



Digital Economy and Society Index (DESI)

2019 Country Report

Romania

About the DESI

The European Commission has been monitoring Member States' digital competitiveness with the Digital Economy and Society Index (DESI) reports since 2015. The set of reports includes both country profiles and thematic chapters.

The DESI country reports combine quantitative evidence from the DESI indicators across the five dimensions of the index with country-specific policy insights and best practices. An in-depth telecoms chapter is annexed to the reports for each Member State.

The thematic chapters present a European-level analysis of broadband connectivity, digital skills, use of the internet, digitisation of businesses, digital public services, the ICT sector and its R&D spending, and Member States' use of Horizon 2020 funds.

To improve the methodology and take account of the latest technological developments, a number of changes have been made to the DESI for 2019. The DESI now covers:

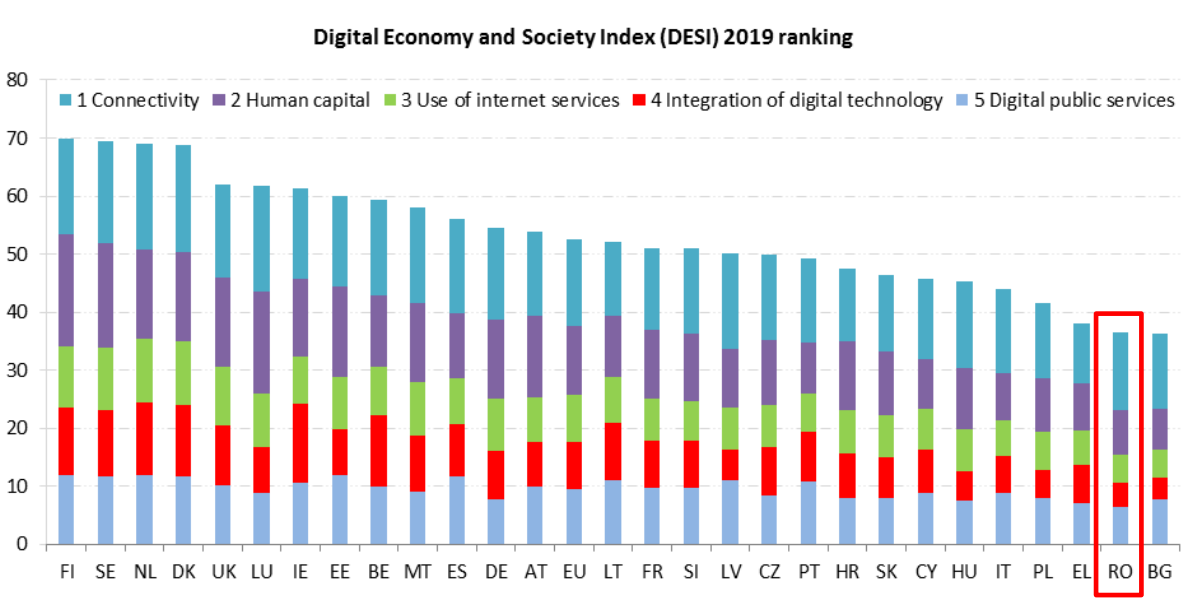
- *5G readiness,*
- *Above basic digital skills,*
- *At least basic software skills,*
- *Female ICT specialists,*
- *ICT graduates,*
- *People who never used the internet,*
- *Professional social networks,*
- *Doing an online course,*
- *Online consultations and voting,*
- *Individuals selling online,*
- *Big data,*
- *Medical data exchange and*
- *e-Prescriptions.*

The DESI was re-calculated for all countries for previous years to reflect the above changes in the choice of indicators and corrections to the underlying data. Country scores and rankings may thus have changed compared with previous publications.

For further information, please consult the DESI website: <https://ec.europa.eu/digital-single-market/en/desi>.

