on an annual basis, for example.

3.3 Governance, Financing, Execution

The success of the further development of the basic digital infrastructure stands or falls on the effectiveness of the preconditions that are created for that purpose. Breakthroughs are necessary and inevitable on this point too.

During the second Rutte government, a concerted effort has been made to improve governance concerning the digital infrastructure. The current governance of the GDI was created on 1st August 2014 with the institution of the Digicommissaris for a period of 4 years.[8]

Under the direction of the Digicommissaris, more streamlining and commonality have been realised in GDI's governance and funding. At the same time, the Study Group found that in the current administrative landscape, which operates according to the consensus principle, the scope for action has been lacking to achieve the desired pace. The Study Group distinguished the following (design) principles and fundamental principles for the coming years:

- The themes of digitisation of the economy and (cyber) security are inextricably linked to the digital government. The development of the digital government contributes to the digitisation and growth of the economy. Security and privacy protection are inherent in any development in digital government: security and *privacy by design*.
- The digital government is not an end in itself, but a means of safeguarding vital infrastructure and organising the provision of services to citizens, businesses and administration. Digital services are not the only way in which citizens and entrepreneurs engage with public services. They must go hand in hand with human contact facilities, with accessibility for citizens and entrepreneurs, and with an open, transparent government.
- The focus of the control must be on realising a coherent infrastructure and service development, rather than on separate facilities.

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[8] TK [House of Representatives] 2014, 26643, no. 314.

- The increasing public sector dependence on generically useable digital facilities requires a form of control that does justice to the interests of all parties that use them and who therefore feel dependent on them.
- Policy and execution should be inextricably linked; making progress and getting results requires clear and unambiguous coordination and perseverance.
- Implementing organisations and public authorities, as 'the face' of the government, play a central role and thus have influence on the parts of the GDI for which they pay.
- Political commissioning and policy development must take digitisation into account, which also means that there is a great need for implementing organisations to have the capacity to adapt. These implementing organisations are now focusing on existing challenges such as the approach to legacy issues (through, inter alia, internal freeze) and stacking as determined by government policy. A successful digitisation agenda therefore requires structural assessments of feasibility, which always requires explicit consideration in policy development.
- Digitisation belongs at the heart of government - in the engine room and especially in the boardroom. The government organises its own knowledge and expertise. Where this is clearly impossible (the government does not have the right knowledge or skills) or it makes sense (better and cheaper options are already available) the market can fill the gaps.

3.3.1 Governance

In order to digitise the economy and government as effectively as possible, while safeguarding public interests such as privacy and cyber security, as well as public values such as freedom of choice, healthy labour conditions and competitiveness, the Study Group recommends setting up a Ministerial Committee for Digitisation, chaired by the Prime Minister, and with an official gateway. The members of Ministry of Economic Affairs, Interior and Kingdom Affairs and Security and Justice are at the heart of this ministerial committee due to their systemic responsibility for the digital economy, digital government and digital security, respectively. Ministers will have the task of drafting digitisation and implemen-tation programmes for their domain, for example on primary processes such as mobility, care, education, taxation, social security, defence, energy and urban environment, and will

therefore link up with the Ministerial Committee where these programmes will also be discussed. Public authorities will also be represented on the committee. Consideration will therefore be given to all opinions represented at the table, including the intergovernmental and implementation aspects; programmes and funding will be weighed simultaneously. In this way, for anything that has to do with digitisation, there will be an intergovernmental decision-making structure at the very highest level.

For the digital government, building on the current Digiprogramma, an annually updated implementation programme will be drawn up by a programme council at administrative/senior level of which public authorities and implementing organisations will, of course, also be a part. The implementation programme is determined and followed by the Ministerial Committee and presented annually to the States General. In the programme, the content and budget for the digitisation of the government are explicitly linked. The starting point is that there are no activities for which financial coverage is not arranged, both on a one-off basis and for the longer term. The Programme Council is comprised of a public/private digitisation consultative group, which includes, among others, private organisations with public duties, such as health insurers, pension funds, Schiphol Airport or the Port of Rotterdam. The Programme Council provides its implementation programme through the official gateway to the Ministerial Committee.

High-Level Steering Committees, such as the current Steering Group eID and the Messaging Facility Steering Group, will have control within a task set by and with the authority of the Programme Council on the maintenance and further development of separate components of the basic digital infrastructure or other designated components of the implementation programmes. Public authorities and implementing organisations will also have a clear role in these steering groups. This is because those who pay collectively also make collective decisions.

Within the Ministerial Commission, the Ministry of the Interior and Kingdom Relations will be responsible for the policy development and implementation of the basic digital infrastructure, including the corresponding regulations, the accompanying monitoring and governance and financing model. This implies that, for these components, the responsibility for the digital government for citizens and businesses will come under one sphere of governance, therefore shifting the current responsibility from the Ministry of Economic Affairs for facilities for digital services between government and companies to the Ministry of the Interior and Kingdom Relations. The Minister of the Ministry of the Interior and Kingdom Relations will be responsible for, and will organise, the implementation of the basic digital infrastructure in the primary processes of Ministries and other public service providers, but will not be explicitly politically responsible for ICT in the primary processes of Ministries and other public service providers. That responsibility will remain where it is (and belongs).

The role of the Digicommissaris as an intergovernmental director will therefore be taken over by a government official for digital government. The Digiprogramma 2016, which was drafted under the direction of the Digicommissaris by the Nationaal Beraad Digitale Overheid (National Meeting for Digital Government), includes a desired situation for the future of digital government's control after the Digicommissaris assignment has ended. This desired outcome also assumes that there will be one politically accountable officer for the digital government and for GDI for the whole of Dutch government, with corresponding intergovernmental governance. The aim to designate one political officer is therefore achieved.

The GDI for public services does not stand alone. The GDI is ultimately part of a much wider infrastructure that is partly in private hands. This includes, for example, a number of products and services from companies such as KPN and organisations such as Surf and the Amsterdam Internet Exchange. Public interests may be put at risk if the further development of this broader infrastructure malfunctions (technical flaws, disasters, misappropriation, *etc.*). The Ministerial Committee must therefore consider this interconnection when it comes to the government safeguarding the basic digital infrastructure.

3.3.2 Financing

Clear financing agreements are also important preconditions for a successful further development of the basic digital infrastructure. The starting points for this are twofold. First, investing in digitisation does not automatically generate money, as was often thought in the past. This is especially true when investing in the infrastructure required. As with any infrastructure, digital infrastructure is mostly an expense at first; namely for the realisation of things that generate savings (Frischmann 2012). The return on investment in the basic digital infrastructure is the safeguarding of vital infrastructure, service improvement and, in the long run, a more effective and efficient primary process. However, this initial starting point does not alter the fact that the government lacks insight into, and understanding of, the effectiveness of ICT budgets and spending, due to the lack of requisite knowledge and transparency (see the Temporary Committee for ICT 2014). A second starting point is therefore to put things in order and to work with better estimates and forecasts than has been the case until now.

GDI
The GDI is the basis of digital services and consists of a collection of government information systems, facilities and arrangements. Examples include DigiD, MijnOverheid and Digipoort. A €380 million structural budget is required to sustain the GDI every year. This money funds the GDI's operation and further development, so that current GDI facilities remain operational. This budget leaves no room for the development of new forms of public service or of new infrastructural facilities. The budget also has no extra money for innovation. These are, however, necessary to keep public services, partly given the rapid technological developments, permanently in line with the expectations and needs of residents and entrepreneurs.

The most important principle of GDI funding is that a vital infrastructure needs funding that guaranteed in the long term. This is precisely what has been lacking in recent years as far as the basic digital infrastructure is concerned. Having to arrange budgetary cover year on year does not help. The same applies to having to work on the basis of the constant flow of new and creative ad hoc arrangements ('going cap in hand'). The general

Table of Budgetary Implications

(€ million)	2018	2019	2020	2021	2022	Structural
Total	**390**	**421**	**447**	**478**	**502**	**515**
GDI Exploitation	200	225	245	270	290	300
Of which covered*	*93*	*225*	*245*	*270*	*290*	*300*
Further GDI Development**	60	65	70	75	78	80
Supervision**	10	11	12	13	14	15
Stimulus***	60 – 120	60 – 120	60 – 120	60 – 120	60 – 120	60 – 120
Target coverage**	*165*	*156*	*156*	*156*	*156*	*156*
No target coverage as yet***	*20-132*	*0-40*	*0-46*	*0-52*	*0-56*	*0-59*

* The second Rutte government decided in February 2017 that management and operation costs would be passed on to the user.

