

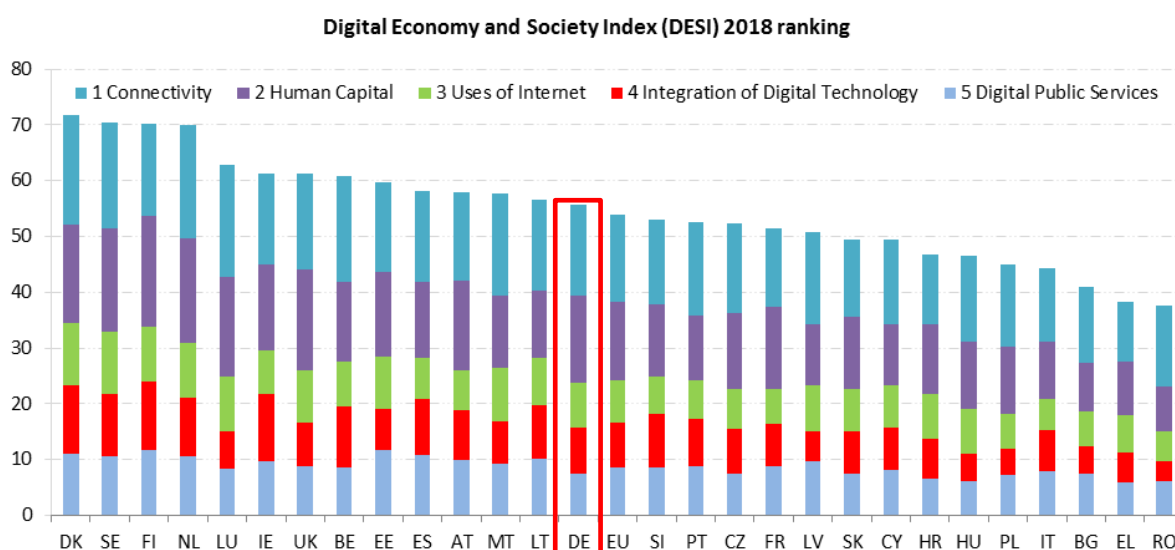
Digital Economy and Society Index (DESI)¹ 2018

Country Report Germany

The DESI report tracks the progress made by Member States in terms of their digitisation. It is structured around five chapters:

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

The DESI was re-calculated for the previous years 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>.



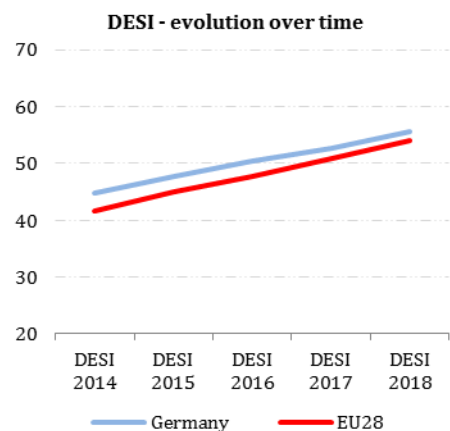
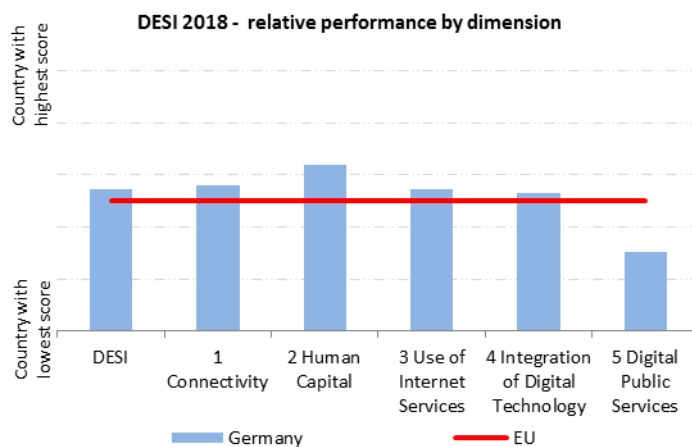
¹ <https://ec.europa.eu/digital-single-market/en/desi>

	Germany		Cluster	EU
	rank	score	score	score
DESI 2018	14	55.6	54.7	54
DESI 2017 ²	14	52.7	51.5	50.8

Germany ranks 14th out of the 28 EU Member States. Overall, it progressed over the last year. It is performing well as regards fixed broadband take-up and prices. However, there is an obvious urban-rural digital divide as regards fast Internet coverage and the share of fibre connections is very low throughout the country. Germans have good digital skills (7th rank), although a shortage of ICT professionals may hamper the potential of Germany's economy. German Internet users are very active online shoppers and German enterprises are active in selling online. The country's greatest digital challenge is to improve the online interaction between public authorities and citizens. With only 39% of the population being eGovernment users, Germany ranks 25th among the Member States in this respect.