Romania overview

	Romania		EU
	rank	score	score
DESI 2019	27	36.5	52.5
DESI 2018	27	35.4	49.8
DESI 2017	28	32.0	46.9

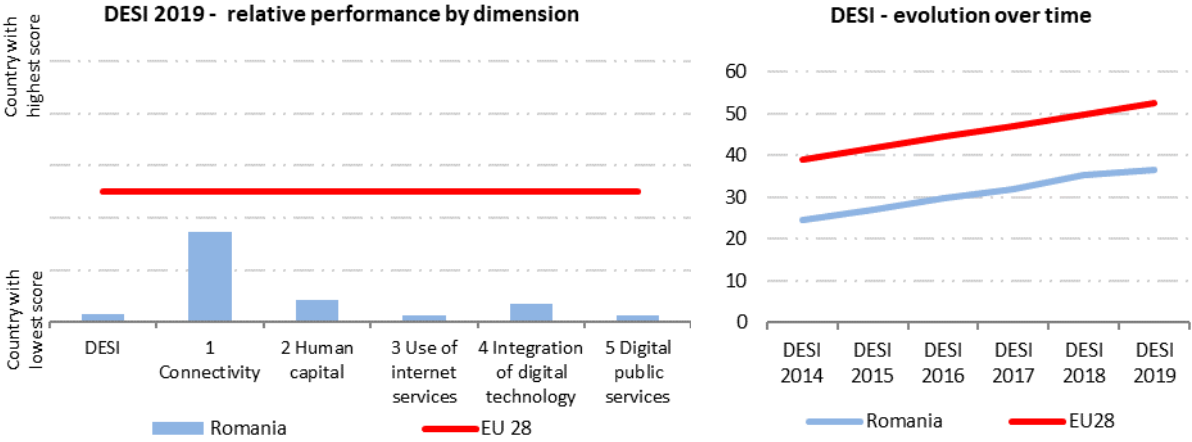


Romania ranks 27th out of the 28 EU Member States in the European Commission Digital Economy and Society Index (DESI) 2019.

Although Romania shows slight improvements in performance in almost all of the DESI dimensions measured, its ranking remained stable given that the overall progress was slow. Romania performs best in the Connectivity dimension, thanks to the wide availability of fast and ultrafast fixed broadband networks (especially in urban areas). However, digitisation of the economy is lagging behind, more than one fifth of Romanians have never used the internet, and fewer than a third have basic digital skills.

When it comes to Digital public services, Romania has the lowest performance among the Member States, despite the large share of e-government users (7th in the EU). On the other hand, 45 % of Romanian homes subscribe to ultrafast broadband, which is the 3rd highest figure in the EU. As regards female ICT specialists, Romania is well positioned as it ranks 16th, with 1.3 % of Romanian women in employment.

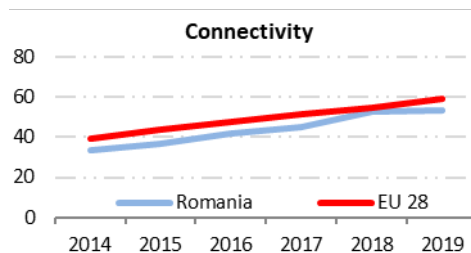
Romania adopted its National Strategy on the Digital Agenda for Romania for 2020 (SNADR) in February 2015¹ setting out four areas of action, but progress with implementation remains limited.



¹ <https://www.comunicatii.gov.ro/agenda-digitala-pentru-romania-2020/>

1 Connectivity

1 Connectivity	Romania		EU
	rank	score	score
DESI 2019	22	53.5	59.3
DESI 2018	19	52.5	54.8
DESI 2017	23	45.2	51.2



	DESI 2017	Romania		EU	
	value	DESI 2018	DESI 2019	rank	DESI 2019
1a1 Fixed broadband coverage % households	89%	88%	87%	26	97%
1a2 Fixed broadband take-up % households	63%	67%	66%	22	77%
1b1 4G coverage² % households (average of operators)	45%	72%	77%	28	94%
1b2 Mobile broadband take-up Subscriptions per 100 people	71	82	85	20	96
1b3 5G readiness Assigned spectrum as a % of total harmonised 5G spectrum	NA	NA	0%	13	14%
1c1 Fast broadband (NGA) coverage % households	72%	74%	76%	21	83%
1c2 Fast broadband take-up % households	44%	53%	55%	9	41%
1d1 Ultrafast broadband coverage % households	NA	73%	75%	14	60%
1d2 Ultrafast broadband take-up % households	32%	44%	45%	3	20%
1e1 Broadband price index Score (0 to 100)	85	87	86	16	87