** The intention is to obtain funds from resources currently reserved for the GDI in, inter alia, the National Budget (mainly Ministry of the Interior and Kingdom Relations and Ministry of Economic Affairs) and the additional budgetary supplement. The (government) organisations through which these funds have been applied previously overlap to a significant extent with those who pay as a result of the charge for management and operation. For this reason, the shifting of this cost might influence the amount of this funding cycle. Further decision-making, in accordance with the basic principles of the second Rutte government's decision (July 2016), is yet to take place with regard to this.

*** This budget still needs to be provided with adequate cover.

rule for consistent funding is: users pay. In February 2017, the second Rutte government decided to pass on the operating costs of GDI facilities (all costs for managing and operating the facilities) to public and private organisations which use the facilities in the services they provide to citizens and businesses. From 2018, this will be introduced for the DigiD, MijnOverheid and Digipoort facilities. In that year, the operation of the remaining facilities will also be covered by an additional GDI supplement to the budget. From 2019, the operating costs for these other GDI facilities will also be passed on to other parties. The funds released (such as the additional item for the Ministry of Finance) following the decision of the second Rutte government (February 2017) to pass those costs on to other parties are part of further decisions to be taken in this regard. Funding possibilities with these resources for further development and supervision will also be examined.

Stimulus

This is a long-term government stimulus aimed at the effectiveness and innovation of the digital government (central government, implementing organisations and local and regional authorities) and the information society and involves developing, together with the business community and knowledge institutions, new services for an innovative government in which transparency, quality and adaptability is increased through the use of digitisation.

The digitisation stimulus provides the government with the necessary space to innovate systematically and provides the sectors involved with scope to experiment, thus contributing to the building of knowledge and expertise within the government and giving direction to the resolving of the legacy issue during implementation. When it comes to spending the budget, the fundamental principle should be that experimentation is only for the purpose of developing new resources that improve the provision of direct services to residents and entrepreneurs. It is

important for the public to be able to interact with the government more easily and independently. Of course, those with digital skills and those who are less adept will also be catered for. The agenda for the digitisation stimulus was drawn up in a collaboration between the central government, implementing organisations and local and regional authorities. This joint agenda ensures that only projects that are linked to broad-based needs are funded.

This requires a collective facility within the domain of the digital government. By centrally organising the digital government stimulus, available resources can be used optimally to utilise the possibilities that digitisation offers for services adapted to individual needs.

Given the speed at which digital developments make their mark in society, joint innovativeness is needed to ensure that the public services provided are constantly in line with the expectations and needs of residents and entrepreneurs. Approximately €120 million per year is set aside for the digitisation stimulus. The degree of investment in the digitisation stimulus determines the extent to which the government is able to make up for the time it has lost as regards digitisation, to differentiate services according to individual requirements and even to strengthen the economic potential surrounding the digital government (see section 1.3). It may be decided to reduce the amount provided for the digitisation stimulus to €90 million or even €60 million per annum. As a result, the above effects will be realised later, or only in part, and the government will be less able to organise its services proactively around the needs of residents and entrepreneurs.

Illustration showing how the digitisation stimulus could possibly be implemented	
Package of €120 million	• With the adaptation of the services to people's needs, the government increases the quality and ease of use of its public services. • Keeping public service properly in line with technological developments simultaneously exploits the full economic potential of the digital government. • Aiming for socially applicable solutions ensures the realisation of benefits that boost the public domain. **Explanation:** On the premise that the government is there to serve society, permanent innovation takes place in public services. The provision of services is adapted to developments in the needs and expectations of residents and entrepreneurs both in the long term and for short-cycle processes, and new technological possibilities (such as blockchain) are proactively sought. Where possible, solutions/facilities are applied not only in the public domain, but in broader social and economic life natonally and/or internationally. In the long term, digitisation also offers the possibility of better quality at a lower cost for each product. By focusing on a coherent infrastructure and service, rather than on separate facilities, ICT spending will remain the same but the quality will be better and the total cost of services and products per unit will be lower. **Example:** Consider identity resources for private parties that regulate societal interaction (Idensys).
Package of €90 million	• All government services are brought to a basic level of digitisation. • Impetus for differentiated services for residents and entrepreneurs. **Explanation:** Digital services must look beyond the level of websites: proactively adapting to the needs of citizens and businesses, while focusing on differentiation as required, hand in hand with physical forms of (civic) contact.

	On the premise that the government serves society, <u>all</u> government services are brought to a basic level of digitisation, whether or not using central facilities. In addition, permanent innovation takes place in provision of public services. The provision of services is adapted to developments in the needs and expectations of residents and entrepreneurs both in the long term and for short-cycle processes, and new technological possibilities are (such as blockchain) are proactively sought. With the adaptation of the services to people's needs, the government increases the quality and ease of use of its public services. Keeping public service properly in line with technological developments simultaneously exploits the full economic potential of the digital government. **Example:** Remember that tablet and smartphones apps are also available, not just websites.
Package: €60 million	• Commitment to eliminating backlog (legacy) in digitising service provision. **Explanation:** In this scenario, existing obsolete digital services are adapted so that they, to the greatest extent possible, remain in line with technological developments and society's expectations in this regard. In this way, all government services are brought to a basic level of digitisation, whether they use central facilities or not. **Example:** Consider, for example, websites with forms to be filled in. At the moment, with (major) government agencies, like the Tax and Customs Administration and municipal authorities, you can make many requests and perform operations online, but government organisations have not yet digitised everything that could be made available online. Also, (small) government agencies too often consider it sufficient to provide pdf forms online which people then have to print out and send back by post. This level of digitisation is no longer appropriate in this day and age.

The budget for the digitisation stimulus should allow sufficient funds, which may involve better use of existing ICT budgets and, if applicable, the elimination of current demonstrable inefficiencies. It is essential when working out the details of the budget to ensure that the budget for the digitisation stimulus is not linked to annual limits.

A €120 million digitisation stimulus alone cannot be described as a quantum leap in the government's approach. Long-term benefits will arise through a fundamentally different approach to ICT, where the potential of digitisation is optimally utilised in social sectors, such as care, education and the social domain. This applies not so much to ICT budgets, which are precisely where investments are needed; above all, ICT applications can be used to make savings in social budgets, such as healthcare costs.

Currently, the government is in two minds. The old services are maintained alongside the new digital services. This leads to inefficient expenditure of public budgets, in which public services costs are disproportionately high. By moving away from the old ideas of parallel services for different target groups and switching to a differentiated customised service, budgets will be spent more efficiently in the future. Chapter 4 describes the differentiated services in more detail.

Still, in the present era of security, and specifically in the field of digitisation, cybersecurity is increasingly important. There is an increasing need for the government to have tools to ensure digital resilience. Cybersecurity is not included in the budgetary implications in this paragraph.

3.3.4 Execution
Ultimately, a vital infrastructure must also be protected during execution. This also applies to the basic digital infrastructure. Users who depend on this infrastructure and pay for their facilities expect this at the very least.

This implies a considerable investment in the execution, not least for the Ministry of the Interior and Kingdom Relations, which has long been responsible for the digital government and the basic digital infrastructure. The agenda presented above represents a major (change) task for this Ministry in general and for the various components, especially the digital government service Logius. Logius plays a central role in the management, further develop-ment and government-wide application of services and standards for the entire government.

In recent years, the Ministry of the Interior and Kingdom Relations has received much criticism about the manner in which responsi-bility for 'government and ICT' was implemented. The reorganisa-tion of the Ministry in 2016 was a first step in bringing about change. The further development of the GDI and the associated major investment in policy-management focus requires that many steps quickly follow. This involves, first and foremost, substantial investment in in-house expertise (including attracting new people, whether or not on secondment from stakeholders elsewhere in the government) and, building on the work of the Digicommissaris, making investments in a more effective manner so as to involve all interested parties, both public and private. A qualitative and quantitative upgrade of the Logius implementa-tion organisation will be required for this in any case. A managed growth and development path for Logius will contribute to an effective, more coherent development and renewal of the GDI. At a later stage, it will be desirable to explore the extent to which the streamlining of the network of the government's various digital knowledge centres can contribute to this.

4

Services to residents and entrepreneurs

4.1   Introduction

The digitisation of the public sector has made significant progress in recent years. More and more services are now available digitally. However, the emphasis was mainly on digitising individual operations, with organisations often developing the same solutions and producing digital copies of existing processes. This resulted in significant cost savings for the government itself, but had limited added value for citizens and businesses. The quality of service did not improve significantly and failed to make a sufficient contribution to realising the outcomes expected by the population, such as the ease of one-time access to data, prompt responses to service issues and transparency of decision-making. Surveys show that residents currently rate digital public services with a mark fluctuating around 7, which is more or less in step with the ratings for digital services in comparable digitised countries. At the same time, there are many opportunities to make further progress. As public services are digitised further, this will require the government to take a radical step and, as its starting point, opt to tailor services to the needs of citizens, companies and other civil society organisations instead of its own processes and rules.

