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Digitalization policies in the UK and the Netherlands

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1. Introduction

This report is concerned with policies for promoting and supporting digital society developments in the UK and the Netherlands.

The idea is to find and extract policy initiatives which can be inspirational for countries in the Baltic Sea Region. The reason for choosing the UK and the Netherlands is that these two countries are considered as advanced in terms of policy formulation for digital society developments.



The term digital has come to mean all new ways of living, producing, consuming, interacting, etc. in the various aspects of social life comprising industry and government using digital technology. It is a term equivalent to what has formerly been called information, knowledge or network society. The scope is thus very broad, however, in this report there will be emphasis primarily on policies for enhancing the exchanges between governments and businesses (G2B) with special focus on Small and Medium sized Enterprises (SMEs).

The report concentrates first and foremost on policy initiatives. With a differentiation between policies, politics and the actual societal effects, most emphasis is on policies. This means that we do not examine the actual implementation of the policies in the form of legislation and regulations, and we do not either study the direct effects of these political interventions. However, we do study the development of digital agenda achievements for the two countries in order to contextualize how far they have come in their digital development compared with other European countries. Furthermore, there is special interest on policies for supporting cross-border business activities transcending the secluded national contexts aiming at inspiring and thus strengthening the regional interactions between the countries in the Baltic Sea Region.

In terms of methodological approach, the material presented in this report is primarily based on official reports from the two countries. It is well-known that the official policies of different countries often do not differ significantly. There is a high degree of isomorphism, the reason being that there are many similarities between countries and, furthermore, that countries inspire one another. Also, policy initiatives are often guided by commissioned reports from consultancy companies who may have elaborated similar policy input in other countries. In our selection of policy initiatives to report on, we therefore focus on policy directions and initiatives which are not common for all countries but which potentially could be implemented elsewhere.

First, there is a section on the actual current performance of the two countries in terms of achievements with respect to digitalization. The actual current performance of the



two countries constitutes part of the background for the policy directions and initiatives including the differences in policies. The performance is obviously also the result of past policies but we do not wish to claim that there is necessarily a direct causal link between the policies and the performances. The actual current performance, therefore, comes first in the report and is followed by the description of the policy directions and initiatives of the two countries. The conclusion compares the salient features of the policies of the two countries with an emphasis on the policies that most clearly could be a source of inspiration for other countries.



2. Current performance

This section evaluates the current performance of UK and the Netherlands with regard to digitalization. The analysis can contribute to map the point of departure for current digitalization policies, but also as an indicator of the outcome of digitalization policies implemented in the past. The analysis will primarily be based on information from international reports comparing the level of digitalization across countries by the use of a set of quantifiable parameters.

Digitalization is one out of a large number of terms applied to describe the ongoing transformation related to the use of ICT. Digitalization refers to the application of ICT in any part of the society. However, with such a broad definition, it becomes difficult to quantify the level of digitalization and make comparisons among countries. In order to create a more operational definition, a number of international organisations have created their own definitions based on different sets of measurable and available data.

A number of different composite indices have been developed in order to compare the level of digitalization. The most well-known indices include:

- E-readiness – Developed by the Economist Intelligence Unit (not published since 2010)
- ICT development index – published by ITU
- Digital Economy and Society Index (DESI) – published by the EU Commission as part of the Digital Agenda. This index includes EU member states only
- Networked Readiness Index – published by World Economic Forum

As the e-readiness index has not been updated for some time, we will base our analysis on data from the three other indices. All the indices are composite measurements combining a number of different parameters. In general they combine parameters on connectivity, usage (government, business and individual), and human capital. It should be noted that some of these parameters are very crude, in the sense that their direct relation to digitalization is far from obvious. For instance ICT skills, which is included in the ICT development index by ITU (ITU, 2017) with a weight of 20%, is measured solely by the general level of education. No indicators on ICT skills specifically are included in this index. One reason may be that parameters included must be defined according to availability in the countries included in the analysis.

Connectivity and access is an important element in all indices, as this area is well covered by reliable data from ITU and other international organisations. Connectivity is a relevant parameter in developing countries, but may be less relevant in countries with close to 100% coverage of basic ICT facilities. In addition to connectivity, ICT skills and



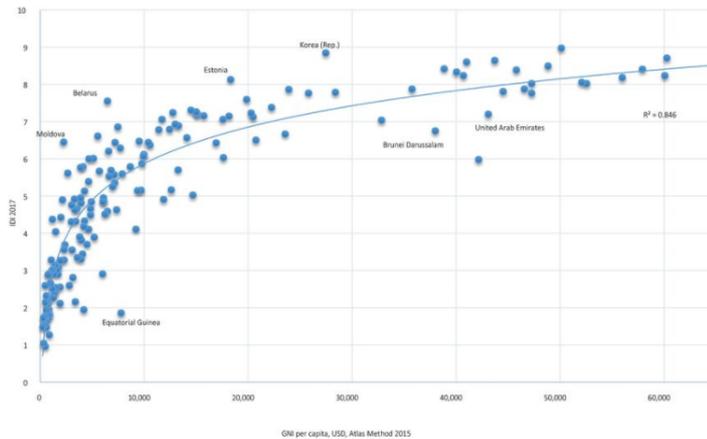
usage by citizens, business and governments are also included. World Economic Forum does also include parameters on regulation and business environment. In spite of differences in definitions and weighting of parameters applied, the outcomes of the rankings are similar.

It is notable that all indices focus on demand side indicators. Indicators relating to the production and operation of the ICT sector itself are not included. For instance there are no indicators on production of ICT goods and services in terms of value added and employment. This contradicts with the scope of most national ICT and Information Society plans, where strengthening of the ICT sector is included as an important policy goal. The supply side must therefore be taken into account in an output assessment. Fortunately, OECD provides extensive statistical information on the supply side in their OECD IT Outlook reports. OECD does not construct a composite index for ranking of OECD countries, but the rankings for each of the supply side parameters are quite different from the rankings for the indices listed above. One reason for this (but not the only one) is that there is no unique relation between the location of the ICT manufacturing industries and the use of ICT.

The approach of performing an output analysis does not enable an assessment of a particular policy instrument. As the analysis only deals with the outcome at the national level, a causal link between policies and results is not established. This would require a detailed analysis, where the analysis of digitalization policies is supplemented by detailed analyses on how each policy measure has been implemented. Digitalization is an ongoing process in all countries, and growth rates within the area of ICT are generally high. It is therefore not difficult to prove that policies have been successful by looking at the outcome in a particular country. A country's policy can only be characterized as a best practice, if the country performs well in comparison with other countries. This is the reason for including rankings in the analysis.

It should be kept in mind that the outcome depends on many other factors than digitalization policies. The national capacity for digitalizing the economy depends on human and economic resources available, and the national rankings of digitalization are closely related to income levels (fig 1). Therefore, a high ranking cannot be attributed directly to a successful policy implementation alone. Still the rankings provide a good indicator, when comparing countries with similar income levels. The levels of digitalization does not vary a lot for countries with similar rankings, so one should not draw too strong conclusions, when a country improves its positions by two or three places.



Figure 1: ICT development Index and GNI per inhabitant

Source: ITU: *Measuring the Information Society Report 2017 – Volume 1*

2.1. Cross-border services

As part of the aim of creating a Digital Single Market (DSM), eGovernment Action Plans have been issued by EU institutions. The latest eGovernment Action Plan is the 2016-2020 plan (Commission, 2014). While the eGovernment Action Plan 2011-2015 contributed to ‘the exchange of best practices and the interoperability of solutions between Member States, ... citizens and businesses are not yet getting the full benefit from digital services that should be available seamlessly across the EU’ (European Commission, 2016). The e-Government Action Plan 2016-2020, therefore has put special emphasis on cross-border initiatives.

