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To:	Mr Jeppe TRANHOLM-MIKKELSEN, Secretary-General of the Council of the European Union
No. Cion doc.:	SWD(2017) 160 final - PART 34/62
Subject:	COMMISSION STAFF WORKING DOCUMENT Europe's Digital Progress Report 2017

Delegations will find attached document SWD(2017) 160 final - PART 34/62.

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Encl.: SWD(2017) 160 final - PART 34/62

COMMISSION STAFF WORKING DOCUMENT

Europe's Digital Progress Report 2017

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Europe's Digital Progress Report (EDPR) 2017 Country Profile United Kingdom

Europe's Digital Progress Report (EDPR) tracks the progress made by Member States in terms of their digitisation, combining quantitative evidence from the Digital Economy and Society Index (DESI)[1] with qualitative information on country-specific policies. It is structured around five chapters:

1 Connectivity	Fixed broadband, mobile broadband, broadband speed and prices
2 Human Capital	Internet use, basic and advanced digital skills
3 Use of Internet	Citizens' use of content, communication and online transactions
4 Integration of Digital Technology	Business digitisation and eCommerce
5 Digital Public Services	eGovernment

Digital Economy and Society Index (DESI) 2017 ranking

| United Kingdom | Cluster | EU |

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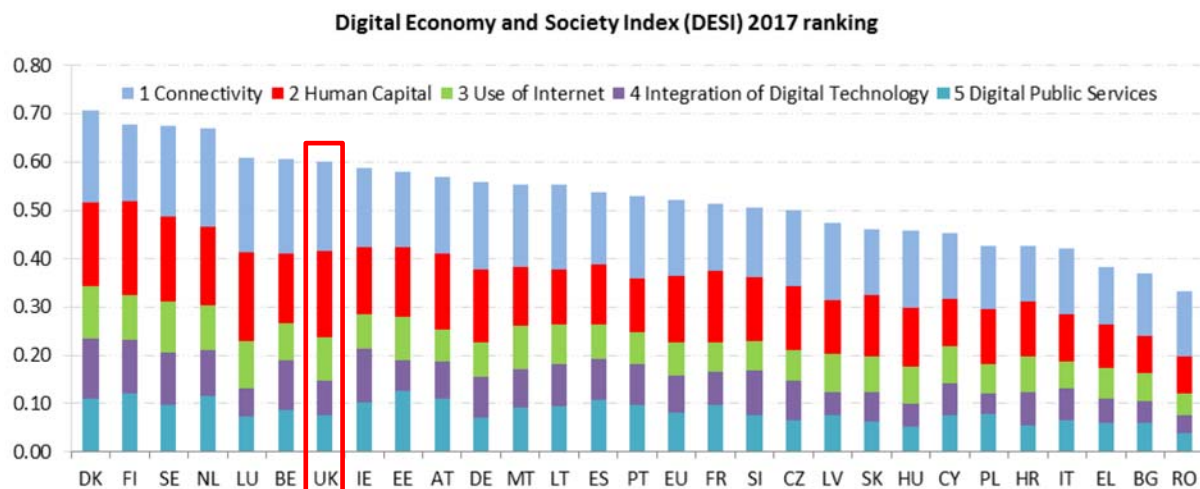
	rank	score	score	score
DESI 2017	**7**	**0.60**	**0.63**	**0.52**
DESI 2016[2]	6	0.58	0.60	0.49

The United Kingdom ranks 7th out of the 28 EU Member States in DESI 2017. While its ranking decreased by one place over 2016, its score increased somewhat due to an improved performance in all DESI domains. UK citizens are well connected: broadband coverage and take-up (fixed and mobile), and NGA coverage are high. Furthermore, progress is being made with NGA take-up. Most UK citizens are now online and make good use of a variety of online services, particularly for shopping, accessing online entertainment and for social networking. Their digital skills are also improving. However, some gaps still exist. In particular, a third of citizens still do not have basic digital skills and STEM graduate numbers have not increased, despite growing demand on the labour market. Use of digital technologies by businesses in the UK shows a mixed picture. While use of Social Media, Cloud and eCommerce is relatively high, use of Electronic Information Sharing, RFID and eInvoices is very low and showing little improvement. The UK ranks lowest in the DESI eGovernment domain. While UK citizens are intensive users of other online services, use of eGovernment services is low (though slightly above the EU average). One area in which the UK is advanced in terms of eGovernment is in Open Data, where it ranks first in the EU.

The United Kingdom belongs to the high performing cluster of countries[3].