4.2   Responding to Needs and Preferences

Citizens make use of the services that public organisations offer at different times in their lives. These services can range from administrative operations, such as renewing a passport or driver's license, to services essential for quality of life, such as first aid in a hospital. Some of these services are one-time (for example, vaccinations), others periodic (such as tax returns) or even more or less constant (for example, disabled facilities). The government offers thousands of services which differ greatly from one another. Furthermore, complex processes often lie behind services provided to citizens and businesses: where a service starts and ends is therefore not easy to determine. All services that citizens receive in fact consist of many different parts (information, a decision in this regard, which, in turn, generates new information, and sometimes even a physical product) and many different private organisations will often be involved in their creation.

Private companies - internet companies especially - have simplified and improved many aspects of daily life, from online banking to *real-time* travel information and from *on demand* films and music to free international video conferencing. Citizens and businesses have become accustomed to applications that are well integrated, user-friendly and easy to find because they are offered in one place or on one device. The services of public organisations continue to lag further and further behind (European Commission 2016). In their haste to implement new digital applications, public organisations often fail to include the preferences, knowledge, limitations and goals of users in their considerations. In developing new ways of providing services, organisations must look beyond their own operational interests to ensure that they also create a satisfactory experience for citizens and, for example, reduce the burden on businesses. If this does not happen, it is likely that new applications will remain underused or that citizens and companies will ignore them. This scenario would undermine the cost savings and performance improvements that the project is intending to achieve.

Digitisation allows public organisations to differentiate between the different user groups they serve. Some needs of citizens and businesses are simple and can be standardised, while other needs are specific or complex, and require personal contact and customisation. An important distinction is the extent to which citizens' requests can be articulated and/or aggregated (Noordegraaf and Grit 2004). An aggregated, easy-to-articulate question lends itself better to digital processes than more specific requests for assistance from people who themselves are unable to determine exactly what they need. In that case, the more obvious approach is to use digitisation to enable professionals to perform their work better and maintain personal contact. In recent years, it has been regularly argued that the lion's share of services can ultimately be made 100% digital. This may well be technically true, but the aim is not actually achieved in all manner of instances. This is, for example, particularly important with an issue like debt assistance, in which personal contact is needed to come up with a solution.

The government can also make it easier for citizens and businesses by looking at what people need at a particular time and then offering the services in a simple way without the need for numerous steps.

Improving the Driving Licence Application Process
Citizens may soon be able upload a recognised passport photo and a signature themselves in the RDW (National Vehicle Authority) portal which has developed software to compare this data with its own files. When this data matches, the driver's licence is created and provided through the municipality. The intention is that in future citizens will be able to re-apply to the RDW directly for a driver's licence without having to go to the municipal desk. In case of doubt about the accuracy of the data, the citizen will have to report to the municipal desk during the applicationi process.

Many major life events, such as birth, divorce, death, but also starting a business, require multiple administrative procedures with multiple agencies. The services for some of these life events (so-called 'customer journeys': turning 18, becoming unemployed, divorce and death) is currently being developed in cooperation with the government agencies involved.

Digital Moving Service
This service consists of a form that allows citizens to register a move online. The data of the applicant and the family members moving is pre-filled on this form and uses the Basisregistraties Adressen en Gebouwen (BAG) (Addresses and Buildings Database) to establish the new address. The form is available on MijnOverheid and uses DigiD and the berichtenbox for citizens.

Simplified Mortgage Application
A number of mortgage lenders have teamed-up to simplify the mortgage application and digitise the process from start to finish. The first step is to replace the employer's statement. Instead, the customer can use the personal wage and work information (the insurance report) made available by the Employee Insurance Agency (UVW). The customer can download this information, stamped, and forward it to the mortgage provider. The citizen therefore carries out this process which reduces administrative work. Since the start of the pilot in August 2016, a specific group of consumers, with a limited number of lenders, has been able to use the verzekeringsbericht (insurance report) to apply for a mortgage. If successful, this service will be offered more widely.

In situations in which private providers also play a role and there is no public chain, for example in healthcare or education, the government can introduce standards that facilitate exchange of information, thus improving the stakeholders' collaboration. Finally, responding to the needs and preferences of residents and entrepreneurs also means that the government obtains maximum benefit from the digital systems they use. At present, it is mainly companies that use such systems, including processing (legally required) records. As citizens begin to increasingly conduct all their business digitally, they can also allow public organisations to read the data in their systems. This is sometimes known as 'managing your own personal data' or 'personal data management'; a potentially powerful way to contradict the image that everything is connected to everything without the people involved even knowing.

4.3   Data Usage: Two Conditions

In the today's information society, public services can also increasingly be characterised as 'information services'. The quality and accessibility of digital information is essential for providing a high-quality service (OECD 2014). The enormous amount of accessible data, and high-growth analytic possibilities also raises the question of how data usage can be used for public interest purposes while protecting the privacy of citizens. The principal questions about, among other things, purpose limitation and proportionality, will need to be answered if the government wishes to maintain the confidence of citizens and companies.

4.3.1   Quality, Accessibility and Transparency

Some of our neighbouring countries have developed a high-quality and accessible data infrastructure in recent years to which all public organisations and, under certain conditions, sometimes also private organisations have access. Belgium has what is known as the MAGDA platform, which securely retrieves data from various Flemish and federal databases. MAGDA does not provide all data but can, if requested, provide an application for development which makes new services possible. The Flemish government claims that MAGDA has great benefits in terms of efficiency, correctness and satisfaction.[9] Denmark is currently embarking on a system of eight high-quality databases (Grunddataprogrammet) with the aim of making freely available, cleaned and reliable data available to public organisations, significantly improving service to citizens and businesses and by partly opening it up, stimulating social innovation and growth (see OECD 2014).[10] Estonia is using what is known as the 'X-Road', a structure connecting different public databases, allowing public and private organisations to use the same data to offer better and more integrated digital services. In many cases, citizens can see exactly who is viewing and using data and which data that is. These three approaches differ in terms of use, size and technical architecture, but share the premise that a common and coherent

data infrastructure for the entire public sector is a necessary step to improve the quality of public services and to stimulate growth and innovation.

In the Netherlands, the conditions of high quality, good accessibility and transparent data usage are currently not being met, although this issue is frequently raised. In 2014, a plan was developed for smart data exchange within and between the various domains and government records, the so-called roundabout model. In the context of the Government-wide programme Gegevenslandschap (Data Landscape Programme), this plan for central databases has now been abandoned in favour of agreements on standards, accessibility, quality and data transparency (source: Jaarrapportage Bedrijfsvoering Rijk 2015). This programme, which rightly has a much broader scope and, apart from the databases, also focuses on other government data, is still in its infancy, though.

Also, more and better readily accessible facilities are needed for residents and entrepreneurs whose data has been wrongly recorded for whatever reason. This goes beyond just records in the databases. The highly interconnected nature of the information flows within the government makes it difficult for citizens and businesses to control and correct data, in that they cannot correct errors or have them corrected. Moreover, a clear point of contact within the goverment and sufficient overriding authority to correct this incorrect data is lacking: the information in the government's networks concerning responsibility is often 'orphaned'. The network of organisations which take up the causes of citizens who have problems with the digital government does not cover this task, nor is it designed to deal with it (Zwenne and Schmidt 2016; WRR 2011).

4.3.2   Responsible Data Usage

By networking, compiling and enriching data, public organisations can generate new information and put together profiles of people. This enables them to refine policies, to customise them, to obtain a comprehensive picture of citizens, businesses and policy issues, and to act proactively where necessary.

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[9]   https://overheid.vlaanderen.be/magda
[10]   https://uk.fm.dk/publications/2012/good-basic-data-for-everyone/

In order to address complex problems in areas such as youth care, social support, participation in the labour force and care for chronically ill and disabled people, municipalities, implementing organisations and supervisory bodies must be able to carry out different tasks in the social domain in conjunction with each other. Where necessary, this will require personal information to be used and/or shared. The problem is that data sharing across domains for integral task execution is insufficiently regulated (Autoriteit Persoonsgegevens 2016). The same problem arises for fraud prevention in the security domain. Another obstacle is that the sections on data sharing in the relevant decentralisation laws (Wmo (Social Support Act) 2015, the Participatiewet (Participation Act) the Jeugdwet (Youth Act)) and other legislation in the areas of social and care provision are worded differently. This leads to a different interpretation of data processing options for each domain. If the government wants to use the available information in a responsible manner for public purposes in the long term, it will need to develop new frameworks that legitimise the overlapping processing of personal data in different domains and provide more clarity in this regard.