Romania ranks 22nd in the Connectivity dimension. In 2018, Romania did not continue the trend of improvement at the same speed as in previous years. Notably, fixed broadband coverage stagnated at around 87 % of households covered and still lags behind most Member States (ranked 26th in the EU). Broadband take-up stalled at 66 % of households and it is well below the EU average of 77 %. The strong infrastructure-based competition in Romania, mainly in urban areas, is reflected in the indicators in which the country performs very well, namely ultrafast broadband coverage and take-up (75 % and 45 % respectively). However, Romania's urban-rural digital divide is illustrated by the figures for ultrafast broadband coverage, where 39 % of rural areas are covered (although above the EU average of 29 %). A significantly higher ratio of homes (55%) subscribe to fast broadband (≥ 30 Mbps) than the EU average of 41 %, although in the last year average EU growth (8 percentage points) outperformed Romanian growth (2 percentage points). Similarly, as regards ultrafast broadband take-up, Romania still largely outperforms the EU average (45 % versus 20 %). However, Romania improved only marginally with regard to this indicator (1 percentage point) after an

² Figures refer to population coverage.

impressive improvement of 12 percentage points the year before. Romania lags behind on 4G coverage (77 %), well below the EU average of 94 %. Similarly, the mobile broadband take-up indicator places Romania amongst the least performing Member States, despite the significant drop in mobile broadband prices for handset offers³ (from EUR 21 in 2017 to EUR 10 in 2018), well below the EU average of EUR 22 in 2018.

To address the urban-rural digital divide, under the 2014-2020 financial framework, the Romanian Operational Programme for Competitiveness has earmarked EUR 100 million from the European Regional Development Fund (ERDF), while the 2014-2020 Rural Development Operational Programme had initially foreseen an indicative amount of EUR 25 million from the European Agricultural Fund for Rural Development (EAFRD) under LEADER⁴, out of which less than EUR 2 million were effectively allocated to broadband infrastructure measures. The RoNet project to support deployment of backhaul networks in 'white areas' was granted ERDF financing of EUR 45 million, of a total of EUR 54 million, to finalise the intended coverage in the current financing period, ensuring broadband backhaul infrastructure for a target of 721 localities. At the end of September 2018, the national authorities reported the reception of works in 607 localities while in 484 localities the works have been finalised and have been accepted. A new grant scheme for next-generation networks (NGN) deployment, with a total estimated budget of EUR 64 million, was set up to provide support to private operators deploying backhaul and last-mile access infrastructure for additional localities in underserved (white) areas. The first call of the project was launched in October 2018, and projects are now under evaluation. A second call, under public consultation until the beginning of January 2019, is expected to be launched in the first half of 2019.

Overall, in Romania, 38 % of the spectrum harmonised at EU level for wireless broadband has been assigned. In November 2018, the National Strategy for the Implementation of 5G in Romania was published for public consultation. The National Strategy is planned to be adopted before the organisation of the spectrum multi-band auction in the 700 MHz, while several other bands remain for the second half of 2019 (including 800 MHz, 1500 MHz, 2600 MHz and 3400-3600 MHz bands). However, the whole process seems to be affected by the adoption of Emergency Ordinance No 114/2018⁵ that set a very high level of the reserve price that seems to go beyond European benchmark levels for future licences as well as similarly increased minimum fees for the renewal of existing licences. In addition, the Emergency Ordinance substantially raises the yearly monitoring tariff levied on the sector. These changes could affect the deployment of future-oriented digital infrastructure in Romania.

Romania would benefit from keeping the momentum of developing its broadband connectivity, as in previous years. In 2018, the growth of the sector stalled while the measures adopted at the end of the year could undermine the potential development of future 5G networks.