On 18 May 2016 the UK government announced it was planning a Digital Economy Bill (see highlight box for further details)[4] and on 1 March 2017 it published its UK Digital Strategy.[5]
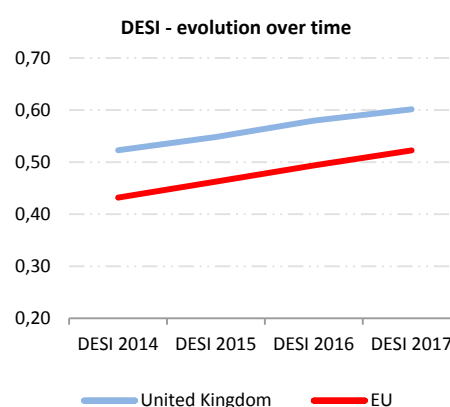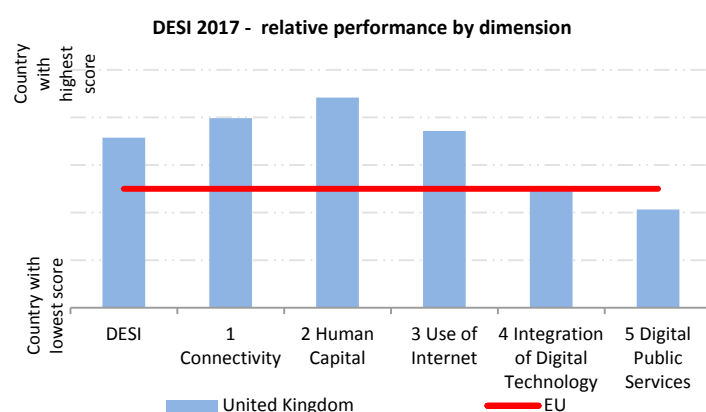
DESI 2017 - relative performance by dimension

DESI - evolution over time

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[2] The DESI 2016 was re-calculated for all countries to reflect slight changes in the choice of indicators and corrections to the underlying indicator data. As a result, country scores and rankings may have changed from the previous publication. For further information please consult the DESI methodological note at https://ec.europa.eu/digital-single-market/en/desi.

[3] High performing countries are Denmark, Finland, Sweden, the Netherlands, Belgium, the UK, Ireland, Luxembourg and Estonia.

[4] https://www.gov.uk/government/collections/digital-economy-bill-2016

[5] https://www.gov.uk/government/publications/uk-digital-strategy

1 Connectivity

1 Connectivity	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**6**	**0.74**	**0.75**	**0.63**
DESI 2016	6	0.72	0.73	0.59

	United Kingdom					EU
	DESI 2017			**DESI 2016**		**DESI 2017**
	value		rank	value	rank	value
1a1 Fixed Broadband Coverage % households	**99.97%** 2016	↓	5	**99.98%** 2015	5	**98%** 2016
1a2 Fixed Broadband Take-up % households	**87%** 2016	↑	3	**85%** 2015	3	**74%** 2016
1b1 Mobile Broadband Take-up Subscriptions per 100 people	**91** June 2016	↑	8	**88** June 2015	6	**84** June 2016
1b2 4G coverage[6] % households (average of operators)	**93%** 2016		12	**NA**		**84%** 2016
1b3 Spectrum[7] % of the target	**69%** 2016	↓	12	**73%** 2015	12	**68%** 2016
1c1 NGA Coverage % households	**92%** 2016	↑	8	**91%** 2015	9	**76%** 2016
1c2 Subscriptions to Fast Broadband % subscriptions >= 30Mbps	**43%** June 2016	↑	16	**36%** June 2015	14	**37%** June 2016
1d1 Fixed Broadband Price[8] % income	**1.3%** price 2016, income 2015	↓	17	**1.2%** price 2015, income 2015	16	**1.2%** price 2016, income 2015

The United Kingdom performed quite well in 2016 and is still making progress in the Connectivity dimension. The United Kingdom is fully covered with fixed broadband services. The 100% fixed broadband rural coverage is especially noteworthy as the EU average stands at 93%. Fixed broadband take-up is at 87%, well above EU average. NGA coverage is at 92% of households, significantly above the EU average (76%). Also take-up of mobile broadband, at 91 per 100 people, is significantly above the EU average of 84 per 100. As regards spectrum, the UK has assigned 69% of the overall harmonised spectrum for broadband and is only slightly above the EU average of 68%.

In March 2015 the Department for Culture, Media & Sport (DCMS) set out its latest digital communications infrastructure strategy in the "UK Next Generation Network Infrastructure

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[6] This is a new DESI indicator measuring the average coverage of telecom operators' 4G networks.

[7] There is a decrease in most of the Member States due to the additional EU harmonisation of the 700 MHz band in April 2016.

[8] Due to a slight methodological change, historical data was re-calculated.

Deployment Plan"[9]. On 18 March 2015 in the policy paper entitled "The digital communications infrastructure strategy,[10]" DCMS restated and updated its overall broadband speed and coverage targets, aiming at providing 95 % coverage with 24 Mbps by 2017 and at least 100 Mbps[11] "to nearly all UK premises", without mentioning a concrete deadline.

The Autumn Statement from November 2016[12] announced further support for broadband delivery. The government announced it will invest over £1 billion by 2020-21 in full-fibre deployment and 5G. This will be delivered through: £400m for a Digital Infrastructure Investment Fund, at least matched by private finance; 100% business rates relief for new full-fibre infrastructure for 5 years from 1 April 2017; funding for local areas to support investment in a much bigger fibre 'spine' across the UK; funding for a programme of integrated fibre and 5G, with further detail to be announced in the 2017 Budget. [13]

In 2016 the United Kingdom transposed the Cost Reduction Directive, which could help to speed up broadband roll-out.

There are several challenges for NGA-rollout. Although total NGA coverage of households is 92%, the digital divide is rather evident, as NGA coverage is only 78% in rural areas[14]. xDSL technologies are the main source of connectivity: as of July 2016 the share of DSL connections stood at 80,1%. Additionally the market share of FTTH/B connections was only 0.5%[15]. Based on this, despite the overall solid trend, there are still doubts as to whether the current approach will be sufficient to meet the proposed targets.