In order to follow the progress in facilitating digital cross-border government services, the European Commission in 2017 published a first background report entitled ‘eGovernment Benchmark 2017 – Taking stock of user-centric design and delivery of digital public services in Europe’ (European Commission, 2017). One of the top-level benchmarks in this report was cross-border mobility, indicating the extent to which customers of public services can use online services in another European country. Four key enablers are analyzed in this report: Online availability, usability, eID, and eDocuments. Scores for individual countries are not generally published in this report, but from the indications provided, the UK as well as the Netherlands seems to be doing relatively well compared with other EU countries.

Related to the Connecting Europe Facility (CEF) program (CEF, 2018) having the aim of enabling the development of the Digital Single Market five CEF Building Blocks have been developed (CEF Digital): eDelivery, eID, eTranslation, eInvoicing, and eSignature. On the CEF website, uptake developments in these five building blocks can be followed for the individual EU countries. With respect to the five Building Blocks, the UK and the Netherlands are generally also among the more developed countries in the EU.

2.2. United Kingdom – current performance

United Kingdom is positioned as number 7 out of 28 countries in the EU Digital Progress Report (EC Progress Report , 2017) right after the three Nordic EU countries and the Benelux countries. In the ITU ICT Development index and in the World Economic Forum Network Readiness Index (Baller, et al., 2016) they are ranked as number 5. United Kingdom is thus among the leading countries with regard to digitalization.

United Kingdom has a telecom market with a high level of competition and a high penetration of broadband services. Almost all households are covered with broadband (99.97%) and 87% of the households have a fixed broadband connection. 43% have a bandwidth of more than 30 Mbps. The average speed is reported by Akamai to be 14.9 Mbps (Akamai, 2016). There are, however, challenges for the future rollout of NGA networks. The level of investments in telecommunications as percentage of revenues is among the lowest within the OECD area (OECD, 2017) and the share of FTTH/B connection was only 0.5% in 2016 (EC Progress Report , 2017).

Table 1: Connectivity in United Kingdom and in EU

	United Kingdom				EU
	DESI 2017		DESI 2016		DESI 2017
	value	rank	value	rank	value
1a1 Fixed Broadband Coverage	99.97%	↓ 5	99.98%	5	98%
% households	2016		2015		2016
1a2 Fixed Broadband Take-up	87%	↑ 3	85%	3	74%
% households	2016		2015		2016
1b1 Mobile Broadband Take-up	91	↑ 8	88	6	84
Subscriptions per 100 people	June 2016		June 2015		June 2016
1b2 4G coverage⁶	93%	12	NA		84%
% households (average of operators)	2016				2016
1b3 Spectrum⁷	69%	↓ 12	73%	12	68%
% of the target	2016		2015		2016
1c1 NGA Coverage	92%	↑ 8	91%	9	76%
% households	2016		2015		2016
1c2 Subscriptions to Fast Broadband	43%	↑ 16	36%	14	37%
% subscriptions >= 30Mbps	June 2016		June 2015		June 2016
1d1 Fixed Broadband Price⁸	1.3%	↓ 17	1.2%	16	1.2%
% income	price 2016, income 2015		price 2015, income 2015		price 2016, income 2015

Source: (EC Progress Report , 2017)

The level of ICT skills in UK is high: 69% of the population possess basic digital skills, and UK has more ICT specialists than most other EU countries. However, in spite of a high growth in employment of ICT professionals, there is still a shortage of labour with ICT skills.

The citizens make extensive use of online services such as shopping and entertainment. In spite of a well-developed banking sector, the use of electronic banking services is close to the European average.

When it comes to the use of ICT in Government and businesses, the UK is close to the European average. 40% of the enterprises are visible on social media, which is the highest percentage in EU. UK companies also make extensive use of cloud services. Regarding all other parameters on business use, the UK is around or below the EU average according to the DESI index. It should, however, be noted that in the analysis from World Economic Forum, the UK ranks at the very top with regard to ICT use for business-to-business transactions (2 out of 139) and business-to consumer Internet use (1 out of 139).

The Government performs well with regard to provision of open data, but is behind in other areas of e-government.

Table 2: Integration of Digital Technology in United Kingdom and in EU

	United Kingdom				EU DESI 2017 value
	DESI 2017 value	rank	DESI 2016 value	rank	
4a1 Electronic Information Sharing	17%	26	17%	26	36%
% enterprises 2015					2015
4a2 RFID	1.6%	27	1.6%	27	3.9%
% enterprises 2014					2014
4a3 Social Media	40%	↑ 1	34%	3	20%
% enterprises 2016					2016
4a4 eInvoices	5%	27	NA		18%
% enterprises 2016					2016
4a5 Cloud	22%	6	NA		13%
% enterprises 2016					2016
4b1 SMEs Selling Online	19%	↓ 8	20%	7	17%
% SMEs 2016					2016
4b2 eCommerce Turnover	9.4%	↑ 12	8.0%	17	9.4%
% SME turnover 2016					2016
4b3 Selling Online Cross-border	9.0%	12	9.0%	12	7.5%
% SMEs 2015					2015

Source: (EC Progress Report , 2017)

The performance of the ICT sector is not directly included in measures on digitalization of the economy. Still it gives an indication on the role of ICT in the economy. In the UK, the ICT sector stands for around 3.5 % of the total employment, which is above the OECD average of 3%. This is in particular due to a high share of employment generated

by the provision of IT and other information services, which is among the highest among the OECD countries. This corresponds with a strong position in exports of IT services. They were in 2016 the 6th largest exporter with a world market share of 5% (up from 2.5% in 2008).

2.3. Netherlands – current performance

The Netherlands is positioned as number 4 out of 28 countries in the EU Digital Progress Report (EC Progress Report , 2017) right after Denmark, Finland and Sweden. In the ITU ICT Development index they are ranked as number 7, and in the World Economic Forum Network Readiness Index they are ranked as number 6. The Netherlands is thus among the leading countries with regard to digitalization.

The Netherlands is the best connected country within the EU. 100% of the households are covered with broadband and 98% are covered with NGA. 95% of the households have a fixed broadband connection, and 68% have a bandwidth of more than 30 Mbps. The average speed is reported by Akamai to be 17.2 Mbps (Akamai, 2016).

Table 3: Connectivity in Netherlands and in EU

	Netherlands				EU DESI 2017 value
	DESI 2017 value	rank	DESI 2016 value	rank	
1a1 Fixed Broadband Coverage	100% →	2	100%	2	98%
% households	2016		2015		2016
1a2 Fixed Broadband Take-up	95% ↑	2	94%	2	74%
% households	2016		2015		2016
1b1 Mobile Broadband Take-up	85 ↑	12	80	9	84
Subscriptions per 100 people	June 2016		June 2015		June 2016
1b2 4G coverage⁵	91%	16	NA		84%
% households (average of operators)	2016				2016
1b3 Spectrum⁶	61% ↓	21	65%	19	68%
% of the target	2016		2015		2016
1c1 NGA Coverage	98% →	3	98%	3	76%
% households	2016		2015		2016
1c2 Subscriptions to Fast Broadband	68% ↑	3	62%	3	37%
% subscriptions >= 30Mbps	June 2016		June 2015		June 2016
1d1 Fixed Broadband Price	1,0% →	7	1,0%	8	1,2%
% income	price 2016, income 2015		price 2015, income 2015		price 2016, income 2015

Source: (EC Progress Report , 2017)

The level of ICT skills in the Netherlands is high. 69% of the population possess basic digital skills, and the country is among the leaders in this area. When it comes to the number of ICT specialists in all sectors of the economy, the Netherlands is well above the European average (5% of the workforce compared to the EU average of 3.5%). Still there is a shortage of labour in this area.

Almost all households have a computer (97.6%) and there is a high penetration of internet banking services (91%) and electronic shopping (79%). The Netherlands is also

among the most advanced countries with regard to digitalization of public services (ranks 3 in EU).