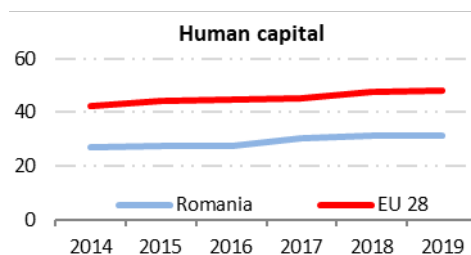
³ Offers from February 2018 compared to those from February 2017 including 1 GB, 300 calls and 225 SMS. Prices expressed in €/PPP, VAT included. Source: Mobile Broadband Prices in Europe (Van Dijk and Empirica).

⁴ The term 'LEADER' is the French acronym for "Liaison Entre Actions de Développement de l'Économie Rurale", meaning 'Links between the rural economy and development actions'.

⁵ Published in the Official Journal of Romania on 29 December 2018.

2 Human capital

2 Human capital	Romania		EU
	rank	score	score
DESI 2019	27	31.1	48.0
DESI 2018	28	31.5	47.6
DESI 2017	27	30.2	45.4



	DESI 2017	Romania		EU	
	value	DESI 2018	DESI 2019	rank	DESI 2019
2a1 At least basic digital skills % individuals	28% 2015	29% 2017	29% 2017	28	57% 2017
2a2 Above basic digital skills % individuals	9% 2016	10% 2017	10% 2017	28	31% 2017
2a3 At least basic software skills % individuals	30% 2016	32% 2017	32% 2017	27	60% 2017
2b1 ICT specialists % total employment	1.9% 2015	2.0% 2016	2.1% 2017	27	3.7% 2017
2b2 Female ICT specialists % female employment	1.2% 2015	1.2% 2016	1.3% 2017	16	1.4% 2017
2b3 ICT graduates % graduates	NA 2014	5.4% 2015	4.9% 2016	6	3.5% 2015

As regards the Human capital dimension, Romania ranks 27th among EU countries, well below the EU average. Basic and advanced digital skills levels remain lowest among EU Member States. Only 29 % of people aged between 16 and 74 have basic digital skills (57 % in the EU as a whole) and 10 % have advanced digital skills (against an EU average of 31 %). Despite the increase in the percentage of ICT specialists from last year, they represent a lower proportion of the workforce by comparison with the EU as a whole (2.1 % against an EU average of 3.7 %). When it comes to ICT graduates, Romania is performing well, as the country ranks 6th among EU Member States, with 4.9 % of all graduates. As regards female ICT specialists, Romania ranks 16th, as they represent 1.3 % of Romanian women in employment, which is just slightly below the EU average of 1.4 %. Romania has the third highest share of women among all ICT specialists (25.7 % in 2017, against an EU average of 17.2 %) ⁶. Romania ranks 11th in terms of the gender pay gap, with 16 % difference in pay ⁷.

Given that the number of ICT places at universities is limited and there is a lack of ICT graduates, there are several private companies investing in digital skills, offering IT specialisation programmes. Several Romanian universities have started offering online courses (MOOC) ⁸. The tax exemption provided for IT professionals in the country helps fill the high number of IT vacancies.

⁶ [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Distribution_of_persons_employed_as_ICT_specialists_by_sex_education_level_and_age_2007_and_2017_\(%25\)_ICT2018.png](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=File:Distribution_of_persons_employed_as_ICT_specialists_by_sex_education_level_and_age_2007_and_2017_(%25)_ICT2018.png)

⁷ <https://ec.europa.eu/digital-single-market/en/news/country-reports-women-digital-scoreboard>

⁸ <https://www.mooc-list.com/countries/romania>
<http://www.biblioteca-digitala.ase.ro/biblioteca/model/index2.asp>

The SNADR is the steering document for all digital matters, including digital skills. The strategy focuses on: providing ICT infrastructure in schools; developing pupils' and teachers' digital skills; using ICT in the learning process and in lifelong learning; updating the ICT skills of public administration staff, and ensuring e-inclusion by developing digital skills and e-skills.