New processes of information processing and use can also greatly affect the character and reliability of the information that the government deals with.

In 2011, the Wetenschappelijke Raad voor het Regeringsbeleid (Scientific Council for Government Policy) recommended that these types of processes should receive government-wide and proactive attention and that a much greater degree of openness and transparency should be observed with the aim of giving citizens and companies insight into the information that is collected about them and enabling them to correct this information where necessary. The use of data within the government is regulated by European provisions on data protection, privacy and anti-discrimination. These provisions determine what can and can't be done with data. In practice, an additional transition is usually needed to determine the applicability of principles such as purpose limitation and proportionality, to assess risks and to evaluate the weighing of different interests and rights. Because this transition is currently lacking, public organisations are unclear and uncertain about the limits, and innovations are not made (Leenes et al., 2017).

In recent years it has become clear that the use of large amounts of data and advanced analysis techniques is not risk-free. For example, when several relatively innocent or anonymised data are combined, new sensitive information may arise (Ohm 2010).

A now famous experiment called *Unique in the Crowd* showed that four random time and location points are sufficient to identify 95% of individuals in a database of half a million mobile data records (De Montjoye et al. 2013).

Also, the data used may be incomplete or may emphasise incorrect things, and static relationships may be assumed that might not actually exist (Expert Group Big Data and Privacy 2016). The majority of analysis models are far from perfect: they encode human prejudices, misconceptions and bias in the software systems (O'Neil 2016; Munnichs et al., 2010). When government takes decisions based on the results of such analyses, this obviously has significant consequences for citizens and busi-nesses. It is therefore not surprising that more than 60% of Dutch citizens are concerned about what the government does with their personal data once they have it (Eurobarometer 2015). Because an increasing percentage of government processes can be performed by computers, the government's use of data also raises questions about human autonomy and dignity (Kool et al., 2017).

There are several ways to channel these risks, which have also been explored internationally. Two concrete examples at national level are the data ethics guidelines of the British Cabinet Office, and the French *Loi Numerique* which aim to regulate the use of data in the information society, covering both the public and private sectors.[11] The British model recognises the broader social implications of data usage, but the guidelines it contains are not enforceable. The French model contains enforceable measures, and stimulates data usage by incorporating *checks and balances* at the same time. However, with this model, it is unclear what a responsible relationship with data is. This will have to be proved over time, through case-law, among other things. The Dutch government will also need to develop a way of handling personal data more responsibly. Different approaches can be pursued here and a choice needs to be made between them (Leenes et al., 2017). For example, should you choose rules, codes, or guidelines?

And at what level and along which lines should supervision be organised? The existing supervisors are insufficiently equipped for this task in terms of knowledge but also capacity (WRR 2016; Big Data Expert Group and Privacy 2016). But new practices and institutions are not, by definition, generally applicable either. For example, smaller municipalities cannot set up their own data usage committee, as Amsterdam has recently done. In any case, the government will have to make progress in this area. Otherwise, in the long run, the tide will turn because citizens and businesses will lose confidence in government's ability to use data in a clear, transparent and democratically legitimate manner. That government should not take that risk.

4.4   Combatting Digital Exclusion

Digital capabilities are objectively more accessible than those that are bound to physical locations and the opening hours of government offices or telephone helpdesks. At the same time, the importance of human contact should not be overlooked. Citizens and companies, whatever their digital skills may be, have a regular need for this (Dutch Chamber of Commerce 2016; Van der Geest 2014). In addition to the digital aspect, the government will have to continue to pay close attention to the maintenance of human contact via telephone, the counter or the kitchen table. Indeed, it is precisely by digitising the more large-scale and uniform processes that it will be possible to pay more attention to small-scale and unique ones.

4.4.1   Human Contact
Private organisations can choose whom they offer their services to. For public organisations, exactly the opposite is true. Their services must be available and accessible to all citizens without exception. It is not possible for citizens to get these services elsewhere - the government is a monopoly. This problem is particularly important for citizens who are insufficiently self-reli-ant and have trouble communicating with the government digitally. The Netherlands has about two and a half million people who have trouble with language and computing (Netherlands Court of Audit 2016). They are, for example, unable to fill in or read a form and sometimes struggle to pay with a debit card. It is

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[11]   For an overview of these guidelines see Leenes et al. (2017).

the skills of these people in particular which are most tested in dealings with the government (National Ombudsman 2012).

Number of People in the Netherlands Lacking Functional Literacy and Numeracy Skills (baseline year 2012)

Number of people who have difficulty with:

Age:	Language	Language and Arithmetic	Arithmetic	Total
16-65	272.971	1.060.379	446.498	1.779.848
		1.333.350		
65+	150.548	443.052	143.685	737.286
		443.052		
		593.600		2.517.134*

* Due to rounding of the figures, the total of the bottom row deviates from the total in the right column.
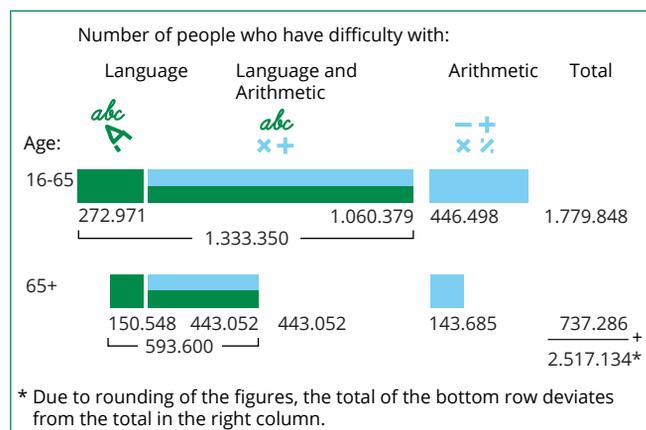
Source: Dutch Court of Audit (2016).

Personal and/or physical contact is also often essential for tackling the more complex issues that municipalities and implementing organisations need to deal with. The complexity of these issues is that they require the engagement of many different public organisations or the provision of additional assistance to citizens and companies, because they are not self-reliant.[12] This type of problem cannot be solved using an (automated) decision tree. Different skills and complex problems, however, need not hinder further digitisation of public services, for example, the idea that no one should be left behind. With digitisation, public organisations often release capacity, especially at the desk, which can benefit the citizens and companies that need it most. In other words: through digitisation, services can potentially *improve across the board and for everyone.*

4.4.2 Combatting Exclusion Digitally

Finally, a more balanced view of digitisation and exclusion is desirable. Digitisation can be a means of combatting exclusion as well as causing it. Digitisation of public services requires adequate support for citizens who, for whatever reason, have difficulty communicating digitally or do not want to (National Ombudsman 2016). For that reason, analogue services remain always an option, but that does not automatically mean that we have to maintain the existing resources (tax revenue!) at all costs. Other digital tools are also possible, such as chat facilities or co-browsing, which can help some people in the currently excluded group to participate in the digital government. At present, for example, we lack a well-functioning system of representation (National Ombudsman 2016). Professional assistance providers, relatives and friends who help citizens communicate digitally with the government cannot yet make use of adequate authorisation facilities. They need their own DigiD for that. This gap in the safety net for citizens must be addressed urgently.

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[12] For details of this difference, see also: Information Society, Public Services and I-Government. Background proposals MFG/SGO Implementation Be Prepared!

5

Approach to Digitisation

5.1   Introduction

Until now, public organisations often worked on digital solutions themselves, with the result being that their systems and applications were not sufficiently interconnected. In technical terms: interoperability was not widespread. When public organisations make more use of open standards, this increases the viability of public services and stimulates innovation. In addition, we should learn from the private sector's discovery that projects deliver better results at lower cost when they start small and are iterative in nature. In this way too, the vulnerable, in some parts insecure, public organisation legacy systems, with constantly increasing maintenance costs, can be replaced. These tasks, however, require a fundamentally different attitude towards the digitisation of the government, conveyed by a digitally-skilled body of public servants which knows, from the shop floor and middle management right up to the boardroom, how vitally important ICT is to the government and is also able to handle it itself.