Table 4: Integration of Digital Technology in Netherlands and in EU

	Netherlands				EU
	DESI 2017		DESI 2016		DESI 2017
	value	rank	value	rank	value
4a1 Electronic Information Sharing	45%	4	45%	4	36%
% enterprises	2015		2015		2015
4a2 RFID	3,1%	19	3,1%	19	3,9%
% enterprises	2014		2014		2014
4a3 Social Media	38%	↑ 2	37%	1	20%
% enterprises	2016		2015		2016
4a4 eInvoices	19%	↑ 11	15%	8	18%
% enterprises	2016		2015		2016
4a5 Cloud	29%	4	NA		13%
% enterprises	2016		2015		2016
4b1 SMEs Selling Online	16%	↓ 14	17%	11	17%
% SMEs	2016		2015		2016
4b2 eCommerce Turnover	9,2%	↑ 14	8,3%	13	9,4%
% SME turnover	2016		2015		2016
4b3 Selling Online Cross-border	10,3%	7	10,3%	7	7,5%
% SMEs	2015		2015		2015

Source: European Commission (2017)

When it comes to the use of ICT in businesses, the picture is more mixed. The use of e-invoicing and SMEs selling online are on the EU average, and in spite of the fact that many users have used e-shopping the e-commerce, turnover is slightly below the EU average. On the other hand, the Government performs well in the provision of e-government services (ranks 3 in EU).

The performance of the ICT sector is not directly included in measures on digitalization of the economy. Still it gives an indication of the role of ICT in the economy. In the Netherlands, the ICT sector stands for a little less than 3% of the total employment, which is slightly below the OECD average. 80% of the employment in the ICT sector is generated by the provision of IT services and other information services. Although the employment in the Dutch ICT sector is below the OECD average, the Netherlands has a substantial export of ICT manufactured goods and services. As an exporter of ICT goods, Netherlands ranks as number 10 with a world market share of around 2.5%. In Europe only Germany has a higher market share. With regard to exports of ICT services the Netherlands performs even better. With a world market share of almost 8%, they are positioned as number three. Only Ireland and India perform better.

3. United Kingdom

3.1. Business structure

The UK is the fifth-largest economy in the world and the second-largest in Europe after Germany. The current population of the United Kingdom is approximately 66 million. The total land area is 241,930 km² and the population density in the United Kingdom is 275 per km². The GDP per capita is presently 36.700 Euro.

The UK is ranked seventh globally in the World Bank's Ease of Doing Business Index (The World Bank Group, 2017). Major segments of the UK industry include energy, mining, manufacturing, and construction. Manufacturing remains a significant part of the UK economy. The automotive industry, the aerospace industry, the pharmaceutical industry and creative industries plays an important role in the UK economy.

Services is the sector that accounts for the largest part of the British economy – in 2017, services accounted for 79% of economic output, the production sector for 14%, construction for 6% and agriculture for 1%. (House of Commons, 2018)

According to business statistics report published by the House of Commons Library, in 2017, there were 5.7 million businesses in the UK. Over 99% of businesses are Small or Medium Sized businesses – employing, all in all, 15.7 million people (60% per cent total business employment), and achieving a turnover of £1.8 trillion (47% of total UK business turnover).

Of these SMEs, the overwhelming majority (95%) are micro-businesses, employing 0-9 people. These businesses account for 54% of SME employment and just under 40% of turnover. Medium businesses represent less than 1 per cent of the SME population, but account for nearly a quarter of SME employment and 30 per cent of turnover.

Since 2010, 32 % of the growth in the number of micro-businesses was in the professional and technical services sector, and 14% in ICT. For small businesses, accommodation and food services were responsible for 41% of business count growth, with health adding 14% and retail 13%. Medium companies provided growth in the health sector (33%) and the education sector (32%) which in itself more than doubled in size. (Sage, 2017)

Even though, SMEs have recorded notable growth in employment and turnover there has been no corresponding rise in productivity. SME productivity has risen by around 2.5% between 2007 and 2016. The report reveals that across the UK, productivity varies significantly and this represents the largest challenge for UK government. The productivity varies not just between North and South or urban and rural areas, but also

between sectors, and within regions themselves. Moreover, the larger the SME, the more productive it typically is.

The labor productivity performance of the 12 UK regions and countries relative to the UK average for 2016 was presented in the report published by Office for National Statistics (Statistics, 2018). The report revealed that the only two regions with productivity above the UK average were London at 33% above the UK average and the South East of England, with productivity 6% above the UK average. In Scotland, productivity in 2016 was marginally below the UK average, whilst in Wales and Northern Ireland, productivity was 17% below the UK average. The regions of the north and Midlands of England (North East, North West, Yorkshire and The Humber, East Midlands and West Midlands) had productivity levels between 7% and 15% below the UK average.

As small businesses are critical to the UK's economy, the main focus of various policies is on lifting the productivity of the SMEs. The UK strategies focus on the strengthening the following sectors: automotive, aerospace, financial and professional services, creative industries and life sciences.

3.2. *Previous policy initiatives*

Over the last years, the UK government has recognized the importance of the digital economy and has been active in various digitalization activities. Most of the initiatives have been focused on opening up existing government services and delivering them online. The arrival of "Digital Public Management" exposed the challenges and opportunities for digitally-delivered government service, and led to major initiatives such as the UK Government Digital Service (GDS), a model that has been copied in the USA, Australia, and elsewhere (Brown, 2017).

The release of new policies aimed at stimulating the digital economy and accelerating adoption of digital technologies across UK government itself. In 2005, the Prime Minister commissioned the strategy to seize the opportunity provided by technology to transform the business of government. The strategy was directed at providing overall technology leadership in three key areas:

1. The transformation of public services for the benefit of citizens, businesses, taxpayers and front-line staff.
2. The efficiency of the corporate services and infrastructure of government organisations, thus freeing resources for the front-line.
3. The steps necessary to achieve the effective delivery of technology for government.

In January 2007, as part of the Transformational Government strategy, an annual report was published, stating that, instead of having hundreds of government websites, most government information is to be available through two main websites – Directgov (for citizens) or Businesslink.gov.uk (for businesses).

The Business Link network operated via the UK's nine Regional Development Agencies (RDA). Each of the government-funded agencies encompassed a Business Link service, designed to advise businesses on issues related from starting up to international trade rules. All nine of the regional agencies, which had cost the government £154m, were officially shut down in late 2011 as part of the government's budget decision. The UK's nine government-funded RDAs were replaced by 38 Local Enterprise Partnerships (LEP) across England. LEPs were set up on a volunteer basis between local authorities and local private sector businesses without any public funding. It was later decided that the LEPs would be supported by the government (Startups, 2013). They play a central role in determining local economic priorities and undertaking activities to drive economic growth and job creation, improve infrastructure and raise workforce skills within the local area. LEP boards are led by a business chair and board members are local leaders of industry (including SMEs), educational institutions and the public sector (LEP, 2018).

On 30 March 2011, the Cabinet Office published the "Government ICT Strategy", confirming the UK's determination to move its public sector away from being locked-in on large-scale single supplier proprietary software solutions. The strategy document intends to focus on an open approach to ICT, mandating open standards, re-aligning the playing field for open source and encouraging greater SME participation in government ICT contracts (EU, 2014).

In November 2012, the first version of the "Government Digital Strategy" was published and it was updated in December 2013. This strategy contained 16 actions and focused on how the government will become digital by default, which was defined as "digital services that are so straightforward and convenient that all those who can use them will choose to do so whilst those who can't are not excluded." (Office, 2012) The Government Digital Service was established in response to Martha Lane Fox's report, "Directgov 2010 and beyond: revolution not evolution", which included recommendations for the future of Directgov. The Government Digital Service worked in three core areas: transforming 25 high volume key exemplars from across government into digital services, building and maintaining the consolidated gov.uk website – which brings government services together in one place, changing the way government procures IT services. At this stage there was no plan to extend gov.uk to cover local authorities' digital services. However, there was an acknowledgement within the Government Digital Strategy that in order to provide public services digitally by default,

all public bodies will need to work together, because most public services are provided by local organizations (Office, 2012).