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/418567/UK_Next_Generation_Network_Infrastructure_Deployment_Plan_March_15.pdf

10   https://www.gov.uk/government/publications/the-digital-communications-infrastructure-strategy/the-digital-communications-infrastructure-strategy

[11] The relevant DAE target is that 50% of the EU to subscribe to broadband above 100 Mbps by 2020.

[12] The Chancellor of the Exchequer gave his Autumn Statement to Parliament on 23 November 2016. (source: https://www.gov.uk/government/topical-events/autumn-statement-2016)

[13] On 1 March 2017 the UK Government has released an umbrella strategy to support the digitalization of the country, setting out the aim to complete the roll-out of 4G and superfast broadband and to implement a broadband universal service obligation (USO) by 2020. It also reconfirmed the £1 billion investment program in full fibre and 5G. Source: DCMS, "UK Digital Strategy", 1 March 2017
(https://www.gov.uk/government/publications/uk-digital-strategy)

[14] Source: Broadband Coverage Study (IHS and Point Topic). Data as of October 2015 and October 2016

[15] Source: Communications Committee. Data as of July 2016

2 Human Capital

2 Human Capital	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**3**	**0.71**	**0.68**	**0.55**
DESI 2016	3	0.69	0.66	0.53

	United Kingdom					EU
	DESI 2017			**DESI 2016**		**DESI 2017**
	value		rank	value	rank	value
2a1 Internet Users	93%	↑	3	90%	5	79%
% individuals	2016			2015		2016
2a2 At Least Basic Digital Skills	69%	↑	5	67%	6	56%
% individuals	2016			2015		2016
2b1 ICT Specialists[16]	5.0%	↑	3	4.8%	5	3.5%
% of employed individuals	2015			2014		2015
2b2 STEM Graduates	23	→	3	23	1	19
Per 1000 individuals (aged 20-29)	2014			2013		2014

In Human Capital, the United Kingdom performs very well but its recent progress has been rather limited. A large proportion of the UK population uses the internet regularly (93% - at least once a week); most people do so daily; and only 4% of the population has never used the internet. These figures are well above the averages for the European Union, 79% and 14%, respectively. Nevertheless, the UK faces some digital skills gaps. In terms of basic digital skills, the UK performs above average in the European Union: 69 % of the population had at least basic digital skills in 2016; the EU average was 56%. However a third of the population is in effect digitally illiterate.

The UK also suffers from a shortage of skilled ICT professionals. While employment of ICT professionals in the UK has grown significantly in recent years, supply is not keeping pace with demand; as graduations in Computer Science have steadily declined from 30,520 in 2011/12 to 26,415 for 2015/16[17]. There is also a strong gender divide with very few women studying and choosing ICT careers. Only around 19% of Computer Science graduates are female. While many countries in the European Union face similar challenges, the UK is particularly affected. At around 1.5 million, the UK employs the largest number of ICT professionals in the European Union, accounting for around 5% of UK employment.

The United Kingdom's digital skills and inclusion strategy forms part of its Digital Strategy, published on 1 March 2017.[18] The strategy has three strands focusing on tackling digital

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[16] Historical data have been revised by Eurostat.

[17] https://www.hesa.ac.uk/data-and-analysis/students/qualifications

[18] https://www.gov.uk/government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need

exclusion, developing the full range of digital skills that individuals and companies need and developing strong collaboration between the public, private and third sector. As part of this new strategy the UK will develop the role of public institutions such as libraries and the NHS in improving digital inclusion, provide adults in England who lack basic digital skills free access to training, establish a new Digital Skills Partnership[19] and provide support to digital skills development in education.[20]

The UK is one of the few countries in the EU with a comprehensive computing curriculum covering compulsory education from the age of 5. It was introduced into schools in September 2014. The UK Cyber Security Strategy, published in November 2016, also announces the intention to develop and implement a new cyber security skills curriculum for schools.[21] The UK is strengthening its vocational education and training system. It has created new degree apprenticeships, including for digital, and in April 2017 introduced a new apprenticeship levy.[22] The Ada National College for Digital Skills provides A-level and BTEC courses in digital for upper secondary students and digital apprenticeships for students of 19+. New curricula for 15 technical education routes are being developed.

The UK is taking active steps to address its digital skills gaps. Its new comprehensive digital skills and inclusion strategy and measures taken in support of it should build on its previous efforts and help close these gaps.

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[19] Under its previous digital skills strategy, published in October 2014, two main bodies worked together with government to implement and monitor the strategy: The Tech Partnership, a network of employers working to develop tech (ICT) specialist skills, and "Doteveryone" (formerly "Go On UK") addressing basic digital skills and digital inclusion.

[20] e.g. through funding a teachers' network in Computing Science, continuing to provide bursaries and scholarships to encourage new computing graduates to take up teaching, implementing the recommendations of the Shadolt Review of Computer Science Degree Accreditation and Graduate Employability and providing £20 million to launch an institute to improve the quality of digital skills provision in higher education.

