

ICT specialists

More than 8 million ICT specialists employed in the EU in 2016

A largely male and highly educated workforce

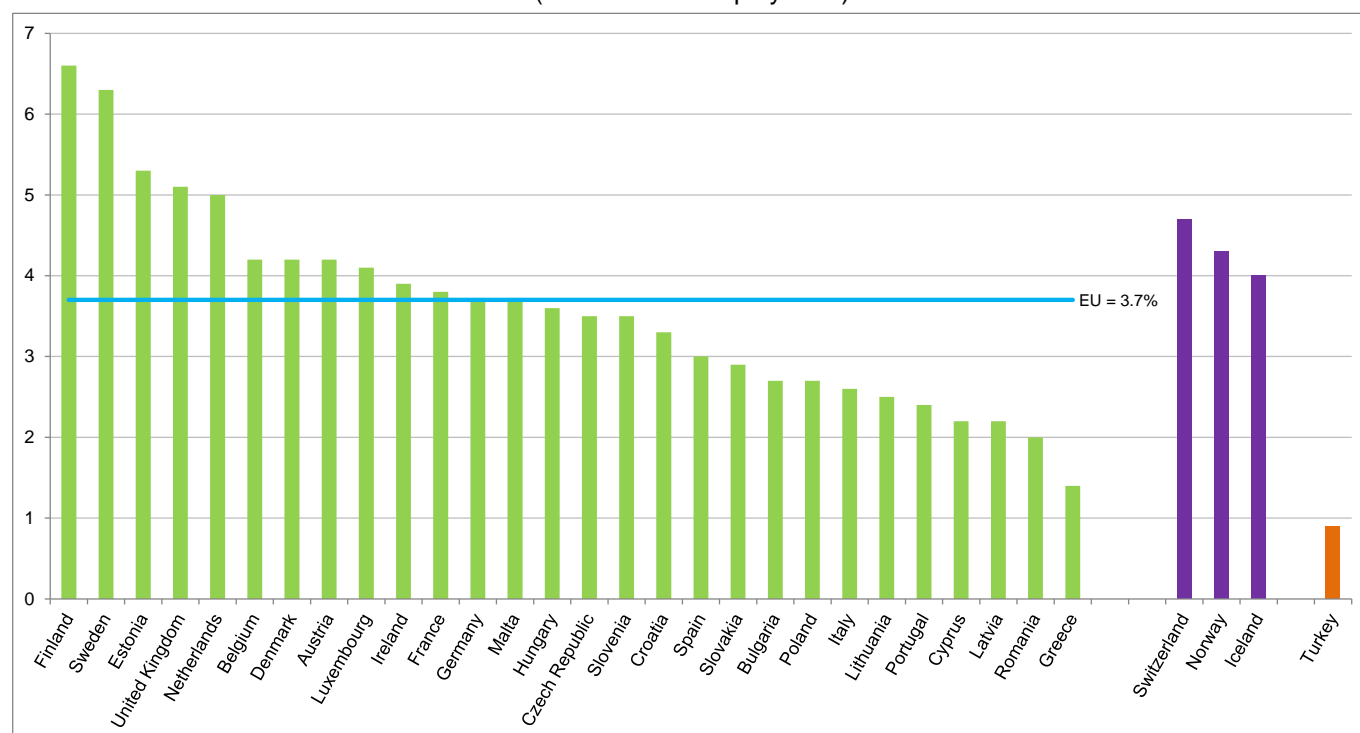
In the **European Union** (EU), 8.2 million persons were employed in 2016 as Information and Communication Technologies (ICT) specialists, representing 3.7% of total employment. Over recent years, both the number and the share of ICT specialists in total employment have continuously risen to better adapt to an ever digitalised world.

This profession is largely made up of men, accounting in 2016 for more than 8 out of 10 ICT specialists employed in the **EU** (83.3%), and of highly educated people, with more than 6 in 10 ICT specialists (61.8%) having a tertiary education or higher.

In 2016, 1 in 5 enterprises in the **EU** (20%) employed ICT specialists and nearly 1 in 10 (9%) recruited or tried to recruit ICT specialists. However, 41% of enterprises which recruited or tried to recruit ICT specialists had difficulties in filling vacancies.

These data, issued by **Eurostat, the statistical office of the European Union**, are notably used for several EU policies, in particular the initiatives under the Digital Single Market strategy.