5.2   Working Together

The digital government includes a complex network of digital facilities, with many parties dependent on each other. Particular interests are regularly guiding the choices made by organisations and tiers of government. The separation between tiers of government, dividing lines between ministries and the distance between policy and implementation stand in the way of a collective approach. Not only when it comes to the development, implementation and use of digital basic services, but also for specific applications of the services for residents and entrepreneurs. In order to advance and to improve the quality of services, more standardised solutions, which in principle need to be used across the entire government, will have to be used. This, in the long run, offers the potential of better quality for a lower cost per product, which is attractive in terms of the expected growth of ICT spending.

5.2.1   Common (open) Standards

Ministries, implementing organisations and municipalities will have to make a clearer distinction on all fronts between needs that are unique and specialised, and which they can cover themselves, and the more general needs for which there is a sufficiently developed market offer to use as an infrastructural service (Brown et al., 2014; Fishenden and Thompson 2013). When (clusters of) public organisations generally make large-scale use of the same (open) standards and offer their services in the same ways, they create a huge demand for shared facilities and make it cheaper and easier for their customers, but also for themselves (Brown et al., 2014; O'Reilly 2010; OECD 2016a). After all, with open standards, it doesn't matter where the technology comes from. Public organisations need to continue to use the technology only provided that it meets the standardised outcomes and overarching requirements, including in the area of security. By bundling their demand for common building blocks, public organisations create a market for standard functionalities in which large but also smaller providers are willing to innovate and compete. The government can in this way, for example, improve the market for use rights of personal data which is still ineffective because it is difficult to establish separate privacy agreements tailored to the person and situation and to check whether companies are complying with the agreements (Bijlsma et Al. 2014).

The government has already been using the market for standardised goods for a much longer period. For example, no government agency generates its own electricity, builds its own offices, develops its own computers or writes its own teaching materials. In that sense there is nothing new here. The government applies the 'Comply or Explain' principle to open digital standards.[13] This principle should be highlighted much more emphatically and merits a wider application. For any digital facility requiring replacement, public organisations should first explore whether standardised building blocks are available on the market before choosing custom-made solutions and, therefore, their 'own solution'. The additional advantage of this approach is that it increases supplier independence.

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[13]   https://www.forumstandaardisatie.nl/lijst-open-standaarden/in_lijst/verplicht-pas-toe-leg-uit.

The government as a platform

The term 'government as a platform' is one of major interest these days but is used somewhat ambiguously. The term was popularised in 2010 by Tim O'Reilly. According to O'Reilly, the government can learn a lot from the success of platforms like the PC, the internet and the appstore because they stimulated enormous innovation. Important assumptions include, inter alia:

- Embrace open standards.
- Start small and simply.
- Design for participation.
- Learn from users (including hackers!)
- Reduce barriers for experimentation.
- Cherish developers.

Large service providers, such as banks and supermarkets, are now using a platform approach, as well as the Government Digital Service (GDS), responsible for the digitisation of the British government. Some big cities use the term to explain their digital strategy.[14]

5.2.2   Local Cooperation

Municipalities are already working hard to take the step towards more cooperation and to come up with common requirements for providers. Cooperation between municipalities improves the quality and accessibility of services, enabling process optimisation and far-reaching digitisation, which, in turn, allows citizens and businesses to use municipal services at any time and from anywhere.

This also eliminates unnecessary procedures for citizens and businesses and chains in the process that do not add value. The previous chapter already mentioned the example of registering a change of residence digitally. Collaboration is not only beneficial for municipalities but also for partners in the chain because they no longer have to deal separately with each municipality if they optimise their work processes and digital data exchange.

The collective digitisation of the policy-neutral processes of municipalities is consistent with the previous standardisation and outsourcing of, among other things, staff administration and payroll records and office automation. New steps include the collective procurement of mobile telephony and the establishment of the common municipal data node to facilitate data exchange in the social domain. The latter was necessary because of the decentralisation in the social domain and greatly facilitated the introduction of new legislation. Further possibilities include, inter alia, the area of general services, data management, privacy and cloud services (VNG 2016). The pooling of facilities allows municipalities to share costs, develop collective expertise, and - in case of data usage - conduct wider and in-depth analyses with national data and resources.

New legislation also requires the creation of more public amenities, such as the Omgevingswet (Environment Law), which requires that citizens and businesses are able to check, at a glance, what the relevant laws and regulations are for their plans. This fundamental principle requires entirely new forms of information exchange. The extent to which the goals of the Environment Law are realised depends, to a large extent, on the development of the corresponding Digitaal Stelsel Omgevingswet (Digital Systems Environment Act) that must be used by all governments. For this purpose, an administrative agreement was concluded between all the parties involved in the summer of 2015.[15]

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[14] Bronnen: O'Reilly 2010; Brown et al. 2014: 116-119; Benton en Simon 2016: 13; Bollier 2016.

[15] https://www.rijksoverheid.nl/documenten/rapporten/2015/07/09/bestuursakkoord-implementatieomgevingswet

Digitale Agenda 2020
With the Digitale Agenda 2020 municipalities seek to make three ambitions a reality:
- open and transparent participation in the participation society;
- act as one efficient government;
- work digitally on a large scale, and deliver local customisation.

In addition, the aim is to organise matters at a collective level. An important part is strengthening municipal commissioning and market transparency. Municipalities want sharper, more business-like and, where possible, more collective focus on the agreements with the 180 ICT suppliers on which they are dependent for the design and execution of their information services. They are also working towards streamlining the accountability obligations in information security so as to be able to ensure the privacy of residents efficiently and effectively. A joint Information Security Service, which supports all Dutch municipalities in the area of information security, has recently been set up.

subsequently to save £200 million annually. Indeed, in the short term, the cost of digitisation is significantly higher than the benefits. An earlier survey by the National Audit Office concluded that the UK government spent £316 million less on ICT between 2010 and 2011, of which 46% were long-term savings. [16] Interestingly, an important contribution to this is provided by the so-called *Shared ICT infrastructure programme* which aims to reduce ICT overlap by ensuring that departments adopt common technical standards where possible and share ICT applications.

Digital Registration of Death
This online form allows funeral care providers to register a death digitally. The form is available on the business' file and uses eHerkenning (eRecognition) 2+ and Berichtenbox for businesses. The service is made available free of charge to municipalities which then need authorise funeral carers once only to use the electronic registration service. The form provides funeral companies with a saving of 1.5 to 5 hours per registration. If all 388 municipalities start using the form, the funeral companies will make a saving of €15 million a year.

5.2.3 Social Costs and Benefits of Digitisation

Digitisation is still often seen within the government as a means of cost reduction. This view of ICT spending is not entirely incorrect, but ignores the broader public value that digitisation of primary processes can provide, especially in the longer term.

A number of international (mainly British) studies have calculated the returns of successful digitisation programmes when these are replicated for large parts of the government. Benton and Simon (2016) suggest that British local authorities can save between 2% and 13% of their total budget by 2025 if they copy internationally successful digitisation programmes. Andrews et al. (2016: 8) analysed the digitisation projects of five major British government organisations, claiming that if other major government organisations were to carry out these projects, they could save between £1.3 billion and £2 billion by 2020. However, these savings often require substantial investment. For example, the British Tax Authority first had to invest £700 million in order

In the Netherlands, over the past few years, dozens of social cost benefit analyses (SCBAs) have been carried out on government digital facilities (for example, database geo-information) and digital government services (for example, berichtenbox for companies, introduction of the national OV (public transport) chip card). This shows that avoided investments provide the greatest benefits: for example by creating a central ICT facility instead of decentralised services (SEO 2017). The investment costs are often lower, as are the costs of management and maintenance. This is also clearly true in situations in which multiple organisations can make use of the same facilities, otherwise these savings will not be made, or will be much less significant. In addition, ICT projects often save the government money in staff costs.

The savings that digitisation can offer, therefore, vary greatly depending on the chosen approach. It matters whether individual

[16] https://www.nao.org.uk/wp-content/uploads/2013/03/ICT-savings-Full-report.pdf

processes, integral organisations or even public functions are digitised (Andrews et al., 2016; OECD 2005: 110-111). The example of digital declaration of death shows that savings created by digitisation projects can also be realised elsewhere, for example in business. The digitisation of the government is not only about cost savings, it is also about the broader public value that digitisation can bring about. Examples are high quality services (availability, satisfaction, appropriateness), achieving objectives for the entire population (economic growth, safety and privacy or improvements in living conditions) and confidence in public institutions (Kearns 2004). In other words, in the long term, digitisation also offers the prospect of better quality for a lower cost per product. By focusing on a coherent infrastructure and services, rather than on separate facilities, ICT spending will remain the same but the quality will be better and total cost of services and products per unit will be lower.