The Government Digital Strategy committed each government department to carrying out 16 actions. Moreover, corporate publishing activities of all 24 ministerial departments and 331 other agencies and public bodies have been merged into a single website, gov.uk. The new site, gov.uk has been built by the Government Digital Service (GDS), which is part of the Cabinet Office. The release of gov.uk was the first phase in the creation of a single domain for government, addressing the needs of citizens previously served by the Directgov.uk and the needs of business previously served by businesslink.co.uk websites. The creation of gov.uk has been a key element in the Digital by Default agenda.

3.3. *Current policy initiatives*

Since 2017, a series of new digital government initiatives has been published. The most important are the following four documents: the UK government transformation strategy 2017 to 2020, the UK Digital Strategy, the UK industrial strategy, and the Digital Economy Bill.

The UK government transformation strategy 2017 to 2020

The Government Transformation Strategy (GTS, 2017) was published on 9 February 2017 and was built on the 2012 Government Digital Strategy. This strategy charts the direction of the digitally enabled transformation of government and represents the next stage of digitally-enabled transformation. It has 3 broad components, which together form the scope of this strategy (GTS, 2017):

- transforming whole citizen-facing services - to continue to improve the experience for citizens, businesses and users within the public sector
- full department transformation - affecting complete organizations to deliver policy objectives in a flexible way, improve citizen service across channels and improve efficiency
- internal government transformation, which might not directly change policy outcomes or citizen-facing services but which is vital if government is to collaborate better and deliver digitally-enabled change more effectively.

This strategy sets out the Government's objectives to harness digital (the technologies, culture, skills and tools of the internet-era) to transform the relationship between citizen and state. The strategy sets out five pillars for the future direction of government (Gummer, 2017):

1. Create shared platforms, components and reusable business capabilities: continuing with government as a platform, reducing duplication, cost and increasing efficiency across government.
2. Make better use of data: ensuring that government data is properly managed, protected and (where non-sensitive) made available and shared effectively. To accelerate the transformation of government, and ensure that government will retain public trust and confidence in use of data, a new Chief Data Officer for government will be appointed.
3. Business Transformation: developing end-to-end services that meet the needs of their users across all channels, in coordination with a fundamental rethink of back-office operations.
4. Grow the Right People, Culture and Skills.
5. Build better tools, processes and governance for civil servants: transforming the inside of the Civil Service to become an organisation that is digital by default.

The UK Digital Strategy

In March 2017, the Secretary of State at the Department of Culture, Media and Sports, launched the Government's UK Digital Strategy (Secretary of State for Culture, 2017). The Strategy builds on the Industrial Strategy green paper (Government, 2017), applying its framework to the digital economy with particular regards to growth, technology and innovation. The strategy sets out the Government's goals for digital infrastructure, creating an advanced skills base, encouraging the use of digital tools and improving access to digital services. It addresses opportunities for businesses, research and development.

The UK Digital Strategy outlines the seven main aims and initiatives designed to keep the UK at the forefront of the digital revolution post-Brexit. The UK Digital Strategy has seven strands (Secretary of State for Culture, 2017):

1. Connectivity - building world-class digital infrastructure for the UK
2. Skills and inclusion - giving everyone access to the digital skills they need
3. The digital sectors - making the UK the best place to start and grow a digital business
4. The wider economy - helping every British business become a digital business
5. Cyberspace - making the UK the safest place in the world to live and work online
6. Digital government - maintaining the UK government as a world leader in serving its citizens online
7. The data economy - unlocking the power of data in the UK economy and improving public confidence in its use



Strands 3, 4, 6 are of particular importance for the SMS.

In contrast to the previous government Digital Strategy, local governments were recognized as an important and integral partner in cross government transformation and economic growth (Blackwell, et al., 2016).

Industrial Strategy: building a Britain fit for the future (Department for Business, 2017)

The UK industrial strategy is a critical part of UK plan for post-Brexit Britain. The main objective of the industrial strategy is “to boost the productivity, earning power and quality of life of the British people”. The UK Government identified 5 pillars as the most important to drive forward UK industrial strategy across the entire economy: ideas; people; infrastructure; business environment; and places. Those pillars frame the UK Government approach, and across each of them, the government sets out a program of new policies (table 5).

Table 5: The UK industrial strategy: key policies

Pillars	Key policies
Ideas	<ul style="list-style-type: none"> • Raise total research and development (R&D) investment to 2.4 per cent of GDP by 2027 • Increase the rate of R&D tax credit to 12 per cent • Invest £725m in new Industrial Strategy Challenge Fund programmes to capture the value of innovation
People	<ul style="list-style-type: none"> • Establish a technical education system • Invest an additional £406m in maths, digital and technical education, helping to address the shortage of science, technology, engineering and maths (STEM) skills • Create a new National Retraining Scheme that supports people to re-skill, beginning with a £64m investment for digital and construction training
Infrastructure	<ul style="list-style-type: none"> • Increase the National Productivity Investment Fund to £31bn, supporting investments in transport, housing and digital infrastructure • Support electric vehicles through £400m charging infrastructure investment and an extra £100m to extend the plug-in car grant • Boost UK digital infrastructure with over £1bn of public investment, including £176m for 5G and £200m for local areas to encourage roll out of full-fibre networks
Business environment	<ul style="list-style-type: none"> • Launch and roll-out Sector Deals – partnerships between government and industry aiming to increase sector productivity. The first Sector Deals are in life sciences, construction, artificial intelligence and the automotive sector • Drive over £20bn of investment in innovative and high

	<p>potential businesses, including through establishing a new £2.5bn Investment Fund, incubated in the British Business Bank</p> <ul style="list-style-type: none"> • Launch a review of the actions that could be most effective in improving the productivity and growth of small and medium-sized businesses, including how to address what has been called the 'long tail' of lower productivity firms
Places	<ul style="list-style-type: none"> • Agree Local Industrial Strategies that build on local strengths and deliver on economic opportunities • Create a new Transforming Cities fund that will provide £1.7bn for intra-city transport. This will fund projects that drive productivity by improving connections within city regions • Provide £42m to pilot a Teacher Development Premium. This will test the impact of a £1000 budget for high-quality professional development for teachers working in areas that have fallen behind

Source: (Department for Business, 2017)

In this Industrial Strategy the UK Government proposed a number of Grand Challenges to put the United Kingdom at the forefront in four areas seen as having growth potential: artificial intelligence; clean growth; an ageing society; and future mobility from driverless cars to drones. The UK government works in collaboration with the governments and businesses of Scotland, Wales and Northern Ireland.

The Digital Economy Act 2017

The Digital Economy Bill received Royal Assent on 27 April 2017 and is now known as the Digital Economy Act 2017 (Act, 2017). The Digital Economy Act 2017 is an Act of Parliament addressing key issues relating to electronic communications infrastructure and services. The Act includes provisions about electronic communications infrastructure, restricting access to online pornography, online copyright infringement, data sharing among government departments and public authorities, functions of Ofcom, regulation of the BBC, and regulation of direct marketing.

As stated on website (Act, 2017), the Act will:

- empower consumers and provide better connectivity so that everyone has access to broadband wherever they live
- build a better infrastructure fit for the digital future
- enable better public services using digital technologies
- provide important protections for citizens from spam email and nuisance calls and protect children from online pornography

3.4. *Governance of digital policies*

The UK has a centralized system of government with devolution. Devolution deals are a core component of central government's broader policy to decentralise power to local areas. Prior to devolution, the United Kingdom was one of the most centralised state in Europe. Since 1997, the UK has an asymmetric model of devolution. As a result of devolution the political and administrative powers of the devolved legislatures - Scotland, Wales and Northern Ireland have changed.

However, the central government still substantially directs most government activity. The Prime Minister leads the government with the support of the Cabinet and ministers. The UK Government consists of 25 ministerial departments, 20 non-ministerial departments and more than 300 agencies and other public bodies. Departments and their agencies are responsible for putting government policy into practice (GOV.UK, 2018). At Departmental level, there is a wide range of national agencies which have specialist functions in relation to issues like procurement, IT and finance; some have expert or advisory roles, etc.