Germany belongs to the Medium performing cluster of countries³.

In 2014, Germany adopted its Digital Agenda 2014-2017⁴ and in March 2016 the Federal Ministry for Economic Affairs and Energy presented the Digital Strategy 2025⁵. A state minister for digital affairs attached to the Chancellor's Office has become part of the new government established in March 2018.



² The DESI was re-calculated for 2017 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 have changed for Germany from the previous publication, where it ranked 11th. The main changes are new indicators on ultrafast broadband and eHealth.

³ Medium performing countries are Latvia, Czech Republic, Slovenia, France, Portugal, Spain, Lithuania, Malta, Germany and Austria.

⁴ <http://www.bmwi.de/EN/Topics/Technology/digital-agenda.html>

⁵ <https://www.bmwi.de/English/Redaktion/Pdf/ict-strategy-digital-germany-2015,property=pdf,bereich=bmwi2012,sprache=en,rwb=true.pdf>

1 Connectivity

1 Connectivity	Germany		Cluster	EU
	rank	score	score	score
DESI 2018	13	64,7	62,4	62,6
DESI 2017	11	62,1	58,8	58,5

	Germany				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
1a1 Fixed Broadband Coverage % households	98% →	17	98%	16	97%
	2017		2016		2017
1a2 Fixed Broadband Take-up % households	88% ↑	3	86%	4	75%
	2017		2016		2017
1b1 4G Coverage % households (average of operators)	88% ↑	23	86%	20	91%
	2017		2016		2017
1b2 Mobile Broadband Take-up Subscriptions per 100 people	79 ↑	22	73	21	90
	2017		2016		2017
1c1 Fast Broadband (NGA) Coverage % households covered by VDSL, FTTP or Docsis 3.0	84% ↑	15	82%	11	80%
	2017		2016		2017
1c2 Fast broadband take-up % homes subscribing to >= 30Mbps	36% ↑	16	26%	16	33%
	2017		2016		2017
1d1 Ultrafast Broadband Coverage % households covered by FTTP or Docsis 3.0	64.9%	19	NA		58%
	2017				2017
1d2 Ultrafast Broadband take-up % homes subscribing to >= 100Mbps	11,1% ↑	19	7,8%	20	15,4%
	2017		2016		2017
1e1 Broadband price index Score (0 to 100)	91 ↓	4	94	3	87
	2017		2016		2017

In 2017, Germany progressed slowly on almost all Connectivity indicators. Since other countries were progressing faster, however, it fell from rank 11 to rank 13. Fixed broadband coverage in Germany is stable at 98%. Although rural next-generation access (NGA) coverage has improved since last year, from 49% to 54%⁶, and is above the EU average (47%), the digital divide between urban and rural areas is still obvious (total fixed NGA coverage was 84% in Germany in 2017). There was a significant improvement in the uptake of fast broadband (>=30 Mbps) connections from 26% in 2016 to 36% in 2017. The Broadband Pricing Index (based on several fixed broadband offers and also income) was the fourth best in the EU. The share of DSL connections, which is the main source of connectivity, was 74.8% as of July 2017, followed by cable connections with 22.8% market share. The market share of FTTH/B connections was still at a very low level of only 2.1% in July 2017, compared to a significantly higher EU average of almost 12.9%⁷.

Germany is the only Member State that had already assigned 100% of the overall harmonised spectrum for broadband in 2015. 4G coverage in Germany is slightly below the EU average: 88% versus 91%. However, mobile broadband take-up is lower than elsewhere in the EU: 79 versus 90 subscriptions per 100 inhabitants (EU average).

⁶ Source: Broadband Coverage Study (IHS and Point Topic). Data as of October 2016 and October 2017.

⁷ Source: Communications Committee. Data as of July 2017.