Share of ICT specialists, 2016
(as % of total employment)



Share of ICT specialists in employment highest in Finland and Sweden

In 2016, three Member States accounted for half of all ICT specialists employed in the **EU**. These were the **United Kingdom** (1.6 million persons), **Germany** (1.5 million) and **France** (1.0 million).

In relative terms, the highest shares of ICT specialists in total employment were recorded in **Finland** (6.6%) and **Sweden** (6.3%), ahead of **Estonia** (5.3%), the **United Kingdom** (5.1%) and the **Netherlands** (5.0%). At the opposite end of the scale, **Greece** (1.4%) registered the lowest proportion, followed by **Romania** (2.0%), **Cyprus** and **Latvia** (both 2.2%).

Compared with 2011, both the absolute number and the share of ICT specialists in total employment increased in almost all Member States by 2016, notably in **Estonia, France, Germany, Portugal, Finland, Bulgaria, Croatia** and **Hungary**. At **EU** level between 2011 and 2016, the number of ICT specialists rose by 1.8 million persons and their share in total employment grew from 3.0% to 3.7%.

ICT specialists employed, 2011 and 2016

	In 1000 persons		As percentage of total employment (%)	
	2011	2016	2011	2016
EU	6 376.5	8 211.4	3.0	3.7
Belgium	159.2	193.8	3.5	4.2
Bulgaria	54.0	80.9	1.8	2.7
Czech Republic	158.6	180.9	3.3	3.5
Denmark	99.5	119.4	3.7	4.2
Germany	1 000.3	1 541.1	2.6	3.7
Estonia	20.8	34.1	3.4	5.3
Ireland	68.5	78.1	3.7	3.9
Greece	50.7	51.2	1.3	1.4
Spain	489.3	557.6	2.7	3.0
France	636.6	1 003.8	2.5	3.8
Croatia	38.8	52.3	2.4	3.3
Italy	523.8	584.8	2.3	2.6
Cyprus	8.1	7.9	2.0	2.2
Latvia	17.7	19.7	2.1	2.2
Lithuania	22.9	34.1	1.8	2.5
Luxembourg	9.8	10.8	4.3	4.1
Hungary	102.0	158.1	2.7	3.6
Malta	5.4	7.1	3.2	3.7
Netherlands	365.4	422.2	4.4	5.0
Austria	145.0	178.6	3.6	4.2
Poland	354.5	431.8	2.3	2.7
Portugal	66.1	108.8	1.4	2.4
Romania	124.8	167.7	1.5	2.0
Slovenia	33.1	32.1	3.6	3.5
Slovakia	62.3	73.2	2.7	2.9
Finland	137.9	162.3	5.6	6.6
Sweden	258.3	310.8	5.6	6.3
United Kingdom	1 363.0	1 608.2	4.7	5.1
Iceland	5.4	7.7	3.3	4.0
Norway	109.9	113.1	4.3	4.3
Switzerland	180.5	216.3	4.2	4.7
Turkey	184.8	245.2	0.8	0.9

The source dataset can be found [here](#).

Highest share of male ICT specialists in Slovakia and the Czech Republic...

Women are under-represented among ICT specialists in all EU Member States, a striking contrast with total employment, where the genders are broadly balanced. Figures show that in 2016, an overwhelming majority (83.3%) of ICT specialists employed in the EU were men. This was the case in every EU Member State. The highest shares of male ICT specialists were observed in **Slovakia** (90.8%), the **Czech Republic** (88.8%), **Malta** (88.3%), **Greece** (87.3%), **Hungary** (86.9%) and **Croatia** (86.7%), while **Bulgaria** (69.8%), **Romania** (73.7%), **Latvia** and **Lithuania** (both 75.2%) recorded the lowest.

... of ICT specialists with tertiary education in Ireland and Lithuania...

In the EU in 2016, 6 in 10 (61.8%) ICT specialists had a tertiary education level. The highest proportions were registered in **Ireland** (82.4%) and **Lithuania** (80.7%), ahead of **Spain** (79.1%), **France** (78.4%) and **Belgium** (76.2%). At the opposite end of the scale, the lowest proportions of ICT specialists having completed tertiary education were recorded in **Italy** (32.8%), followed by **Germany** (49.6%), **Portugal** (51.2%) and **Croatia** (52.5%).