[21] https://www.gov.uk/government/publications/national-cyber-security-strategy-2016-to-2021

[22] https://www.gov.uk/government/publications/apprenticeship-levy-how-it-will-work/apprenticeship-levy-how-it-will-work

3 Use of Internet

3 Use of Internet	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**7**	**0.59**	**0.60**	**0.48**
DESI 2016	7	0.57	0.57	0.45

	United Kingdom				EU
	DESI 2017		**DESI 2016**		**DESI 2017**
	value	rank	value	rank	value
3a1 News % individuals who used Internet in the last 3 months	68% ↓ 2016	22	71% 2015	17	70% 2016
3a2 Music, Videos and Games[23] % individuals who used Internet in the last 3 months	80% 2016	13	NA		78% 2016
3a3 Video on Demand[24] % individuals who used Internet in the last 3 months	34% 2016	5	NA		21% 2016
3b1 Video Calls % individuals who used Internet in the last 3 months	49% ↑ 2016	10	43% 2015	13	39% 2016
3b2 Social Networks % individuals who used Internet in the last 3 months	73% ↑ 2016	10	71% 2015	8	63% 2016
3c1 Banking % individuals who used Internet in the last 3 months	68% ↑ 2016	11	63% 2015	12	59% 2016
3c2 Shopping % internet users (last year)	87% → 2016	1	87% 2015	1	66% 2016

In Use of Internet Services, the United Kingdom performs relatively well, ranking 7th out of the 28 Member States. As mentioned above, most UK citizens are now online (93%). By far the most popular online activity in the UK is shopping. 87% of UK internet users buy online. As such, the UK ranks first in terms of online shopping amongst Internet users. This position is unchanged over the last year. Downloading music, videos and games (80%), Social networking (73%), reading online news (68%) and online banking (68%) are also activities undertaken by the majority of internet users. Use of VoD (Video on Demand) is also relatively more widespread than in other EU countries. Furthermore, use of video calls is increasing with almost half of internet users in the UK now using these services.

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[23] Break in series due to a change in the Eurostat survey.

[24] Break in series due to a change of data source. New source is Eurostat.

4 Integration of Digital Technology

4 Integration of Digital Technology	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**15**	**0.37**	**0.44**	**0.37**
DESI 2016	14	0.35	0.41	0.35

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

In Integration of Digital Technologies by businesses, the United Kingdom shows only average performance. While its progress is on a par with the EU average, businesses in the UK are not fully taking advantage of the possibilities of digital technologies for business. The percentages of businesses using technologies such as electronic information sharing (ERP – 17%) and RFID (1.6%), are very low; so the UK ranks third to last and second to last in the EU for these two indicators. However, take-up of Social Media, at 40% of enterprises, is advanced. Domestic eCommerce by SMEs is equal to the average for the EU, as is turnover from eCommerce. The percentage of SMEs that sell online cross border is somewhat higher.

The UK's Digital Economy Strategy 2015-2018[25], published in 2015, sets out UK strategy to help businesses innovate through digital technologies. The strategy has five objectives: encouraging digital innovators; focus on the user; equipping the digital innovator; growing infrastructure; platforms and ecosystems; and ensuring sustainability. It commits a total of £120 million over a four year period for the implementation of the strategy, including £15 million a year to support innovative business projects and a further £15 million to support the Data Catapult centre, the Open Data Institute and Tech City UK, each of which is involved in delivering the objectives of the strategy.

The timely implementation of this strategy is important to support the digitisation of UK businesses and the development of the UK as a digital economy.

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[25] https://www.gov.uk/government/publications/digital-economy-strategy-2015-2018

5 Digital Public Services

5 Digital Public Services	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**18**	**0.50**	**0.59**	**0.55**
DESI 2016	15	0.48	0.57	0.51

	United Kingdom					EU
	DESI 2017			DESI 2016		DESI 2017
	value		rank	value	rank	value
5a1 eGovernment Users	**36%**	↑	**16**	**34%**	**16**	**34%**
% internet users (last year)	2016			2015		2016
5a2 Pre-filled Forms	**16**	↓	**26**	**17**	**26**	**49**
Score (0 to 100)	2016			2015		2016
5a3 Online Service Completion	**76**	↓	**21**	**77**	**20**	**82**
Score (0 to 100)	2016			2015		2016
5a4 Open Data[26]	**78%**	↑	**6**	**69%**	**4**	**59%**
% of maximum score	2016			2015		2016

In Public Services, the United Kingdom shows below average performance. It has also slipped three places in the DESI rankings for this dimension since last year. While active eGovernment use is somewhat above the EU average, online service completion and, in particular, the sophistication of the services on offer could be improved: availability of pre-filled forms is very low (16 out of 100), and the UK ranks 26th out of 28 countries. By contrast, the UK performs relatively well within the EU for use of Open Data.

In February 2017 the UK government published a Government Transformation Strategy 2017-2020.[27] Building on the 2012 Government Digital Strategy[28], this new strategy is structured around 5 objectives: 1) continue to deliver world-class digital services and transform the way government operates, from front end to back office, in a modern and efficient way; 2) develop the right skills and culture among our people and leaders, and bring together policy and delivery to enable services to be delivered in a learning and iterative environment, focused on outcomes for citizens; 3) build better workplace tools and processes to make it easier for public servants to work effectively, including sourcing, governance, workplace IT, businesses cases, human resources processes, common technology across the public sector and better digital tools for civil servants; 4) make better use of data - not just for transparency, but to enable transformation across government and the private sector; 5) create, operate, iterate and embed good use of shared platforms and reusable business capabilities to speed up transformation - including shared patterns, components and establishing open standards.