On 7 March 2017, the Network Alliance and the Federal Ministry of Transport and Digital Infrastructure (BMVI) set out the Zukunftsoffensive Gigabit-Deutschland strategy⁸, declaring the need to install fibre infrastructure on a large scale. Altogether the Network Alliance plans to invest around EUR 100 billion until 2023 in order to realise gigabit capable converged infrastructures by 2025. On 12 July 2017, the Federal Government published its 5G strategy for Germany. The aim is to position Germany as a lead market for 5G applications and to support the rapid and successful introduction of 5G technology. Following the 2017 elections in Germany, a EUR 10-12 billion Gigabit Investment Fund was included in the new Federal Government coalition agreement⁹, to be spent by 2021 (i.e. in the next four years). Also, part of the coalition agreement is the legal right to fast internet from 1 January 2025, to be designed by 2019, and direct fibre connections for socio-economic drivers (schools, hospitals, business parks etc.) by 2021.

The Federal Government will face several challenges on the German telecom markets. There is an obvious urban-rural digital divide as regards fixed NGA coverage (rural coverage at 54%, still above EU average of 47%) in Germany, where targeted broadband funding would seem to be crucial. The share of fibre connections is very low (only 2%), so Germany is lagging behind several other Member States. The incumbent's focus on vectoring technology could further delay deployment of very-high-speed connections. Commitments from the Federal Government and from operators to deliver nationwide high-speed infrastructures will help to improve the very low availability and take-up of gigabit connections. The 2018 coalition agreement includes a commitment to full coverage with gigabit-ready networks and prioritises fibre.

⁸ <http://www.bmvi.de/SharedDocs/DE/Artikel/DG/eckpunkte-zukunftsoffensive-gigabit-deutschland.html>
http://www.bmvi.de/SharedDocs/DE/Publikationen/DG/netzallianz-digitales-deutschland.pdf?__blob=publicationFile

⁹ <https://www.bundesregierung.de/Content/DE/StatischeSeiten/Breg/koalitionsvertrag-inhaltsverzeichnis.html>

2 Human Capital

2 Human Capital	Germany		Cluster	EU
	rank	score	score	score
DESI 2018	8	62.9	58.6	56.5
DESI 2017	8	61.6	56.5	54.6

	Germany				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
2a1 Internet Users	87%	→	87%	7	81%
% individuals	2017		2016		2017
2a2 At Least Basic Digital Skills	68%	→	68%	7	57%
% individuals	2017		2016		2017
2b1 ICT Specialists	3.7%	→	3.7%	10	3.7%
% employed individuals	2016		2015		2016
2b2 STEM Graduates¹⁰	20.5	↑	19.3	11	19.1
Per 1000 individuals (aged 20-29)	2015/16		2014		2015

On Human Capital, Germany is performing well and making progress. The inhabitants are regular users of the Internet, and generally possess above-average digital skills. However, there is a significant skills shortage. 3.7% of the workforce are ICT specialists but, as in most European countries, demand exceeds supply. In October 2017, there were 55 000 open ICT positions¹¹.

An element of the German Digital Agenda is the Digital Knowledge Society. At Länder level, the Conference of Education Ministers (KMK) in December 2016 adopted the 'Education in the digital world' strategy¹². Concrete steps for implementation are being discussed. In October 2016, the Federal Ministry for Education and Research (BMBF) presented its 'Education Offensive for the Digital Knowledge-based Society' strategy and proposed a DigitalPakt#D with the Länder. In its coalition treaty, the new federal government agreed to invest EUR 5 billion (of which EUR3.5 billion in the current legislative period) to provide schools with the necessary digital infrastructure, technologies and a school-cloud. In return, the Länder are to provide teachers with the necessary training.

As to safeguarding the future supply of skilled personnel, science, technology, engineering and mathematics (STEM) studies in general and ICT in particular are increasingly popular. Also, migration of skilled personnel to Germany could mitigate the shortage of ICT specialists.

A national digital skills and jobs coalition could facilitate the building of synergies between different stakeholders for the design and implementation of strategies addressing the shortage of people with digital skills.

¹⁰ In DESI 2018 the most recent data have been used, which refer to 2015 or 2016 depending on the Member State. The DESI 2018 ranking is based on the most recent data, too. Historical data have been updated by Eurostat.