Romania has a National Coalition for Digital Skills and Jobs⁹ - Skills4IT¹⁰. This open platform includes several stakeholders and has political backup from several Ministries. Activities are focusing on rolling out coding and IT classes in schools, organising cybersecurity courses and educational events. The coalition also provides training to upgrade the digital skills of the labour force. Romania actively participated in EU Code Week¹¹ in 2018, a grassroots movement to encourage people of all ages to code. There were 458 activities organised around the country, with an estimated number of 25,400 participants.

In 2018, the Romanian Government launched the tender¹² for a project entitled 'Wireless Campus' - a national integrated platform that will provide wireless internet in 4,500 state-run schools. The project will get a RON 117 million (EUR 25 million) financing from the ERDF and RON 32.8 million (EUR 7 million) from the state budget.¹³

There are several initiatives from the private sector. In October 2018, the University of Bucharest, together with Google Romania, launched an innovation hub for digital skills, the Google Digital Workshop hub.

A high level of skills mismatches in companies' workforces limit their capacity to innovate and capitalise on innovation. Increasing the number of Romanian ICT specialists, ensuring the necessary training of teachers in order for education supply to meet the high demand, but also re-skilling the labour force is of the utmost importance if Romania is to derive full benefit from the digital economy.

⁹ <https://ec.europa.eu/digital-single-market/en/national-local-coalitions>

¹⁰ <http://coalitiait.ro/>

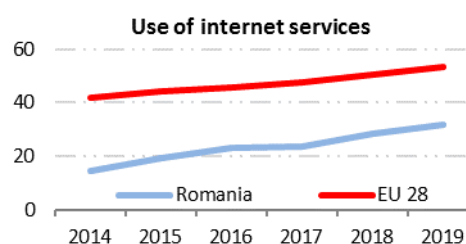
¹¹ <https://codeweek.eu/>

¹² <https://www.romania-insider.com/romania-eur-35-mln-tender-wifi-schools>

¹³ <https://www.romania-insider.com/govt-substantiation-note-wireless-campus-schools/>

3 Use of internet services

3 Use of internet services	Romania		EU
	rank	score	score
DESI 2019	28	31.9	53.4
DESI 2018	28	28.5	50.7
DESI 2017	28	23.8	47.8

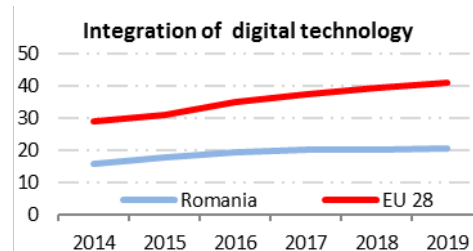


	Romania		EU	
	DESI 2017 value	DESI 2018 value	DESI 2019 value	DESI 2019 rank
3a1 People who never used the internet % individuals	30%	27%	21%	24
3a2 Internet users % individuals	56%	61%	68%	27
3b1 News % internet users	63%	69%	69%	24
3b2 Music, videos and games % internet users	67%	67%	63%	28
3b3 Video on demand % internet users	6%	6%	10%	26
3b4 Video calls % internet users	45%	53%	51%	15
3b5 Social networks % internet users	74%	82%	86%	1
3b6 Professional social networks % internet users	6%	6%	6%	25
3b7 Doing an online course % internet users	4%	5%	5%	23
3b8 Online consultations and voting % internet users	4%	5%	5%	23
3c1 Banking % internet users	8%	11%	10%	28
3c2 Shopping % internet users	18%	23%	26%	28
3c3 Selling online % internet users	5%	4%	5%	26

Overall, the Use of internet services in Romania continues to be the lowest among the EU Member States. 21 % of individuals aged 16-74 have never used the internet (compared to the EU average of 11 %). People in Romania are keen to engage in a variety of online activities, especially social networks and video calls. The use of social networks is more widespread than in all the other EU countries, the country ranks first with 86 % of internet users (65 % in the EU). Romanians used video calls (51 %) also above the EU average (49 %). However, the use of banking, shopping as well as music, videos and games (10 %, 26 % and 63 % respectively) is below the EU average, mainly due to a lack of trust in digital technology.