The announcement of the new Government Transformation Strategy is very welcome. Its implementation will be crucial for improving eGovernment services in the UK and for encouraging more eGovernment usage by citizens.

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[26] Change of data source. The historical data have also been restated. The new source is the European Data Portal.

[27] https://www.gov.uk/government/publications/government-transformation-strategy-2017-to-2020/government-transformation-strategy

[28] https://www.gov.uk/government/publications/government-digital-strategy

Highlight 2017[29]: The Digital Economy Bill

The Digital Economy Bill introduces measures to modernise the climate for enterprise, ensuring that Britain remains at the forefront of the global 21st century economy. Its stated goals are to:

- empower consumers and provide better connectivity so that everyone has access to broadband wherever they live – for example it proposes a new broadband Universal Service Obligation of at least 10Mbps;
- build a better infrastructure fit for the digital future – including by reforming the Electronic Communications Code;
- enable better public services using digital technologies;
- provide important protections for citizens from spam email and nuisance calls and protect children from online pornography – including introducing a legal requirement for commercial providers to have age verification controls for online pornographic content.

The bill has been passed by the House of Commons (lower house) and is currently being reviewed by the House of Lords (upper house). Once it has been passed by both houses, it will go for Royal assent before passing into law.

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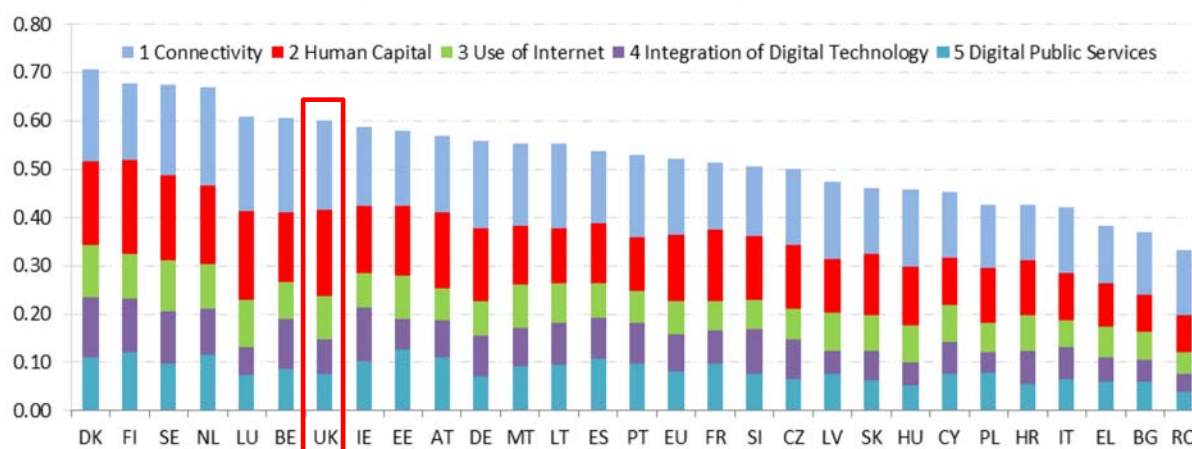
1 Connectivity	Fixed broadband, mobile broadband, broadband

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[29] Highlight 2016: "The TECH partnership" The United Kingdom has an active digital skills coalition in "The TECH partnership" which is licensed by the UK government as the Sector Skills Council for Business and Technology and which functions as the UK's national coalition in the Grand Coalition for Digital Jobs. It is a coalition of employers (including also a stakeholders' network and a set of Ambassadors, including a significant cohort of MPs), working to "Inspire young people about technology, accelerate the flow of talented people from all backgrounds into technology careers and help companies develop the technology skills they need for the future." Together with "Go On UK", the UK initiative on digital inclusion and basic digital skills, the TECH partnership is responsible for tracking and reporting on progress on the UK's digital skills strategy. It is also responsible for the development of the highly successful ITMB course designed to bridge the gap between IT and business and which has spread and been emulated across a number of universities and higher education establishments in the UK.

[30] https://ec.europa.eu/digital-single-market/en/desi

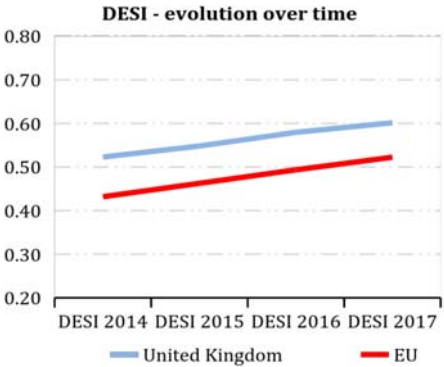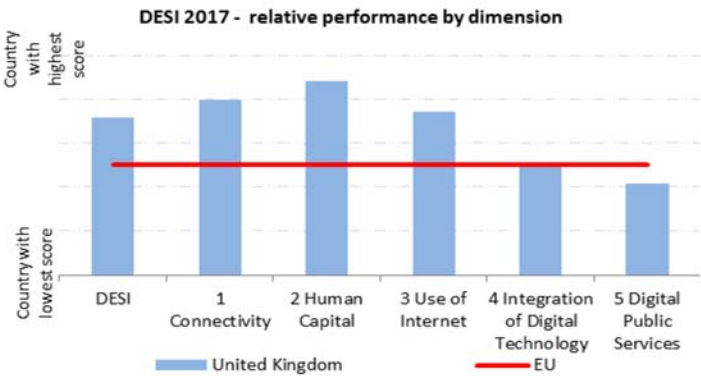|	
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exist. In particular, a third of citizens still do not have basic digital skills and STEM graduate numbers have not increased, despite growing demand on the labour market. Use of digital technologies by businesses in the UK shows a mixed picture. While use of Social Media, Cloud and eCommerce is relatively high, use of Electronic Information Sharing, RFID and eInvoices is very low and showing little improvement. The UK ranks lowest in the DESI eGovernment domain. While UK citizens are intensive users of other online services, use of eGovernment services is low (though slightly above the EU average). One area in which the UK is advanced in terms of eGovernment is in Open Data, where it ranks first in the EU. The United Kingdom belongs to the high performing cluster of countries[32].