¹¹ https://www.bitkom.org/Presse/Presseinformation/55_000-Jobs-fuer-IT-Spezialisten-sind-unbesetzt.html

¹² <https://www.kmk.org/themen/bildung-in-der-digitalen-welt/strategie-bildung-in-der-digitalen-welt.html>

3 Use of Internet Services

3 Use of Internet Services	Germany		Cluster	EU
	rank	score	score	score
DESI 2018	14	52.7	48.3	50.5
DESI 2017	18	47.3	45.0	47.5

	Germany				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
3a1 News % individuals who used Internet in the last 3 months	74% ↑ 2017	21	72% 2016	20	72% 2017
3a2 Music, Videos and Games % individuals who used Internet in the last 3 months	78% 2016	17	78% 2016	17	78% 2016
3a3 Video on Demand % individuals who used Internet in the last 3 months	23% 2016	11	23% 2016	11	21% 2016
3b1 Video Calls % individuals who used Internet in the last 3 months	54% ↑ 2017	11	31% 2016	27	46% 2017
3b2 Social Networks % individuals who used Internet in the last 3 months	56% → 2017	27	56% 2016	25	65% 2017
3c1 Banking % individuals who used Internet in the last 3 months	62% ↑ 2017	16	59% 2016	16	61% 2017
3c2 Shopping % internet users (last year)	82% → 2017	6	82% 2016	3	68% 2017

In terms of individuals' propensity to use Internet services, Germany made good progress over the last year, in particular when it comes to Video Calls, and overall it moved from rank 18 to rank 14. German Internet users read news online (74%), listen to music, watch videos and play games online (78%), watch films (23%) and make Video Calls over the Internet (54%). They use social networks (56%) and online banking (62%). Users in Germany tend to use Internet for online shopping more than Europeans 82% as compared with 68% for the EU as a whole.

4 Integration of Digital Technology

4 Integration of Digital Technology	Germany		Cluster	EU
	rank	score	score	score
DESI 2018	12	41.3	42.1	40.1
DESI 2017	14	38.8	38.5	36.7

	Germany				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
4a1 Electronic Information Sharing % enterprises	38% 2017	11	NA 2015		34% 2017
4a2 RFID % enterprises	3.6% ↓ 2017	19	4.0% 2014	15	4.2% 2017
4a3 Social Media % enterprises	16% ↓ 2017	20	18% 2016	15	21% 2017
4a4 eInvoices % enterprises	17.2% ↑ 2017	17	15.6% 2016	13	NA 2017
4a5 Cloud % enterprises	NA 2017		9.3% 2016	21	NA 2017
4b1 SMEs Selling Online % SMEs	23.5% ↓ 2017	4	25.6% 2016	5	17.2% 2017
4b2 E-commerce Turnover % SME turnover	11.4% ↑ 2017	9	7.0% 2016	19	10.3% 2017
4b3 Selling Online Cross-border % SMEs	11.3% ↑ 2017	7	9.2% 2015	11	8.4% 2017

Germany made good progress as regards the Integration of Digital Technology by businesses. In particular, German enterprises are taking advantage of the possibilities offered by online commerce: 23.5% of SMEs sell online and 11.3% do so across borders. However, SMEs are slow adopters of digital technologies and 34.6 % of them have a very low level of digitisation¹³. Only 5.3 % of German SMEs used big-data analytics in 2016, for example, as compared with almost 10 % of SMEs in the EU as a whole¹⁴.

To help SMEs catch up with digitisation, the government is extending a network of SME competence centres. The main purpose of the centres is to inform SMEs about the potential that digitisation offers. The centres support SMEs in testing advanced technologies and in training staff. Since July 2017, the 'go digital' support programme has been providing SMEs all over the country with consultancy services via innovation vouchers to advance their own digitisation in the areas of IT security, digital marketing and digitised business processes. Digital hubs are promoting closer cooperation between start-ups, SMEs, industry, science and administration. One reason why businesses do not invest more in new digital business models is the lack of skilled personnel. In 2016, SMEs were asked what was preventing them from digitising their business. 67 % replied that there was a lack of ICT skills in their workforce, while 55 % replied that they lacked skilled employees. In October 2017, 23 700

¹³ <https://ec.europa.eu/digital-single-market/en/digital-scoreboard>

¹⁴ <https://ec.europa.eu/digital-single-market/en/digital-scoreboard>

business parks were not connected to a fibre network and 28 % of all companies did not have access to networks of at least 50 megabits.