4 Integration of digital technology

4 Integration of digital technology	Romania		EU
	rank	score	score
DESI 2019	27	20.5	41.1
DESI 2018	27	20.1	39.6
DESI 2017	27	20.3	37.6



	DESI 2017	Romania		EU	
	value	DESI 2018	DESI 2019	rank	DESI 2019
4a1 Electronic information sharing	22%	17%	17%	27	34%
% enterprises	2015	2017	2017		2017
4a2 Social media	8%	9%	9%	27	21%
% enterprises	2016	2017	2017		2017
4a3 Big data	11%	11%	11%	14	12%
% enterprises	2016	2016	2018		2018
4a4 Cloud	5%	6%	7%	25	18%
% enterprises	2016	2017	2018		2018
4b1 SMEs selling online	7%	8%	8%	27	17%
% SMEs	2016	2017	2018		2018
4b2 e-Commerce turnover	4%	5%	5%	25	10%
% SME turnover	2016	2017	2018		2018
4b3 Selling online cross-border	2%	2%	2%	28	8%
% SMEs	2015	2017	2017		2017

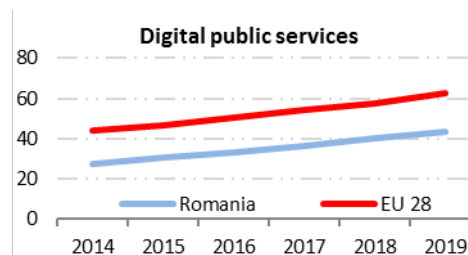
On the Integration of digital technology by businesses, Romania ranks 27th among EU countries, well below the EU average. Romania's ranking remained stable in this dimension compared to the last two years. There was almost no change in any of the indicators. Romanian enterprises are taking advantage of the possibilities offered by big data analysis (11 % versus 12 % EU average), where the country ranks 14th. 9 % of Romanian enterprises are using social media (versus 21 % EU average). There was a slight improvement in the use of cloud services from 6 % in 2017 to 7 % in 2018, however it remains well below the EU average of 18%. Only 8 % of total SMEs are selling online (against an EU average of 17%), while 2 % of them are selling online cross-border (versus 8 % EU average).

Romania has committed to invest in digital technologies, via EU-coordinated programmes. The country is a member of the EuroHPC Joint Undertaking; it has also signed the Declaration creating the European Blockchain Partnership and the Declaration on Cooperation on Artificial Intelligence. Digitising enterprises remains an important challenge. One of the measures to support SMEs is the 'Start-up nation' programme¹⁴. About 10,000 companies per year are targeted, with a maximum financing of EUR 44,000 that can be obtained for e.g.: IT equipment, website, software licenses, courses, consulting etc. (not all related to IT). In 2017 over 8,000 new companies were created that signed financing programmes, in a total amount of RON 1.7 billion (about EUR 380 million).

¹⁴ <https://start-upnation.ro/>

5 Digital public services

5 Digital public services	Romania		EU
	rank	score	score
DESI 2019	28	43.2	62.9
DESI 2018	27	40.4	57.9
DESI 2017	26	36.5	54.0



	Romania		EU	
	DESI 2017 value	DESI 2018 value	DESI 2019 value	DESI 2019 rank
5a1 e-Government users % internet users needing to submit forms	84%	80%	82%	7
5a2 Pre-filled forms Score (0 to 100)	12	12	10	28
5a3 Online service completion Score (0 to 100)	55	62	67	27
5a4 Digital public services for businesses Score (0 to 100) - including domestic and cross-border	48	51	54	28
5a5 Open data % of maximum score	NA	NA	62%	18
5b1 e-Health services % individuals	NA	11%	11%	21
5b2 Medical data exchange % of general practitioners	NA	NA	19%	24
5b3 e-Prescription % of general practitioners	NA	NA	39%	18

As regards Digital public services, Romania's rank decreased, putting the country last in the EU. Nonetheless, the country performs relatively well regarding certain indicators. There is a high level of online interaction between public authorities and citizens, as Romania ranks seventh regarding e-government users, with 82 % of internet users versus 64 % EU average. This contrasts with the low scores for pre-filled forms and online service completion, which could indicate a systemic problem with the quality and usability of the services offered.