The government is the driver of digitalization policies development. The key player from the public sector is the Prime Minister, responsible for the overall organisation of the executive and the allocation of functions between ministers. The Cabinet Office holds overall responsibility for the government's efficiency and reform agenda.

In 2012, the Minister for the Cabinet Office was accountable for the development of the "Government Digital Strategy". The Minister for the Cabinet Office was responsible for launching a plan for the implementation of the government's new ICT strategy across all Government departments and for an annual review process to track departments' progress against the actions in this strategy. According to the document, by December 2012, each department had to publish their own departmental digital strategy explaining what actions they would take to contribute to this strategy.

The main departments which support digitalization in UK are: the Department for Digital, Culture, Media & Sport and the Government Digital Service (GDS). Chief Digital and Information Officer (CDIO) is responsible for the digital transformation agenda.

In 2015, the government has announced a series of "devolution deals" between central government and local areas. Over the years, there will be more power devolved to city regions through the implementation of "devolution deals". The UK government promised that the new deals will give cities and their surrounding areas certain powers and freedom to: take charge and responsibility for decisions that affect their area, do

what they think is best to help businesses grow, create economic growth and to decide how public money should be spent. The government has concluded deals in areas including Greater Birmingham and Solihull, Bristol and the West of England, Greater Manchester, Leeds City Region, Liverpool City Region, Nottingham, Newcastle and Sheffield City Region. In total, 30 deals have been granted, 26 in England, 3 in Scotland and 1 in Wales (BBC, 2016). The specific powers were devolved or delegated to local institutions, including mayors, combined authorities and other local bodies, but they vary across different parts of the country.

On 4 May 2017, metro mayors were elected for the first time in six English city-regions where local and central government had earlier agreed the terms of devolution deals. They have powers and responsibilities to make strategic decisions across whole city regions and are responsible for digitalization. As part of the Mayor's Digital Strategies, the new position of a Chief Digital Officer (CDO) for the city regions has been created. The CDO is responsible for leading digitisation and technology initiatives across city regions.

In recent years, the British government has made targeted interventions to support various sectors in digital transformation effort. Four sectors being targeted by the government are: life sciences, construction, artificial intelligence and the automotive industry.

The UK Government have also introduced a number of programmes aimed specifically at closing the gap in digitisation between different sectors. The creation of a network of technology hubs is probably the one with the highest profile. In 2017, the Government announced plans to create a new national network of regional tech hubs in areas across the country, including Belfast, Cardiff, Edinburgh and Birmingham. The UK Government also announced that Tech City UK and Tech North are to become a national organisation. Eleven regional hubs will form the backbone of a national digital network and help the Government achieve aims outlined in its Industrial and Digital Strategies.

3.5. Cross-border eGovernment services

The eGovernment Benchmark report published in 2017 (European Commission, 2017) presents the priority areas of the eGovernment and evaluates those areas in 34 countries (EU28+). According to this report, the UK performs generally very well on the "business cross border mobility" (overall score: UK: 92; average 65), and quite well on "user centricity" (overall score: UK: 82; average 80). The UK is falling behind when compare to EU+ average on "citizen cross border mobility" and "key enablers" (overall score: UK: 22; average 52). The deployment of key technological enablers such as "Authentic Sources" seems to be considerably lagging behind (UK: 6)



The eGovernment benchmark for the “Business Cross border mobility” indicates to what extent EU business can use online services in another country. Cross-border service delivery dimension encompasses 4 main areas: online availability, usability, eID cross borders, eDocuments cross borders.

- Online availability: indicates if a service is online. Ranging from offline (0%), only information online (50%), fully online (100%). UK scored 89 % (EU+: 73%)
- Online usability: indicates if support, help and (interactive) feedback functionalities are online. UK scored 100% (EU+: 29%)
- eID Cross Borders: indicates if a national eID from country A can be used in country B. UK scored 83% (EU+: 79%)
- eDocuments Cross Borders: indicates if eDocuments can be transmitted from country A to country B. UK scored 100% (EU+: 43%)

When comparing “Business Cross border mobility” (UK score: 92%) with “Citizen Cross border mobility” (UK score: 22%) dimensions, significant differences can be observed between those.

The eIDAS Regulation in the UK (UK Regulations, 2016) came into force on the 22nd July 2016. The Electronic Signatures Regulations 2002 have been replaced with the new set of regulations which are based on the eIDAS regulation and cover E-signatures, trust services and electronic identification. In August 2016, The Department for Business, Energy and Industrial strategy published a guide which explained the changes made to UK law on electronic signatures and the requirements of the new Regulation. The UK government initiative for establishing a single trusted login across various government digital services is GOV.UK Verify. Currently, only 15 government services can be used with GOV.UK Verify.

3.6. Summary

The UK Government plays a significant role in supporting the digital economy by taking a lead in creating and executing numerous actions through various policies. Even though devolution in the UK has enabled a new approach to government and policy making, the UK government retains control over most key aspects of the UK.

Previously, most of the UK government activities focused on opening up existing governmental services to online activities. The recently announced policies focus on the UK government digital transformation itself, the transformation of the UK economy towards digital economy and the industrial strategies aiming to increase sectors productivity.

Since the UK government has announced a series of devolution deals between central government and local governments, there is more power devolved to city regions through the implementation of devolution deals. All of the deals transfer powers, funding and accountability for policies and functions previously undertaken by central government. The specific arrangements vary in each case, as they are negotiated and agreed separately based on local proposals. All deals seek to support business, economic growth and key industries of the future.

Recently there are some important activities taking place at national and local level. At national level, the UK Government focuses on the ICT sector itself, but also recognizes the role of digital as an important factor enabling growth in other industries across the UK. The creation of a global and national network of technology hubs, targeted interventions to support various sectors, investment in innovative and high potential businesses, and appointment of a new Chief Data Officer are some of the vital initiatives taken by the government. At local level, key initiatives include: creation of local industrial strategies and local funding mechanism, collaboration through Local Enterprise Partnership LEP to help small businesses increase their digital presence, and an appointment of new Chief Digital Officers (CDO) for main six city regions.

Generally, there is a movement towards supporting regions which have a huge role to play in delivering the industrial strategy and digitalization.

A traditional approach to sector support remains important as part of government strategy and is practiced at a national and regional level.

Looking at the UK eGovernment performance across EU policy priorities and narrowing the focus on the business cross border mobility, it can be noticed that the availability, usability, eID and eDocument of cross border services are getting closer to the 100% landmark and follow the vision of a Digital Single Market.



4. Netherlands

4.1. *Business environment*

The Netherlands is a country with a relatively large population (app. 17 mill.) on a small land area (41.543 km²). It is a very densely populated country with large and widespread urban and semi-urban areas. The GDP per capita is presently app. 40,000 Euro, which places the country among the 10 richest OECD countries.

Many multinational companies have settled in the Netherlands, and the country is also home to a number of multinational companies headquartered in the Netherlands. However, as with most other countries, far the largest part of companies consists of micro or small enterprises. Out of the app. 1.45 million companies in the Netherlands, app. 1.1 million are companies with just one employed person, and a little less than 300,000 are companies with 2-9 employees (Centraal Bureau voor de Statistiek, CBS).

Since 2011, the Dutch government has defined 9 top sectors in the Dutch economy with the purpose of specifically supporting and strengthening these sectors, which are considered to have strategic importance for the Netherlands. The 9 sectors in question are agriculture and food, creative industries, chemical industry, energy, high tech, horticulture and starting materials, life sciences & health, logistics, and water. CBS has calculated that 23% of all enterprises belonged to one of the 9 top sectors in 2015, and that all enterprises belonging to the 9 top sectors accounted for 20% of all employees. This means that the companies belonging to the top sectors in general are of the same size as other companies in the Netherlands. The sectors are not specifically chosen on the basis of the size of companies. They are chosen very much on the basis of R&D expenditures (app. 75%) and export value (almost 40%).