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DESI 2017 - relative performance by dimension

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/418567/UK_Next_Generation_Net

communications infrastructure strategy,[39]" DCMS restated and updated its overall broadband speed and coverage targets, aiming at providing 95 % coverage with 24 Mbps by 2017 and at least 100 Mbps[40] "to nearly all UK premises", without mentioning a concrete deadline.

The Autumn Statement in November 2016[41] announced further support for digital infrastructure. The Government announced it will invest over £1 billion by 2020-21 in full-fibre deployment and 5G. This will be delivered through: £400m for a Digital Infrastructure Investment Fund, at least matched by private finance; 100% business rates relief for new full-fibre infrastructure for 5 years from 1 April 2017; funding for local areas to support investment in a much bigger fibre 'spine' across the UK; and funding for a programme of 5G trials and testbeds. [42]

In the Spring 2017 Budget, the Government announced further details on these programmes and published its 5G strategy. On 5G, the Government announced the creation of a new national 5G Innovation Network - with up to £16m made available for UK research institutions to cooperate on a 5G facility to trial and demonstrate the technology. Also, £200m has been made available to fund locally-led projects across the UK to leverage local and commercial investment in full fibre broadband.

In 2016 the United Kingdom transposed the Cost Reduction Directive, which ensures digital communications providers can access other providers' physical infrastructure, across a range of sectors, on fair and reasonable terms.

There are several challenges for NGA-rollout. Although total NGA coverage of households is 92%, the digital divide is rather evident, as NGA coverage is only 78% in rural areas[43]. xDSL technologies are the main source of connectivity: as of July 2016 the share of DSL connections stood at 80,1%. Additionally the market share of FTTH/B connections was only 0.5%[44]. Based on this, despite the overall solid trend, there are still doubts as to whether the current approach will be sufficient to meet the proposed targets.

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work_Infrastructure_Deployment_Plan_March_15.pdf

[39]   https://www.gov.uk/government/publications/the-digital-communications-infrastructure-strategy/the-digital-communications-infrastructure-strategy

[40] The relevant DAE target is that 50% of the EU to subscribe to broadband above 100 Mbps by 2020.

[41] The Chancellor of the Exchequer gave his Autumn Statement to Parliament on 23 November 2016. (source: https://www.gov.uk/government/topical-events/autumn-statement-2016)

[42] On 1 March 2017 the UK Government has released an umbrella strategy to support the digitalization of the country, setting out the aim to complete the roll-out of 4G and superfast broadband and to implement a broadband universal service obligation (USO) by 2020. It also reconfirmed the £1 billion investment program in full fibre and 5G. Source: DCMS, "UK Digital Strategy", 1 March 2017

(https://www.gov.uk/government/publications/uk-digital-strategy)

[43] Source: Broadband Coverage Study (IHS and Point Topic). Data as of October 2015 and October 2016

[44] Source: Communications Committee. Data as of July 2016

2 Human Capital

2 Human Capital	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**3**	**0.71**	**0.68**	**0.55**
DESI 2016	3	0.69	0.66	0.53

	United Kingdom				EU
	DESI 2017		DESI 2016		DESI 2017
	value	rank	value	rank	value
2a1 Internet Users	93% ↑	3	90%	5	79%
% individuals	2016		2015		2016
2a2 At Least Basic Digital Skills	69% ↑	5	67%	6	56%
% individuals	2016		2015		2016
2b1 ICT Specialists[45]	5.0% ↑	3	4.8%	5	3.5%
% of employed individuals	2015		2014		2015
2b2 STEM Graduates	23 →	3	23	1	19
Per 1000 individuals (aged 20-29)	2014		2013		2014

In Human Capital, the United Kingdom performs very well but its recent progress has been rather limited. A large proportion of the UK population uses the internet regularly (93% - at least once a week); most people do so daily; and only 4% of the population has never used the internet. These figures are well above the averages for the European Union, 79% and 14%, respectively. Nevertheless, the UK faces some digital skills gaps. In terms of basic digital skills, the UK performs above average in the European Union: 69 % of the population had at least basic digital skills in 2016; the EU average was 56%. However, as such, almost a third of the population does not have basic digital skills.