It is very important that the government invests in making a realistic estimate of the pros and cons of digitisation. Digitisation projects also require business support in the form of a business case, which must illustrate the results and the associated costs and benefits over the entire cycle of a project (see Temporary ICT Committee 2014). This is especially important in scaling up successful innovation, because there are major uncertainties that can affect both the scope of future services or the development of technology, which can rapidly render current applications obsolete.

The business case is different if replacement investments are required at the same time. However, the methodological quality of the broader SCBAs currently leaves much to be desired (SEO 2017). There is a balanced mandatory guideline for the physical infrastructure. Furthermore, a general SCBA guideline established by the government which concerns all policy areas has been available since 2013. A focused methodology in the field of digital government is currently lacking. The Ministry of the Interior and Kingdom Relations therefore recently gave the CPB (Centraal Planbureau) (Dutch Bureau for Economic Policy Analysis) the task of exploring which elements could be used to create a possible method, with the specification of values such as information security, reliability, ease of use and privacy remaining an important focal point.

5.3   Small Steps, Fast Results

Apart from more collaboration and the use of open standards, there is also a need for a different approach to digital projects, both to realise innovation and to enable the future-proof replacement of legacy systems.

5.3.1   Perpetual Beta

The government is constantly confronted with uncertainty about the direction and impact of technological developments, such as big data, blockchain, personalised services and artificial intelligence in decision-making systems. The government must be able to gain systematic experience with these new possibilities, both to investigate their usefulness and to determine their positive and negative effects on society (Bijlsma et al., 2016). The experience gained on a small scale with experiments may serve to make adjustments on a larger scale, in laws and regulations (the what) or in the broader apparatus of government (the how). A subsequent government could therefore strengthen the government's learning ability more emphatically (Studiegroep Openbaar Bestuur 2016). This could be achieved, for example, with what are known as *regulatory sandboxes*, where the supervisor, in consultation with governments and companies, creates scope for investigating new technological applications (Big Data Expert Group and Privacy 2016: 23).

Digital applications are never really finished, they are in a 'perpetual' phase. In the world of software, companies often put early beta versions on the market, and then analyse in *realtime* how the use thereof works out. They then offer successful innovations across a broad spectrum. Another, more open option, is to work with multiple variants, to discover what these variants do and in what direction it is wise to develop further solutions (Van der Steen 2016).

Agile

In 2001, 17 software developers introduced the now famous *Agile Manifesto for Software Development*, which included four values that, according to them, contribute to better ways of developing software:
- *individuals and interactions* over processes and tools;
  working software over comprehensive documentation ;
- *customer collaboration* over contract negotiations;
- *responding to change* over following a plan.

Independently of one another, the 17 authors created their own methods of software development in the eighties and nineties, (e.g. SCRUM, Crystal and Extreme Programming), with the common denominator being that they wanted to reduce bureaucracy. The Agile Manifesto actually gives a brief general definition of all these 'agile' methods.

Perpetual beta requires both a different approach to risks as well as management and organisation. Government information technology projects are highly risky because they regularly fail and, especially with large projects, many tens of millions of Euros go up in smoke (Flyvberg and Budzer 2011). No one wants to be burned by a failed IT project. An important explanation for the difficult relationship with ICT projects is the lack of knowledge and expertise in the government, as well as the way in which the process is organised (Tijdelijke Commissie ICT 2014). That process begins with instruction and analysis, after which an operational schedule is drawn up. Each of these steps often take months. Then the phase of development and implementation begins, after which a management authority takes over.

Using a more flexible, agile approach does not prevent projects from failing. By taking small steps, however, it is possible to mitigate risks, which reduces the impact of failures and keeps costs down. Regular feedback also brings problems to light sooner. Many of the current ICT projects focus heavily on the realisation of the technical system. The embedding of that system is neglected or does not receive attention until late in the process. This imbalance between hard and soft factors, and the barriers between policy development and implementation, have a negative impact on controlling and managing the direction of digital change. With a more iterative approach, the initial requirements are not set in stone, but instead develop as more is discovered about the needs and preferences of users and as understanding grows of the context of the service. Due to the rapid delivery of prototypes and intermediate results, this information is available early on and not until much later in the process when the cost of adjustment is high.

This *agile* approach calls for strong administrative shoulders to ensure that progress is made. On the one hand, a multitude of small steps need to be taken, which requires discipline and strict rules. On the other, going with the flow, giving others a free rein and even doing nothing requires a strong political ambition and will (Van der Steen et al., 2015). The motto is therefore not less but different and more effective control, aimed at achieving results instead of eliminating uncertainties in advance. A crucial condition is that the government itself is directly involved in the development of new applications and has its own development capacity. If the development of new applications is outsourced to external providers, it is often difficult, if not impossible, for policy makers to test digital applications or to make interim changes.

5.3.2 Reducing Legacy

The ability of public organisations to innovate is highly dependent on the extent to which they have legacy systems. Legacy systems are systems built with technology that is either no longer, or only minimally, supported by external suppliers and/or within the organisation. Particularly with complex customisation programs, public organisations are often bound hand and foot to specific ICT providers who have a vested interested in maintaining the existing systems. Many public organisations (like banks, insurers and telecom companies) make use of these hard-to-use legacy systems for their services. Many of these systems are still in use far beyond their life expectancy, and are vulnerable, unsafe and involve maintenance costs that increase every year.

For example, some systems have been built or made up of customised packages, which make their stability difficult to guarantee and hamper the viability of the service. That said, by no means all older systems are vulnerable: some technology is extremely stable and can last for many more years. Particularly in post-merger organisations, there is often a need to invest heavily in the restructuring and rationalisation of applications, simplifying the infrastructure and making the systems generally more stable. Only after that is there an opportunity to renew and replace the existing ICT.

If public organisations want to focus all their attention on maintaining old systems, they will not be able to modernise their services. The same is true when they need to make policy changes that require major adjustments in their ICT systems. At the same time, it is an illusion that legacy systems can be replaced quickly and entirely. Instead, it would be better to invest in small parallel building blocks, which allow processes to go through other channels. The fundamental principle must be to create a more flexible architecture that brings unity to the service and implementation which makes public organisations less dependent on individual ICT suppliers.

There will be more attention paid to the cost of ICT systems across the board. During the development phase, more expensive solutions are often set aside as they do not fit into the programme's budget. In the long run, however, a larger investment may provide financial benefits, due to lower operating costs and maintenance costs during the use phase. In addition, there is a real chance that the system will remain useful or better support future developments. Moreover, the digital government is an ongoing project, therefore, attention is required over the entire life cycle of the facilities. After all, all of these facilities will, at some point in time need replacement, which will require new investments. This can be anticipated early by clarifying who determines the replacement policy, how long the replacement process will take, how to handle interim policy changes, and how the funding is arranged.

5.4 Digital Knowledge and Expertise as a Government Core Competence

Without knowledge and the means to understand and implement every aspect of digitisation, the government will be unable to use digital solutions efficiently, effectively and at a reasonable price for the performance of public tasks. Digitisation of the public sector is done by people. The quality of directors, representatives and civil servants is therefore crucial for the ability of public administration to implement the possibilities that digitisation offers (Studiegroep Openbaar Bestuur 2016). But shifting up a gear is not enough. Digitisation requires a fundamentally different view and and management of government competences. Digital knowledge and expertise must become part of the government's core competences as a matter of urgency, from the shop floor right to the top; digital government is a matter of *board room decisions*.

5.4.1 The Need for In-Depth Knowledge of Digitisation within the Government

At the moment, public organisations often own many of the digital resources they use and often have their own management organisations. They have outsourced the necessary technological expertise to a number of major suppliers, with which they have entered into long-term contracts. This situation often results in delayed digitisation projects, different prices and rates for the same services and products, high customisation costs, unnecessary customisation and therefore little reuse of digital components. There are still applications that are designed without keeping the user sufficiently in mind. Even when providers come up with good solutions, each system is often developed and managed separately, typically using patented and closely-linked technologies. This situation is disastrous for the digital transformation of the government.

Within the central government, major implementing organisations and municipalities, the number of people with digital knowledge is growing, although a very large proportion of them are hired externally. Real change is only possible when it becomes clear to the government that a different attitude towards digital technology is needed. Technology should no longer be seen as a

'tool' but as a starting point for government thinking, organising and working (*digital by design*). Only then can the government take the lead in the development and management of its own digital solutions. In short, the government needs to recruit people who have knowledge of the (global) digital technology market, be able to formulate the task, and clearly define the package of requirements, as well as the legal context and preconditions, and, in a wider context, be able to think through and guide the development of applications expertly and, in extreme cases, even implement them themselves (see WRR 2011: 233). Outsourcing leaves a gap remains between policy and execution, even though sound knowledge of technology remains crucial for good policy design. After all, the development of standards, applications and connections essentially revolves around political and policy choices. Open or closed systems, privacy and security: such choices are too important to be left to external parties. They determine how the government develops. Therefore, it is not enough to strengthen implementation alone, because it leads to over-investment in technical knowledge. On the other hand, the government must invest in knowledge at the cutting edge of technology, policy and implementation.