Although the use of medical data exchange is low (19 % of general practitioners versus 43 % EU average), e-prescription services are more widespread, and Romania ranks 16th with 39 % of general practitioners using it (versus 50 % EU average). In 2018, Romania's performance improved by 5 points compared to last year regarding online service completion (from a score of 62 to 67). Furthermore, Romania is just slightly below the EU average as regards open data policy and the national open data portal (62 % versus 64 %).

A Government Decision has been adopted establishing a National Interoperability Framework, based on the European Interoperability Framework. A proposal for an Interoperability Law is being drafted by the Ministry of Communications and Information Society.

As of 2018, the eDelivery Access Point is operational. This will contribute to achieving compliance with the eIDAS Regulation and will support the implementation of access points for other services, such as e-invoicing, transportation, environment, health, e-tendering or e-justice. Romania's eIDAS

node is currently being built through an ERDF financed project (“SITUE”) and is expected to be finalized by end of 2019.

Romania is planning to introduce an electronic identification system (eID) based on chip-based ID cards. The government intends to use the eID as the legal tool for the interaction between citizens and companies with the government. The large-scale deployment of eID was planned for early 2019, but the process is delayed, awaiting for the adoption of relevant legislation.

The new Centre for Financial Information, reorganized in October 2017, allows the government to communicate electronically with taxpayers and to receive tax declarations online. It was redesigned and simplified in 2018 and is now available via the Single Contact Point (PCUe). During the first three months the number of tax returns submitted electronically increased to more than 600,000 tax returns/months, i.e. 96% of all tax returns. The Virtual Private Space (SPV) is the system of management of declarations and tax liabilities of citizens, where payment obligations are established; however it does not include a payment module. Ghiseul.ro, acts as a payment platform for the SPV. The adoption of the SPV by businesses exceeded 200,000 new users/month during the first three months from March 2018.

In 2018, several authorities at central and local level have simplified their procedures, which are now available via the PCUe. However, not all procedures can be fulfilled online, but rather the documentation needed is available.

The Ministry of Health has simplified its procedures so that the dossier on the approval and correction of medicine prices can be transmitted electronically and communication to operators can be done online. The Ministry envisages projects in the domain of e-health, such as the Disease Registry Project and the Electronic Clinical Informatics System.

The National Office Trade Register (NOTR) has implemented the complete online registration process for new companies, including the changes and modifications in the business register, the sale or transfer of ownership (social shares transfer), and insolvency procedures. The simplified online registration has a response time of maximum 3 working days. The NOTR provides now 30 digital public services.

Overall, the national administration’s IT system is fragmented, which represents an administrative burden for citizens and businesses. The level of interoperability between the public administration services is generally low, as each public institution focused on its own digital public service. As a result, it is unclear how much information once submitted is then re-used by the other institutions.

Highlight 2019: the Romanian Electronic System for Public Procurement

The Electronic System for Public Procurement (ESPP) (*Sistemul Electronic de Achizitii Publice (SEAP)*) is an electronic environment which enables all users (contracting authorities and economic operators) to conduct public procurement procedures. It enforces national legislation in the public procurement field, according to EU legislation and it is currently used by approximately 20,000 contracting authorities and 140,000 economic operators (it is compulsory in Romania to conduct public procurement procedures by electronic means only).

The platform is available at www.e-licitatie.ro in Romanian and English. The system uses forms and structured data, with advanced security through the use of digital certificates, as well as advanced search and reporting criteria. The system allows for automatic notifications based on interest and

extensive web services for interoperability, including for mobile terminals.

Any interested person can access the public interface freely. The following categories of information can be visualised: all types of notices; contract notices that contain documentations of the award procedures; all procurement intentions grouped by each contracting authority; all documents issued by the contracting authorities; all direct purchases conducted online; information on European and national legislation in the field, the list of all users etc.

The ESPP will be enhanced through the implementation of the Open Contracting Data Standard, the integration of the European Single Procurement Document (ESPD) and e-Certis platform and the electronic invoice.