In 2017, the previous government published a 'White Book on Digital Platforms', which presents practical proposals for 'digital governance', and a number of measures and projects have been launched. Germany does not have a strategy on the collaborative economy. Policy and regulation differ considerably across regions and cities, for example regarding short-term accommodation and passenger transport.

In order to improve the digital transformation of the economy, it will be important continuously to raise awareness of the importance of digital transformation strategies, in particular for medium-sized companies. In that context, continuous investment in ICT skills and infrastructure is key.

Highlight 2017: Darmstadt won Germany's first ever Digital City award.

Initiated by Germany's digital association, Bitkom, in collaboration with the German Association of Towns and Municipalities, the Digital City contest was for medium-sized German cities that have a decent infrastructure, an urban character and a nearby university. Darmstadt's holistic approach and its focus on cybersecurity helped it to win the award. The Digitisation of the city will focus on 10 areas: Public administration, IT infrastructure, commerce, energy and environment, education, security, data platforms, transport, society and health. At the end of the process, Darmstadt could be an exemplary smart city. <https://digitalstadt-darmstadt.de/>

Darmstadt is one of Europe's leading IT hubs. The science city, with a population of almost 160,000, had already received a Digital Leader Award in 2016 for its open data project on traffic flow improvement. Darmstadt is also the first city in a decade to switch its entire tram power supply to 100% green electricity. In 2018, the city will be launching a connected [parking app](#), designed to help residents and visitors to find and reserve parking spots. Special sensor-equipped antennae will measure each district's environmental factors and make the resultant readings available as open data.

A trading platform will offer regional products with same-day [delivery](#) by cargo e-bike.

In closed areas, Darmstadt is experimenting with [autonomous](#) buses and in the near future it will run semi-autonomous trams.

5 Digital Public Services

5 Digital Public Services	Germany		Cluster	EU
	rank	score	score	score
DESI 2018	21	50.2	58.5	57.5
DESI 2017	21	46.2	54.9	53.7

	Germany				EU
	DESI 2018		DESI 2017		DESI 2018
	value	rank	value	rank	value
5a1 eGovernment Users % internet users needing to submit forms	39% 2017	↑ 25	38% 2016	25	58% 2017
5a2 Pre-filled Forms Score (0 to 100)	38 2017	→ 19	38 2016	17	53 2017
5a3 Online Service Completion Score (0 to 100)	87 2017	↑ 15	83 2016	17	84 2017
5a4 Digital Public Services for Businesses Score (0 to 100) - including domestic and cross-border	84 2017	→ 14	84 2016	14	83 2017
5a5 Open Data % of maximum score	70% 2017	↑ 17	51% 2016	20	73% 2017
5b1 eHealth Services % individuals	7% 2017	26	NA		18% 2017

This is the area in which Germany is performing worst. Germany ranks 21st among EU countries for Digital Public Services. It is improving its score and making progress. Germany is one of the EU countries with the lowest online interaction between public authorities and citizens. Only 7 % of Germans use online health services from time to time and Germany ranks 26th in the EU in that respect.

The plan, based on the Online Access Act (*Onlinezugangsgesetz – OZG*) adopted in June 2017, is significantly to expand and improve eGovernment services and to provide easy, secure and mobile access for citizens and businesses. In order to make this possible, an exclusive legislative competence of the Federal Government was incorporated into Article 91c (5) of the Constitution (*Grundgesetz*). The OZG obliges the federal government and the *Länder* to offer their administrative services online within five years and to link their respective portals in a portal network. The IT architecture for this network is currently under construction. The federal level sets the necessary IT standards and IT components that are to be used in the portal network and, if possible, strives for a mutually acceptable solution with the regions. There will be an associated citizen's account where the citizen can handle personal data and see what data are available to which state authority. Under the Coalition Treaty of the new Federal Government, the plan is to provide EUR 500 million for the implementation of the OZG and to set up an e-government agency to develop standards and pilot projects.

The extremely low use of eHealth services reflects the comparatively low adoption of eHealth among both general practitioners and hospitals. *Inter alia*, the federal government's eHealth law sets milestones for the deployment of a digital eHealth infrastructure and the comprehensive use of the electronic health card in all medical establishments as from mid-2018, but it is still unclear whether this objective will be met.