Every year the Heritage Foundation from the US measures what they call the 'economic freedom' of countries. In the 2018 Index of Economic Freedom (Heritage Foundation, 2018), the Netherlands is ranked 17 on a global scale. Among the 44 countries in Europe, the Netherlands is no. 10. The parameters on the basis of which 'economic freedom' is measured are the rule of law, government size, regulatory efficiency, and open markets. The Netherlands can thus be considered as a country with a relatively liberal approach to guiding markets. However, the fact that the Netherlands does not figure among the 10 countries with the highest degree of 'economic freedom' is that markets in the Netherlands are also regulated to a large degree. It is a regulated liberal market with a relatively high degree of public intervention – as will also be visible in the description of the policies for digitalization.



4.2. *Previous policy initiatives*

In line with many other countries in Europe and elsewhere, the Dutch Ministry for Economic Affairs in 1994 issued an Action Program 'Electronic Highways', which was the first Dutch general policy initiative in the ICT field. This action program followed a trend among many countries with the US initiatives regarding the Information Superhighway and the EU initiatives starting with the 1993 White Paper on Growth, Competitiveness and Employment (the so-called Delors White Paper (CEC, 1993). The emphasis in these national and multinational policy initiatives differed a bit depending on the general social, economic and business environments in question, but the overall direction was the same, and the Dutch program was no exception putting an emphasis on the dual need for upgrading the infrastructure and for promoting services and the use of ICTs for various social and business purposes.

The Action Program by the Dutch Ministry for Economic Affairs was supported by other ministries in the Netherlands, which was an indication of the general government support for the initiative. ICT policies have since the first initiative in 1994 been one of the spearhead policy areas for Dutch governments.

Since the first Action Program, there have been a number of follow-up programs and initiatives and additional initiatives under the Digital Delta umbrella. The specific focus areas have obviously changed over time, presently with a special interest in, for instance, big data, privacy and artificial intelligence. However, there is a great degree of continuity in the policy initiatives, which is also supported by the general political consensus surrounding ICT policies. The continuity and consensus can be seen in the continual focus on improving framework conditions for the production and marketing of ICT based products and services and for the use of ICTs in businesses and society at large. The overall policy approach puts focus on public institutions mobilizing societal activities to promote digital developments by improving framework conditions but also by means of targeted financial support when needed.

In a report published in 2003 by the Swedish Institute for Growth Policy Studies (ITPS, 2003), comparing ICT policies in the UK and the Netherlands, the major finding regarding the Netherlands was that ICT policies in the Netherlands following the general policy tradition in the Netherlands are relatively de-centrally generated and executed. As will be discussed in sub-section 4.4 on 'governance of digital policies', there can be advantages as well as disadvantages of such decentralized approaches. A primary advantage can be that policy initiatives will have a greater tendency to be well embedded in the social context in which they are implemented, while the disadvantage can be a possible lack of coordination. The ITPS report (2003) discusses these downsides



which are believed to be a general feature of Dutch policies for digitalization since its early stages.

In a paper from 2009 by Poel and Kool (Poel, et al., 2009) entitled ‘Innovation in information society policy: rationale, policy mix and impact in the Netherlands’, the intersection between ICT/information society policies and innovation policies are analyzed. The paper discusses how innovation policies to a growing extent have become important and how they interrelate with ICT/information society policies in the EU as well as in the Netherlands. The paper argues that the inclusion of innovation perspectives provides better and more focused policies for the ICT/information society policy area. The paper also discusses the large number of policy initiatives in the Netherlands when counting initiatives relating to the various business sectors as well as at different levels of government. The argument is that an innovation perspective for policies can help enhance the coordination of policy initiatives.

There is thus an almost 25 year long tradition for policy initiatives for digitalization in the Netherlands. A great degree of continuity in the policy approaches can be observed and the same applies to the consensus around these policy initiatives. There is a dual focus on infrastructure issues as well as the development and use of ICT-based services. Furthermore, the issue of centralization vs. decentralization is a continual trend in Dutch digitalization policies.

4.3. Current policy initiatives

The most recent overview of policy initiatives for digitalization in the Netherlands is the ‘Digital agenda for the Netherlands – innovation, trust and acceleration’, published by the Dutch Ministry of Economic Affairs in 2016 (MEA, 2016). It is stated in this policy document that the short term action points dealt with concern 2016 and 2017.

In this policy document, it is explained that the general role of government regarding digitalization is the following – ‘stimulating the development and application of knowledge, education and lifelong learning; safeguarding of high-quality and secure digital infrastructure; and privacy protection’ (MEA, 2016). It is also acknowledged that ‘a significant proportion of digital legislation and policy is of EU origin’ (MEA, 2016). This applies to all EU countries, as the EU for long, starting with the Delors White Paper from 1993 (CEC, 1993), has issued policy initiatives in the area of information/network/digital societies.

The MEA document (MEA, 2016) further explains that with the widespread societal implications of digitalization, the role of government goes further in this area than the mere stimulation of framework conditions and safeguarding of public interests. Public authorities also have the role of buyers of innovative solutions, thus supporting

developments in the ICT field, and the role of providers of digital services to businesses and the public at large. This all contributes to the digitalization of society says the MEA document (MEA, 2016).

The more specific short-term activities that the MEA document (MEA, 2016) focuses on are the following:

1. Education, knowledge and innovation
2. Open and high-speed infrastructure
3. Security and trust
4. More scope for entrepreneurs
5. Digitisation of sectors (industry, healthcare, energy and mobility)

In the present report, emphasis is on 'more scope for entrepreneurs' and 'digitisation of sectors'. However, there is also a brief mention of 'open and high-speed infrastructure'. We will start with the infrastructure policy.

The Netherlands have for centuries been an area functioning as a port in and out of Northern Europe. International trade has been going through the Netherlands and international companies have settled there partly because of this central economic position. In addition to the sea ports and Schiphol airport, the MEA document (MEA, 2016) sees a reliable and high-speed network as a 'third mainport in the Netherlands'.

Indeed, the broadband infrastructure in the Netherlands is at a high level in international comparisons. The 2017 'Europe's Digital Progress Report (EDPR)' for the Netherlands (EC, 2017) reports that there is 98% NGA (Next Generation Network) coverage in the Netherlands by 2016, and that subscriptions to fixed fast broadband (> or = 30 Mbps) is 68% (June 2016) and 85% to mobile broadband (June 2016). One of the reasons for the widespread NGA infrastructure is the high coverage of cable networks in the Netherlands in addition to the fixed telephone network.

Various initiatives for further enhancing the communications infrastructure are listed in the MEA document (MEA, 2016), and two of these are mentioned here: Local initiatives for upgrading the broadband infrastructure and the establishment of a 5G Field Lab.

The local initiatives are concerned with the role of the central government in informing municipalities about broadband potentials and facilitating processes regarding local improvements of broadband infrastructures including the provision of clarity with respect to opportunities permitted within the European state-aid-rules (MEA, 2016). Also, citizens' initiatives will be supported. The intension is to 'intensify these efforts by forming an High-Speed Internet Knowledge Platform and by taking stock of the demand

for a national umbrella scheme for public funding of broadband projects by decentralized government bodies' (MEA, 2016).

A 5G Field Lab has been established. 5G networks will be the next step in the mobile field, and it will be important to explore all the new potentials that 5G will allow for. In different countries, among them the Netherlands, initiatives have been taken to establish 5G research centers / field labs / cooperative institutions for promoting the applications of 5G technology. 5G networks will be deployed by telecom operators in all European countries. It is, however, not certain that business users of 5G technologies will necessarily take optimal advantage of the potentials offered. Initiatives like the 5G Field Lab in the Netherlands are, therefore, important. The MEA document (2016) reports that 'to increase innovation in relation to 5G, businesses and government bodies in the Netherlands have initiated a 5G Field Lab'. It is further stated that 'over the next few years, the 5G Field Lab will enable businesses to gain experience with innovative applications for agriculture, healthcare, energy, the living environment, traffic and logistics'.