5.4.2 New Digital Talent
The lack of employees in ICT and information services slows down the pace of digitisation considerably, both inside and outside the government. The number of ICT workers in the Netherlands is rising, but there are also many more vacancies (CBS 2016: 42-47). This shortfall is not only due to rapid technological developments but also to an insufficient connection between education and the labour market, low intake in ICT training and a mismatch between demand and supply of ICT professionals (ECP 2015: 33). In this small and dynamic labour market, the government must also compete with the business community when recruiting the necessary ICT knowledge. In the recruitment of managerial ICT talent, the government is also bound by, inter alia, the law concerning top incomes and hiring rates.

A first step towards securing greater in-house digital knowledge and skills in the future is to start recruiting and training early. This new National ICT Trainee Programme, for example, provides ICT graduates with a two-year trainee programme aimed at preparing them for a career in the government and allows them to develop to handle critical ICT functions over time. This is very important and, in the short term, this approach provides some relief. At the same time, the recruitment of digital talent across the government will have to be made strong, with more attention being paid to more development capacity within government and digital leadership. The knowledge of ICT within the government focuses on implementation, especially in implementing organisations such as Logius, ICTU, KING and DICTU. However, within these organisations, too, there is insufficient knowledge and expertise to develop digital solutions in-house and to manage them from start to finish. In addition, recruiting talent is one thing, keeping it is quite another. An attractive working environment is crucial in order to be able to keep digital talent working for the government in the long term.

In order to reduce the current shortfall in digital leadership, the government will have to consider modifying the recruitment process and the criteria that govern management positions. Andrews et al. (2016) mention a separate, multi-annual process in the British civil service aimed at preparing external professionals ready for management positions in a relatively short period of time. This circumvents the requirement that management positions are only available to people with years of experience in the civil service. This approach is different because it is based on the premise that knowledge of the digital transition within the organisation is just as important as technical competencies. Besides the knowledge of technology, digital leadership requires a broad and profound knowledge of the government itself. This process is promising and requires the necessary flexibility within the current government's wage structure to give ICT staff more development potential (Tijdelijke commissie ICT 2014: 16).

5.4.3 Making Every Civil Servant Digital
Finally, the crucial role that digitisation has in the implementation of public tasks means that the lifelong learning of civil servants must be used to its fullest potential. Within the Dutch government, with the exception of operational executive functions, education and training is primarily a reactive tool (Uijlenbroek 2015), whereas both are needed to handle change. Because digitisation has become an essential part of the primary

processes of government, every civil servant should at least have elementary knowledge of it. More specific knowledge may be required depending on the person's role. Almost every part of the government policy and structure involves ICT. The minimum standard of ICT knowledge required to carry out any one category of functions needs to be identified.

Based on this inventory of function categories and digital knowledge, there must be a structural digital training programme for all government employees, with a tailored approach being the fundamental principle. This can be done in an analogous manner to that of the Wetgevingsacademie, Rijksacademie voor Financiën, Economie en Bedrijfsvoering (Legislative Academy, the National Academy of Finance, Economics and Management), with the idea that these programmes must also be accessible to employees. *The Digital Academy*, created by the British Department of Work and Pensions (85,000 civil servants) is an example of this, where civil servants are given a six-week training programme to gain understanding of the more complex aspects of digital technology and services (Eggers 2016: 54-59). In addition to technical knowledge, these civil servants also gain experience of innovative working methods in one of the *digital transformation hubs*, which, in the case of the Netherlands, could be 'hosted' through a partnership of central government, co-operatives and small and large implementing organisations.

Finally, governments can significantly improve access to digital talent by participating in the wider digital ecosystem (Eggers 2016: 59-63). There will always be more talent outside the government than inside. Therefore, it is wise to invest in relation-ships with market players, and educational and knowledge institutions. A concrete starting point for this are the diverse projects and organisations that central government promotes such as StartupDelta, Smartindustry and SURF.[17] The knowledge and expertise that can be developed in these projects may also partly flow back to the government.

It's not only the government that needs to know more about digitisation. This is certainly true for citizens as well. Participating in the digital society requires knowledge and know-how that has to be taught and maintained from an early age. Otherwise, people can not benefit from the many social and economic opportunities that the information society offers. But, and perhaps even more importantly, it also makes citizens aware of and resilient to the new risks that arise. The OECD (2016d) identifies a number of necessary skills for citizens to be able to participate in, and take advantage of, the benefits and opportuni-ties of the twenty-first century information society, such as 'key knowledge', learning and critically evaluating online information, curiosity, collaboration and programming. In Estonia and Belgium, among others, a training programme is part of the government's e-Government strategy. A similar arrangement would not go amiss in the Netherlands.

5.5   To Conclude

As already stated, digitisation is never 'finished'. The digital society requires continuous attention, work, investment and reassessment. The vital infrastructure and the government's (digital) services are undergoing a thorough overhaul. A free and secure digital society that strengthens economic growth also requires our rights, duties and social values to be examined in the light of digitisation and technology. The social order is changing thanks to digitisation. In addition to an effective implementation programme for the improvement of the digital government (a digitisation agenda), there is a need for a multi-annual digital agenda that not only identifies the tasks of today but also identifies the themes of tomorrow and develops answers to the many urgent social questions raised by the information society. This includes data-driven operations, sensor data, the internet of things, ownership of algorithms and fundamental rights. The members of the Study Group will be happy to contribute to such an agenda.

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[17]   https://www.rijksoverheid.nl/onderwerpen/ict/inhoud/ict-en-economie/ontwikkelen-ict-in-projecten)

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Afterword,
Acknowledgements

The final report of this Study Group can inspire a new way for government to meet the - numerous - tasks and challenges within the information society. The social questions surrounding the information society remain. These are substantive themes that come up when we emphasise the importance of the individual in the (information) society. Interacting with data, cybersecurity, digital (fundamental) rights, services, the impact of technology on people, work, care, transport and well-being are some of these themes. First of all, the basic step must be achieved, the digital government.

This report provides an intergovernmental (policy) agenda in which we jointly guide, bring into focus, experiment, learn and make choices for the digital government. The policy agenda, and the multi-annual implementation programme itself, can be fleshed out specifically during the next government. In good old Dutch tradition, the current (outgoing) government has enabled us to draft this report independently and not bound by any instructions, which I greatly appreciate.

The findings of this Study Group show that we, with digital government and the information society, must transcend the technology, the engine room and the costs. Making this happen requires knowledge and a cultural shift.

This report also provides a mirror to my own Ministry of the Interior and Kingdom Relations. With the revamp of the Ministry over a year ago, the digital government has invested in one (new) Directorate General, the Directorate-General for Government Organisation. The Director-General, Simone Roos and I are aware of our task to make it a reality.

Fortunately, we have had the support of many others, starting with all the members of this Study Group. I thank the 'external' members of the Study Group, from business and science, implementing organisations and local and regional authorities, for having the courage to bind themselves to a forum such as a Study Group. Without their expertise and sharp, outside perspective the report could not have been written.

Our colleagues from the Ministries have endorsed the importance of the digital government and the information society in word and deed with their participation. Their support gives strength to the message that the digital government is a *board room decision*. Our Digicommissaris, Bas Eenhoorn, was an indispensable 'bridge' in the Study Group, both outside and within.

Of course it goes without saying that the activities of this Study Group and the drafting of the report could not have succeeded without the commitment and enthusiasm of the secretariat, with Erik Schrijvers as the scientific secretary (thanks to the WRR for their willingness to make him available) and also Anja Lelieveld, Ingrid Zondervan, Thomas Zandstra, Margo Hijmans and Berend Timmer, from Ministry of the Interior and Kingdom Relations alone. Enough talk, now let's make it happen!