The UK also suffers from a shortage of skilled ICT professionals. While employment of ICT professionals in the UK has grown significantly in recent years, supply is not keeping pace with demand; as graduations in Computer Science have steadily declined from 30,520 in 2011/12 to 26,415 for 2015/16[46]. There is also a strong gender divide with very few women studying and choosing ICT careers. Only around 19% of Computer Science graduates are female. While many countries in the European Union face similar challenges, the UK is particularly affected. At around 1.5 million, the UK employs the largest number of ICT professionals in the European Union, accounting for around 5% of UK employment.

The United Kingdom's digital skills and inclusion strategy forms part of its Digital Strategy, published on 1 March 2017.[47] The strategy has three strands focusing on tackling digital exclusion, developing the full range of digital skills that individuals and companies need and

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[45] Historical data have been revised by Eurostat.

[46] https://www.hesa.ac.uk/data-and-analysis/students/qualifications

[47] https://www.gov.uk/government/publications/uk-digital-strategy/2-digital-skills-and-inclusion-giving-everyone-access-to-the-digital-skills-they-need

developing strong collaboration between the public, private and third sector. As part of this new strategy the UK will develop the role of public institutions such as libraries and the NHS in improving digital inclusion, provide adults in England who lack basic digital skills free access to training, establish a new Digital Skills Partnership[48] and provide support to digital skills development in education.[49]

The UK is one of the few countries in the EU with a comprehensive computing curriculum covering compulsory education from the age of 5. It was introduced into schools in September 2014. The UK Cyber Security Strategy, published in November 2016, also outlines that cyber security will be embedded in the school curriculum where needed.[50] The UK is strengthening its vocational education and training system. It has created new degree apprenticeships, including for digital, and in April 2017 introduced a new apprenticeship levy.[51] The Ada National College for Digital Skills provides BTEC courses in digital for upper secondary students and digital apprenticeships for students of 19+. New curricula for 15 technical education routes are being developed.

The UK is taking active steps to address its digital skills gaps. Its new comprehensive digital skills and inclusion strategy and measures taken in support of it should build on its previous efforts and help close these gaps.

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[48] Under its previous Digital Inclusion strategy, published in October 2014, two main bodies worked together with government to implement and monitor the strategy: The Tech Partnership, a network of employers working to develop tech (ICT) specialist skills, and "Doteveryone" (formerly "Go On UK") addressing basic digital skills and digital inclusion.

[49] e.g. through funding a teachers' network in Computing Science, continuing to provide bursaries and scholarships to encourage new computing graduates to take up teaching, implementing the recommendations of the Shadolt Review of Computer Science Degree Accreditation and Graduate Employability and providing £20 million to launch an institute to improve the quality of digital skills provision in higher education.

[50] https://www.gov.uk/government/publications/national-cyber-security-strategy-2016-to-2021

[51] https://www.gov.uk/government/publications/apprenticeship-levy-how-it-will-work/apprenticeship-levy-how-it-will-work

3 Use of Internet

3 Use of Internet	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**7**	**0.59**	**0.60**	**0.48**
DESI 2016	7	0.57	0.57	0.45

	United Kingdom				EU
	DESI 2017		DESI 2016		DESI 2017
	value	rank	value	rank	value
3a1 News % individuals who used Internet in the last 3 months	68% ↓ 2016	22	71% 2015	17	70% 2016
3a2 Music, Videos and Games[52] % individuals who used Internet in the last 3 months	80% 2016	13	NA		78% 2016
3a3 Video on Demand[53] % individuals who used Internet in the last 3 months	34% 2016	5	NA		21% 2016
3b1 Video Calls % individuals who used Internet in the last 3 months	49% ↑ 2016	10	43% 2015	13	39% 2016
3b2 Social Networks % individuals who used Internet in the last 3 months	73% ↑ 2016	10	71% 2015	8	63% 2016
3c1 Banking % individuals who used Internet in the last 3 months	68% ↑ 2016	11	63% 2015	12	59% 2016
3c2 Shopping % internet users (last year)	87% → 2016	1	87% 2015	1	66% 2016

In Use of Internet Services, the United Kingdom performs relatively well, ranking 7th out of the 28 Member States. As mentioned above, most UK citizens are now online (93%). By far the most popular online activity in the UK is shopping. 87% of UK internet users buy online. As such, the UK ranks first in terms of online shopping amongst Internet users. This position is unchanged over the last year. Downloading music, videos and games (80%), Social networking (73%), reading online news (68%) and online banking (68%) are also activities undertaken by the majority of internet users. Use of VoD (Video on Demand) is also relatively more widespread than in other EU countries. Furthermore, use of video calls is increasing with almost half of internet users in the UK now using these services.

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[52] Break in series due to a change in the Eurostat survey.

[53] Break in series due to a change of data source. New source is Eurostat.

4 Integration of Digital Technology

4 Integration of Digital Technology	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**15**	**0.37**	**0.44**	**0.37**
DESI 2016	14	0.35	0.41	0.35

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

In Integration of Digital Technologies by businesses, the United Kingdom shows only average performance. While its progress is on a par with the EU average, businesses in the UK are not fully taking advantage of the possibilities of digital technologies for business. The percentages of businesses using technologies such as electronic information sharing (ERP – 17%) and RFID (1.6%), are very low; so the UK ranks third to last and second to last in the EU for these two indicators. However, take-up of Social Media, at 40% of enterprises, is advanced. Domestic eCommerce by SMEs is equal to the average for the EU, as is turnover from eCommerce. The percentage of SMEs that sell online cross border is somewhat higher.