In the MEA document (MEA, 2016), special attention is paid to entrepreneurs and SMEs in general in the section on 'more scope for entrepreneurs'. The concepts used in the document are start-ups and scale-ups, addressing new companies as well as companies which are in the likewise vulnerable phases of scaling up. Building on the idea of the Netherlands as an international port, one of the initiatives is the StartupDelta and its follow up initiative StartupDelta 2020. The aim is to maintain and improve the position of the Netherlands as a location for start-up businesses. To that purpose, fiscal support measures are among the tools used.

Also, digital tools are important for supporting SMEs. As is written in the MEA document (MEA, 2016), digital tools lower the transaction costs for businesses and give entrepreneurs more time to run their businesses. To enhance the possibilities for businesses to communicate digitally with public authorities, citizens and businesses have the right - as of 2017 - to digitally conduct all their affairs with the government digitally. Other means of communication are also possible, but digital communications has been made a right, which puts emphasis on the demand side of the development of digital modes of communication.

In order to facilitate digital communications between businesses and government 'the Dutch government promotes digital service provision to businesses by means of a government-wide Generic Digital Infrastructure (GDI)' (MEA, 2016). This infrastructure must be used for government information as well as data-exchanges, i.e. for one-way information provision as well as two-way communications. As this is a generic infrastructure for all different kinds of communications from different parts of



government and with different business areas, standards are of crucial importance and the standards to be used should be open standards. It is emphasized that the facilities and standards for the GDI should be technology-independent.

The goal is thus to avoid that businesses are faced with a plethora of diverse communication facilities and standards. At the same time, the document observes that the Answers for Business website (answersforbusiness.nl), which was launched at the beginning of 2014, and which was an attempt to centralize communications with businesses, is only accessed directly by businesses to a limited extent. Other government websites such as the ones maintained by the Chamber of Commerce and the Tax Authorities are more well-known and are, therefore, used to a larger degree. The solution to this challenge is to make the Answers for Business accessible from all other government websites. And, 'the marketing of answersforbusiness.nl will be conducted via the aforementioned government organisations and will no longer focus on the answersforbusiness.nl brand', says the MEA document (MEA, 2016).

Other important initiatives comprise activities to enable the reuse of data previously entered by businesses so that companies will not have to re-enter the same kinds of data each time they use a government communication service. In 2012, a Company Dossier was set up to facilitate this. Later, this initiative has been enhanced by giving access to companies to the information that public authorities keep on their businesses. This makes it possible for companies to use this as a repository for information on their companies and to check the correctness of the data kept by public authorities.

Another initiative is to make access to public data open so that it can be used for various business initiatives and generate social and economic added value (MEA, 2016). Making public data available has for many years been a goal for the EU and for national governments, and in 2015, the Dutch minister for the Interior and Kingdom Relations established the National Open Data Agenda, which is to make data held by public authorities publicly available unless other concerns speak against it. The catch-phrase is 'open, unless'.

With respect to the international cross-border dimensions of policy initiatives regarding digitalization, the MEA document (MEA, 2016) refers to the EU initiatives. The Dutch economy is one of the world's most internationalized economies, and the international dimensions are, therefore, important. However, the document does not add initiatives to the EU agenda in the area but mentions the EU policies concerning the development of the Digital Single Market (DSM). The EU initiatives mentioned are addressing three goals: '1) encouraging cross-border online economic activities, 2) reinforcing the digital infrastructure, and 3) capitalizing on the potential of the European data economy' (MEA, 2016).

In the section on 'digitisation of sectors', focus is on four sectors: healthcare, energy, manufacturing and mobility. In the present report, we will only be dealing with manufacturing, as this includes the more generic perspective on policies for digitalization.

One of the ways in which the Dutch government has been dealing with digitalization policies is via a Top Sector approach. Policies for digitalization constitute a cross-cutting agenda for all these top sectors (Dutch Digital Delta, 2015). In order to promote digitalization, the Dutch government set up Team Smart Industry, which was commissioned to devise an action plan, which came into force in 2015. The action plan has three action lines: capitalization on existing knowledge, acceleration of field labs, and reinforcement of foundations (MEA, 2016).

As is stated in the MEA document (MEA, 2016), the rollout of field labs is the main priority. In these field labs businesses and knowledge institutes collaborate. The primary source of funding is private investments, but the field labs also apply for further funding from various financial mechanisms such as the SME Innovation Scheme for Top Sectors and the Top Consortium for Knowledge and Innovation.

Among the many different approaches and initiatives coming out of these field labs and the other activities with respect to digitalization, three approaches deserve special attention, as they may entail types of activities that can be inspirational for other countries. The three approaches are the focus on public-private partnerships (PPP), the emphasis on the need for standardization, and the prioritization of certain sectors in the policy initiatives.

The Netherlands is traditionally considered as one of the more liberal economies internationally. However, as has already been seen in some of the above-mentioned public initiatives, the state still has a very active role. The importance of the interplay and cooperation between private interests and public institutions is recognized and is an inherent part of policy approaches. PPPs are one of the ways in which this type of cooperation can be developed.

Standardization is another crucial part of the policy initiatives of the Dutch government. This is emphasized in the MEA document (MEA, 2016) and is also put forward as one of the action lines in Dutch Digital Delta document (2015). Action line 3 in this latter document is concerned with 'ICT for a connected world' and focuses on improving interoperability of information exchanges. This not only concerns communication networks. In fact, the standardization of communication networks is an area where national governments in most countries including the European countries have only little influence. However, the standardization and interoperability of innovative



products and services at the content and application levels is an important task for national governments and for the EU. In the Dutch Digital Agenda document (Dutch Digital Agenda, 2015) it is said that ‘the development of interoperability and standards is indispensable when it comes to creating efficient digital business, supply chain, electronic health record, and digital government’. The semantic level is emphasized in this context.

The last issue to be mentioned is the prioritization of certain sectors. As in the case with PPPs, governments with a liberal approach will often refrain from (at least explicitly) prioritize certain sectors over others. And, although one can say that the top sectors prioritized cover a broad range of business sectors, there still is a prioritization of some areas over others. The idea is clearly not to leave other sectors behind but to create some breakthrough initiatives that can lead the way to broader gains by way of digitalization.

4.4. Governance of digital policies

Public governance structures in the Netherlands are generally consensus oriented with clear decentral features. This also applies to digitalization policies and initiatives. In a report commissioned by the Swedish Institute for Growth and Policy Studies from 2003 (Molas-Gallart, et al., 2013) comparing ICT policies in the Netherlands and the UK for potential inspiration for Swedish ICT policies (Molas-Gallart, et al., 2013), the overall conclusion was that ICT policy development in the Netherlands is decentral and consensus oriented as compared to the policy processes in the UK, and that this has advantages as well as disadvantages. The disadvantages are related to sometimes slow decision procedures and a tendency towards lack of coordination. The advantages are a potentially greater degree of support for decisions taken and, therefore, better implementation processes.

During the past few years, however, there have been initiatives in the Netherlands towards a greater degree of coordination and centralization of digitalization policies. In 2014, a National Commissioner for Digital Government (digi-commissioner) was appointed by the Dutch government (De Digicommissaris, 2016) . The reason stated was that ‘without a strong progress of the governance and without better funding arrangements, we in The Netherlands are not going to succeed in getting the Generic Digital Infrastructure on the needed level or operational excellence’ (De Digicommissaris, 2016). The digi-commissioner is appointed by the Dutch government (cabinet) although there was no legal basis for this governance structure (De Digicommissaris, 2016). It is explained in the statement by the digi-commissioner that relevant laws and regulations in the area do exist but that they are often not consistent and only concerned with partial domains of sectors (De Digicommissaris, 2016).

The digi-commissioner is responsible to a Ministerial Commission consisting of high level ministers and a representative of the local governments and, furthermore, a representative of the major execution-organizations (De Digicommissaris, 2016). Also, a consulting group, Citizens and Businesses, provides input from end user perspectives. As stated by the digi-commissioner, 'The digital services to citizens and businesses cannot be implemented and developed successfully, separately from the ultimate users'.

The statement by the digi-commissioner concludes that for a central governance structure to work 'it is necessary that all government organisations have to work considering the principles of cooperation, not power! The involved parties have to realize (or been constantly shown) that they can be complementary' (De Digicommissaris, 2016).