Richard van Zwol
Chairperson of the Information Society and Government Study Group
Secretary General of the Ministry of the Interior and Kingdom Relations

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8

Appendices

Appendix 1 Information Society and Government Study Group

Chairperson

Richard van Zwol   Secretary General, Ministry of the Interior and Kingdom Relations

Members

Michiel Boots   Senior Adviser, Ministry of General Affairs
Maarten Camps   Secretary General, Ministry of Economic Affairs
Robert Carsouw   Partner McKinsey & Company
Wilma van Dijk   Director of Safety, Security & Environment, Schiphol Group
Bas Eenhoorn   the National Commissioner for Digital Government (Digicommissaris)
Valerie Frissen   Professor, Erasmus University of Rotterdam, Director of SIDN Fund
Erik Gerritsen   Secretary-General, Ministry of Health, Welfare and Sport
José Lazeroms   Board of Directors, Uitvoeringsinstituut Werknemersverzekeringen (Employee Insurance Agency)
Manon Leijten   Secretary General, Ministry of Finance
Loes Mulder   Secretary-General, Ministry of Social Affairs and Employment
Simone Roos   Director-General, Government Organisation, The Ministry of the Interior and Kingdom Relations
Daniel Ropers   General Director, Bol.com
Franc Weerwind   Mayor, Almere Municipality, Chairperson VNG Commission Services and Information Policy

Secretary

Steven Luitjens   Director of Information Society and Government, Ministry of the Interior and Kingdom Relations

Secretariat

Margo Hijmans
Anja Lelieveld
Erik Schrijvers
Berend Timmer
Thomas Zandstra
Ingrid Zondervan

Appendix 2 Public Service Remit

Ministerie van Binnenlandse Zaken en
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Kenmerk
2016-0000711684

Uw kenmerk

Datum   16 november 2016
Betreft   Taakopdracht Studiegroep Informatiesamenleving en Overheid

Hierbij informeer ik u dat het kabinet de Studiegroep Informatiesamenleving en
Overheid heeft verzocht om een advies op te stellen over (het verbeteren van)
het functioneren van de digitale overheid.

Opdracht aan de Studiegroep Informatiesamenleving en Overheid
De wereld digitaliseert razendsnel en de impact daarvan laat zich voelen over de
gehele breedte van de samenleving. Deze ontwikkeling raakt ook de overheid.
Digitalisering is door de overheid lange tijd beschouwd als onderdeel van de
bedrijfsvoering, gericht op efficiëntieverbetering van overheidsdiensten. Intussen
is digitalisering echter onontbeerlijk geworden in het primaire proces van de
overheid - veel overheidstaken kunnen niet of nauwelijks nog zonder digitale
middelen worden uitgevoerd. Bovendien is een ontwikkeling gaande waarbij
maatschappelijke partijen – waaronder burgers – een actieve rol spelen in de
ontwikkeling van nieuwe digitale diensten en dienstverleningsconcepten. Data
spelen in dit proces een cruciale rol, niet alleen data van de overheid maar ook
van private partijen en burgers. Deze ontwikkeling heeft de potentie om de
kwaliteit van het overheidshandelen enorm te vergroten, maar stelt ook eisen aan
die overheid (of aan dat overheidshandelen).

Gegeven deze stand van zaken, en in te schatten ontwikkelingen daaromtrent, is
het verzoek aan de Studiegroep Informatiesamenleving en Overheid om, ten
behoeve van de volgende kabinetsperiode zo evidence based mogelijk te
adviseren over (een verbetering van) het functioneren van de digitale overheid
voor wat betreft:
  1. de doorontwikkeling, de financiering en de governance van de generieke
      digitale voorzieningen,
  2. de doorontwikkeling en de benodigde kennis en kunde voor het leveren
      van digitale overheidsdiensten voor burgers en bedrijven.

De Studiegroep wordt verzocht om hierbij expliciet aandacht te besteden aan (a)
de vraag welke type normering respectievelijk wet- en regelgeving noodzakelijk
is, (b) verantwoord datagebruik en toezicht daarop en (c) de rol en positie van
medeoverheden.

Naast de gevolgen voor het functioneren van de overheid zelf, heeft digitalisering een veel bredere impact op de samenleving. In de informatiesamenleving veranderen rollen en posities van partijen, zowel in de publieke als de private sfeer. Parallel aan het onderhoud en de verbetering van bestaande digitale voorzieningen zal de overheid zich dan ook moeten herbezinnen op de rol die zij heeft te spelen in de informatiesamenleving. Tegen die achtergrond wordt de studiegroep uitgenodigd om elementen te benoemen die nadere uitwerking behoeven in een toekomstige beleidsagenda voor de informatiesamenleving. Daarbij kan bijvoorbeeld gedacht worden aan de vernetwerking van de samenleving, herijking van wet- en regelgeving, digitale ethiek en publiek-privaat gebruik van data en digitale middelen.

De studiegroep wordt verzocht zich hierbij eerst te richten op de generieke digitale infrastructuur en dienstverlening en daarna aandacht te besteden aan elementen voor een toekomstige beleidsagenda. Het advies van de studiegroep wordt in de eerste helft van 2017 verwacht.

Leden van de Studiegroep
In de Studiegroep Informatiesamenleving en Overheid nemen plaats:

Voorzitter
Richard van Zwol   Secretaris-generaal
                    Ministerie van Binnenlandse Zaken en Koninkrijksrelaties

Secretaris
Steven Luitjens   Directeur Informatiesamenleving en Overheid
                    Ministerie van Binnenlandse Zaken en Koninkrijksrelaties

Leden
Michiel Boots   Raadadviseur
                    Ministerie van Algemene Zaken
Maarten Camps   Secretaris-generaal
                    Ministerie van Economische Zaken
Robert Carsouw   Partner
                    McKinsey & Company
Wilma van Dijk   Directeur Safety, Security & Environment
                    Schiphol Group
Bas Eenhoorn   Digicommissaris
                    De Digicommissaris
Valerie Frissen   Directeur/ Hoogleraar
                    SIDN fonds/ Erasmus Universiteit Rotterdam
Erik Gerritsen   Secretaris-generaal
                    Ministerie van Volksgezondheid, Welzijn en Sport
José Lazeroms   Raad van Bestuur
                    Uitvoeringsinstituut Werknemersverzekeringen
Manon Leijten   Secretaris-generaal
                    Ministerie van Financiën
Loes Mulder   Secretaris-generaal
                    Ministerie van Sociale Zaken en Werkgelegenheid

Simone Roos	Directeur-generaal Overheidsorganisatie
	Ministerie van Binnenlandse Zaken en Koninkrijksrelaties
Daniel Ropers	Algemeen Directeur
	Bol.com
Franc Weerwind	Burgemeester
	Gemeente Almere

De Studiegroep zal in de eerste helft van 2017 zijn rapport aan de ministerraad aanbieden. De ministerraad zal het rapport vervolgens aan beide Kamers der Staten-Generaal aanbieden.

De minister van Binnenlandse Zaken en Koninkrijksrelaties,

dr. R.H.A. Plasterk

Appendix 3 People Consulted

Jan Baan	Egovernance Foundation
Frans Backhuijs	Nieuwegein Council
Ger Baron	Amsterdam Council
Chris Batist	The Hague Council
Sjoerd Blüm	Schiphol
Lucas Bolsius	Amersfoort Council
Olha Bondarenko	Eindhoven Council
Bas Boorsma	Cisco
Mark Bressers	Ministry of Economic Affairs
Mark Crooijmans	Amsterdam Council
Staf Depla	Eindhoven Council
Mo Derraz	I-interim Rijk
Arjan Dikmans	Ministry of Social Affairs and Employment
Nathan Ducastel	VNG
Michiel Eielts	EQUINIX
Marens Engelhard	National Archive
Willo Eurlings	Chamber of Commerce
Pieter Frijns	Bureau Gateway
David Hall	EQUINIX
Marjan Hammersma	Ministry of Education, Culture and Science
Noud Hooyman	Ministry of Infrastructure and the Environment
Sander Klous	University of Amsterdam, KPMG
Jantine Kriens	VNG
Martin Kuipers	Dutch Association of Regional Water Authorities
Gé Linssen	Ministry of Economic Affairs
Geert Munnichs	Rathenau instituut
André Nagtegaal	Schiphol
Lidewijde Ongering	Ministry of Infrastructure and the Environment
Jeannine Peek	Nederland ICT
Arnoud van Petersen	Tax Authority
Siebe Riedstra	Ministry of Security and Justice
Ron Roozendaal	Ministry of Health, Welfare and Sport
Willy Rovers	Tax Authority
Michel Rovers	UWV
John Schattorie	Deloitte
Dick Schoof	Ministry of Security and Justice

Hans van der Stelt	Digicommissaris's Office
Hans Tijl	Ministry of Infrastructure and Environment
Rob van de Velde	Geonovum
Theo Veltman	Amsterdam Council
Arno Visser	Netherlands Court of Audit
Cornelis van der Werf	Netherlands Court of Audit
Jos van Wesemael	Ministry of Infrastructure and Environment
Larissa Zegveld	KING
Patricia Zorko	NCTV
Reinier van Zutphen	National Ombudsman