The UK's Digital Economy Strategy 2015-2018[54], published in 2015, sets out UK strategy to help businesses innovate through digital technologies. The strategy has five objectives: encouraging digital innovators; focus on the user; equipping the digital innovator; growing infrastructure; platforms and ecosystems; and ensuring sustainability. It commits a total of £120 million over a four year period for the implementation of the strategy, including £15 million a year to support innovative business projects and a further £15 million to support the Data Catapult centre, the Open Data Institute and Tech City UK, each of which is involved in delivering the objectives of the strategy. The timely implementation of this strategy is important to support the digitisation of UK businesses and the development of the UK as a digital economy.

The UK government has also announced £13 million of funding support for the business-led

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[54] https://www.gov.uk/government/publications/digital-economy-strategy-2015-2018

Productivity Council to support stronger business-to-business engagement, including through the appropriate use of digital technologies. This initiative, will provide management training and business-to-business coaching through its specialised productivity academies across the country.

5 Digital Public Services

5 Digital Public Services	United Kingdom		Cluster	EU
	rank	score	score	score
DESI 2017	**18**	**0.50**	**0.59**	**0.55**
DESI 2016	15	0.48	0.57	0.51

	United Kingdom					EU
	DESI 2017			DESI 2016		DESI 2017
	value		rank	value	rank	value
5a1 eGovernment Users	**36%**	↑	**16**	**34%**	**16**	**34%**
% internet users (last year)	2016			2015		2016
5a2 Pre-filled Forms	**16**	↓	**26**	**17**	**26**	**49**
Score (0 to 100)	2016			2015		2016
5a3 Online Service Completion	**76**	↓	**21**	**77**	**20**	**82**
Score (0 to 100)	2016			2015		2016
5a4 Open Data[55]	**78%**	↑	**6**	**69%**	**4**	**59%**
% of maximum score	2016			2015		2016

In Public Services, the United Kingdom shows below average performance. It has also slipped three places in the DESI rankings for this dimension since last year. While active eGovernment use is somewhat above the EU average, online service completion and, in particular, the sophistication of the services on offer could be improved: availability of pre-filled forms is very low (16 out of 100), and the UK ranks 26th out of 28 countries. This is in part due to the adaptation of public services to UK citizens' aversion to data-withholding by public administrations. By contrast, the UK performs relatively well within the EU for use of Open Data.

In February 2017 the UK government published a Government Transformation Strategy 2017-2020.[56] Building on the 2012 Government Digital Strategy[57], this new strategy is structured around 5 objectives: 1) continue to deliver world-class digital services and transform the way government operates, from front end to back office, in a modern and efficient way; 2) develop the right skills and culture among our people and leaders, and bring together policy and delivery to enable services to be delivered in a learning and iterative environment, focused on outcomes for citizens; 3) build better workplace tools and processes to make it easier for public servants to work effectively, including sourcing, governance, workplace IT, businesses cases, human resources processes, common technology across the public sector and better digital tools for civil servants; 4) make better use of data - not just for transparency, but to enable transformation across government and the private sector; 5) create, operate, iterate and embed good use of shared platforms and reusable business capabilities to speed up transformation - including shared patterns, components and establishing open standards.

The announcement of the new Government Transformation Strategy is very welcome. Its implementation will be crucial for improving eGovernment services in the UK and for

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[55] Change of data source. The historical data have also been restated. The new source is the European Data Portal.

[56] https://www.gov.uk/government/publications/government-transformation-strategy-2017-to-2020/government-transformation-strategy

[57] https://www.gov.uk/government/publications/government-digital-strategy

encouraging more eGovernment usage by citizens.

Highlight 2017[58]: The Digital Economy Bill

The Digital Economy Bill introduces measures to modernise the climate for enterprise, ensuring that Britain remains at the forefront of the global 21st century economy. Its stated goals are to:

- empower consumers and provide better connectivity so that everyone has access to broadband wherever they live – for example it proposes a new broadband Universal Service Obligation of at least 10Mbps;
- build a better infrastructure fit for the digital future – including by reforming the Electronic Communications Code;
- enable better public services using digital technologies;
- provide important protections for citizens from spam email and nuisance calls and protect children from online pornography – including introducing a legal requirement for commercial providers to have age verification controls for online pornographic content.

The bill has been passed by the House of Commons (lower house) and is currently being reviewed by the House of Lords (upper house). Once it has been passed by both houses, it will go for Royal assent before passing into law.

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[58] Highlight 2016: "The TECH partnership" The United Kingdom has an active digital skills coalition in "The TECH partnership" which is licensed by the UK government as the Sector Skills Council for Business and Technology and which functions as the UK's national coalition in the Grand Coalition for Digital Jobs. It is a coalition of employers (including also a stakeholders' network and a set of Ambassadors, including a significant cohort of MPs), working to "Inspire young people about technology, accelerate the flow of talented people from all backgrounds into technology careers and help companies develop the technology skills they need for the future." Together with "Go On UK", the UK initiative on digital inclusion and basic digital skills, the TECH partnership is responsible for tracking and reporting on progress on the UK's digital skills strategy. It is also responsible for the development of the highly successful ITMB course designed to bridge the gap between IT and business and which has spread and been emulated across a number of universities and higher education establishments in the UK.