The initiative to appoint a new central entity to complement other institutions thus aims at balancing the central aspects with the more decentral and cooperative governance structures. The issue of the combination of central and decentral structures is permanently present in digitalization policies of all countries. In Denmark, for instance, the national telecom and ICT regulator with responsibilities not only for telecoms regulation but also for ICT policies was dissolved in 2011 spreading out the responsibilities for ICT policies on several agencies of ministries. Any explicit reason for this move was not given, but the reasoning later discussed has been that ICT/digitalization policies have so widespread implications that all areas of governance need to be involved.

However, in the Netherlands, coming from a traditionally relatively decentralized governance structure, a coordinating and central body to direct digitalization policies has lately been implemented. Instead of placing digitalization policies under just one ministry, the version of more centralization in the Netherlands has opted for a coordinating body referring directly to the Prime-Minister and other high level ministries.

4.5. *Cross-border eGovernment services*

With respect to the Connecting Europe Facility (CEF) Building Blocks developed for monitoring and measuring the progress of the Digital Single Market, the Netherlands is on all 5 building blocks among the more advanced countries. This applies to eDelivery, where the evolution of eDelivery access points per country is measured. It also applies to the other measures, where eID is measured by the number eIDAS (electronic Identification, Authentication and trust Services) nodes conformance tests, eTranslation is measured by the number of language resources per country, eInvoicing is measured

by the number of public entity and service provider profiles, and eSignature is measured by the number of qualified trust service providers (CEF Digital).

The EU has issued an eIDAS Regulation adopted in 2014 and coming into force in September 2018. The Netherlands is one of the countries, which has come furthest in the application of this Regulation. The eIDAS 2018 Municipalities Project is an early implementation of the EU eID policy. On a page of the CEF Digital website, it is stated that this project 'enables citizens of EU Member States and EEA countries to electronically prove their identity with their nationally issued eID when seeking access to around 300 services in 81 municipalities across the Netherlands' (CEF Digital).

4.6. *Summary*

The Netherlands is a country with a relatively liberal approach to market developments. However, regulatory interventions setting (now and then strict) framework conditions but also providing financial stimulus and support when considered needed is part of the overall policies for the development of the economy. Markets are being controlled and guided and economic development is being facilitated. Part of this facilitation process currently is the so-called Top Sector approach. For a country with a relatively liberal market approach such a prioritization of certain sectors is notable.

The policies for digitalization follow the general direction of market policies in the Netherlands. As with many other countries, the first general ICT policy document was issued in the mid-1990s – in 1994. This document had a dual focus on infrastructure as well as service development and this dual focus has continued to be the overall approach of the Dutch government to ICT policies. There is thus a great degree of continuity of the digitalization policies, which is underpinned by the political consensus in this field.

Among the more notable political initiatives, which can be inspirational to other countries, are the public-private partnership initiatives, which are well in line with the overall policy mix of liberal market approaches and the need for promotion of specific developments. Also notable is the emphasis on the need for standardization of services, applications and content provision in communications between public authorities and business companies.

In line with this focus on standardized communications is the attempt to centralize the platform for communications between government and business. The aim is to make it easier for businesses to communicate with public institutions. In the same vein can be seen the establishment of a digi-commissioner with the purpose of better coordinating policies for digitalization.



In the area of more specific initiatives can be noted the establishment of a 5G field lab. Such an initiative is also taken in a few other European countries and will be important for getting the highest possible benefits from the various applications surrounding the development of 5G communications. Furthermore, the stimulation of an increased use of public data for building new business possibilities will be of importance.

In the area of cross-border initiatives, the Netherlands is implementing the EU policies for the development of a Digital Single Market connected with the 'EU eGovernment Action Plan 2016-2020' and more specifically with the initiatives related to the Connecting Europe Facility program. Especially with respect to eID and the eIDAS Regulation, the Netherlands has made progress with its EIDAS 2018 Municipalities Project.



5. Conclusion

The UK as well as the Netherlands has a broad business basis with no all-dominating business sectors. As with most other countries, the overwhelming majority of companies are micro or small enterprises. This contributes to the necessity of ease of access to government information and exchanges between government and businesses in order to lower the transaction costs of such communications. Micro-businesses and small enterprises will not have much time for these activities and will not be able to create special communication channels with public authorities.

In both countries, the markets are based on relatively liberal state policies. This implies state intervention by means of primarily framework regulation, but also the stimulation of market developments by means of targeted financial support and the mobilization of resources facilitated by cooperative relationships between private and public actors. Both countries must be considered as open economies with a large degree of reliance on international trading and investments including settlements.

In terms of digitalization and use of ICTs for business and other social purposes, both countries are among the most advanced. In the various international rankings mentioned in section 2 on current performance, the UK as well as the Netherlands is at the very top. This applies to the infrastructural parts including broadband facilities in terms of coverage and take-up and it applies on the service side with e-government services.

The overall policies for digitalization do not differ substantially, but the specific manners in which policies are constructed and implemented are obviously embedded within the specific business and other social structures of the two countries. Policies for ICT developments and digitalization have for the last quarter of a century played a prominent role in the two countries. Policies for digitalization are among the spearhead initiatives. For the past 25 years or so, there have been numerous policy plans and initiatives for advancing ICT infrastructures and the use and take-up of digital services and a vital part of such policies have included the provision of digital services to businesses.

As is emphasized in the section on UK policies, the provision of government services in online digital formats instead of the previous analog formats is only part of the general strategy. It is also a question of a digital transformation of government itself, the transformation of the economy as such towards a digital economy, and industrial strategies to increase economic productivity.

Important salient features of the policies for digitalization in both countries are the dual emphasis on promoting infrastructure enhancement as well as the services provided on



top of these infrastructures. In the infrastructural area, there is an overall reliance on private operators to extend broadband facilities. However, there is also a willingness to provide public economic support for targeted areas if the market is not able to provide the infrastructures considered needed. Another aspect is that both countries have taken political steps to support initiatives for public-private cooperation regarding the future use of 5G technologies for business purposes.

The use of public-private partnerships is a measure that can be found more generally in the policy approaches of both the UK and the Netherlands. Although the overall policy framework is guided towards liberal market policies, there is a willingness to enter into public-private arrangements and also a willingness to put special focus on certain business sectors, which are considered of strategic importance and which can be frontrunners in the general digitalization. This seems to be a little more pronounced in the Netherlands with the Top Sector approach but can also be seen in some of the initiatives of the UK government.

The standardization of services and applications provided by public authorities and used in communications with businesses is considered important in both countries. This will make it easier for businesses to communicate with government institutions. The same applies to the centralization of portals for information provision and communications. The UK has traditionally had a very centralized approach to government, while the Netherlands has been more decentralized. In both countries, however, there have been initiatives to provide but one single entry website for public information and communications. In the UK, this does not seem to have met serious obstacles, while in the Netherlands there seems to be a traditional for multiple entries to acquiring public information and for communicating with public authorities.

The UK has traditionally has a relatively centralized form of government, while the Netherlands have had a tradition for more decentralized forms of governance. In both countries, there is obviously a continual adaptation of the centralized and the decentralized aspects of government. The Netherlands have lately decided to centralize parts of governance of public infrastructure developments, while the UK has moved in the opposite direction with its policy initiatives regarding devolution.

The further issue to be mentioned is the use of open standards. Instead of large information system providers implementing their own proprietary systems, the UK as well as the Netherlands prioritizes the use of open standards, where there can be multiple systems providers but where interoperability is maintained.

Regarding cross-border initiatives, the UK and the Netherlands have been working on following up on the Digital Single Market policies of the EU including the EU



eGovernment Action Plans and the Connecting Europe Facility program. The UK as well as the Netherlands is among the frontrunners in implementing these plans and programs. Cross-border initiatives are, however, not among the primary policy initiatives of public institutions in the two countries. It is, to a considerable extent, first and foremost EU institutions that drive these policy initiatives.



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