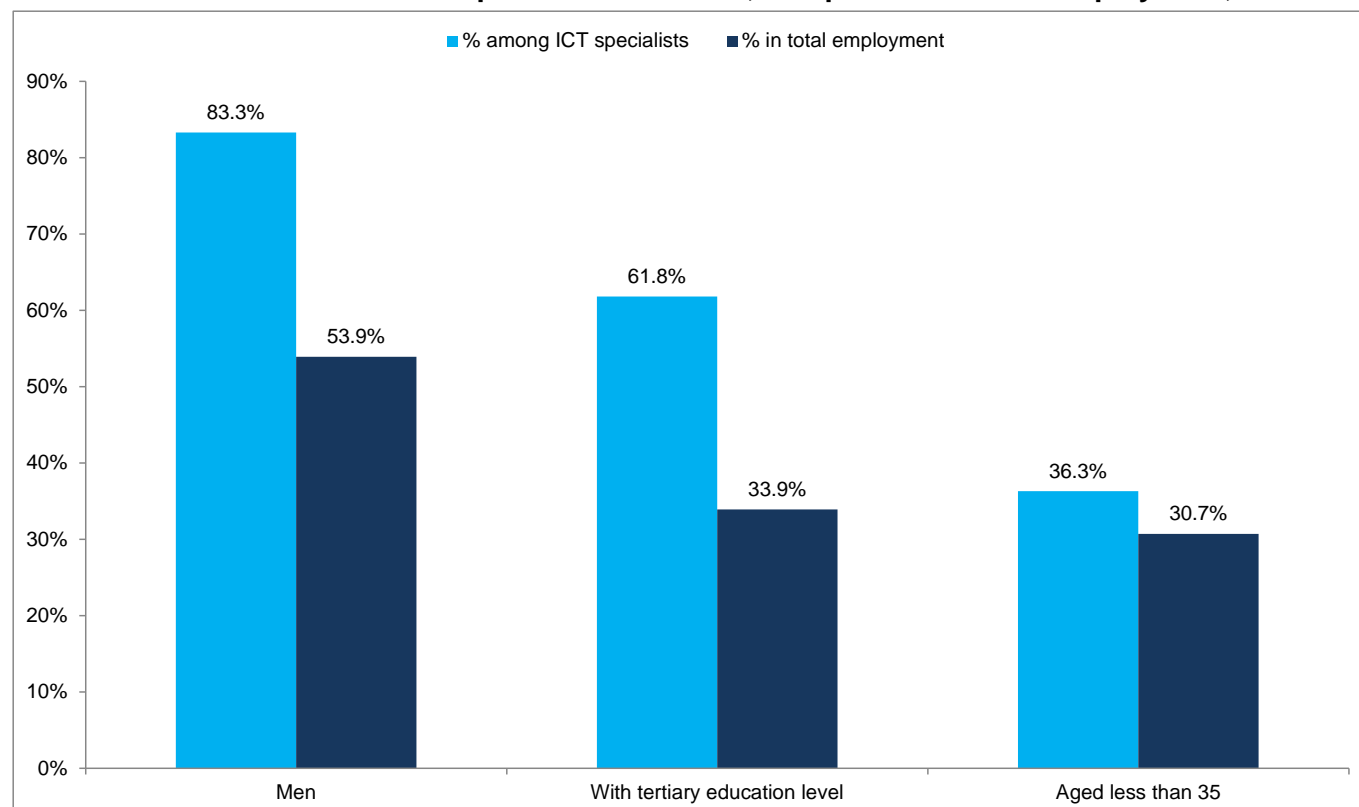
In 2016, the share of employed persons with tertiary education was higher among ICT specialists than in total employment in all EU Member States.

... and of ICT specialists younger than 35 in Malta, Latvia and Poland

In 2016, more than 1 out of 3 ICT specialists (36.3%) in the EU was younger than 35. Across Member States, the majority of ICT specialists employed were younger than 35 in **Malta** (63.1%), **Latvia** (54.1%), **Poland** (53.6%) and **Lithuania** (50.2%). In contrast, persons younger than 35 accounted for fewer than a third of all ICT specialists employed in **Italy** (24.5%) and the three EU Nordic Member States: **Finland** (28.6%), **Sweden** (30.0%) and **Denmark** (30.4%).

In 2016, there were proportionally more persons younger than 35 among ICT specialists than in total employment in a majority of Member States, with the exceptions of **Denmark**, **Finland**, **Sweden**, the **Netherlands**, **Luxembourg** and the **United Kingdom**.

Main characteristics of ICT specialists in the EU, compared with total employment, 2016



ICT specialists, by gender, age and education level, 2016 (in %)

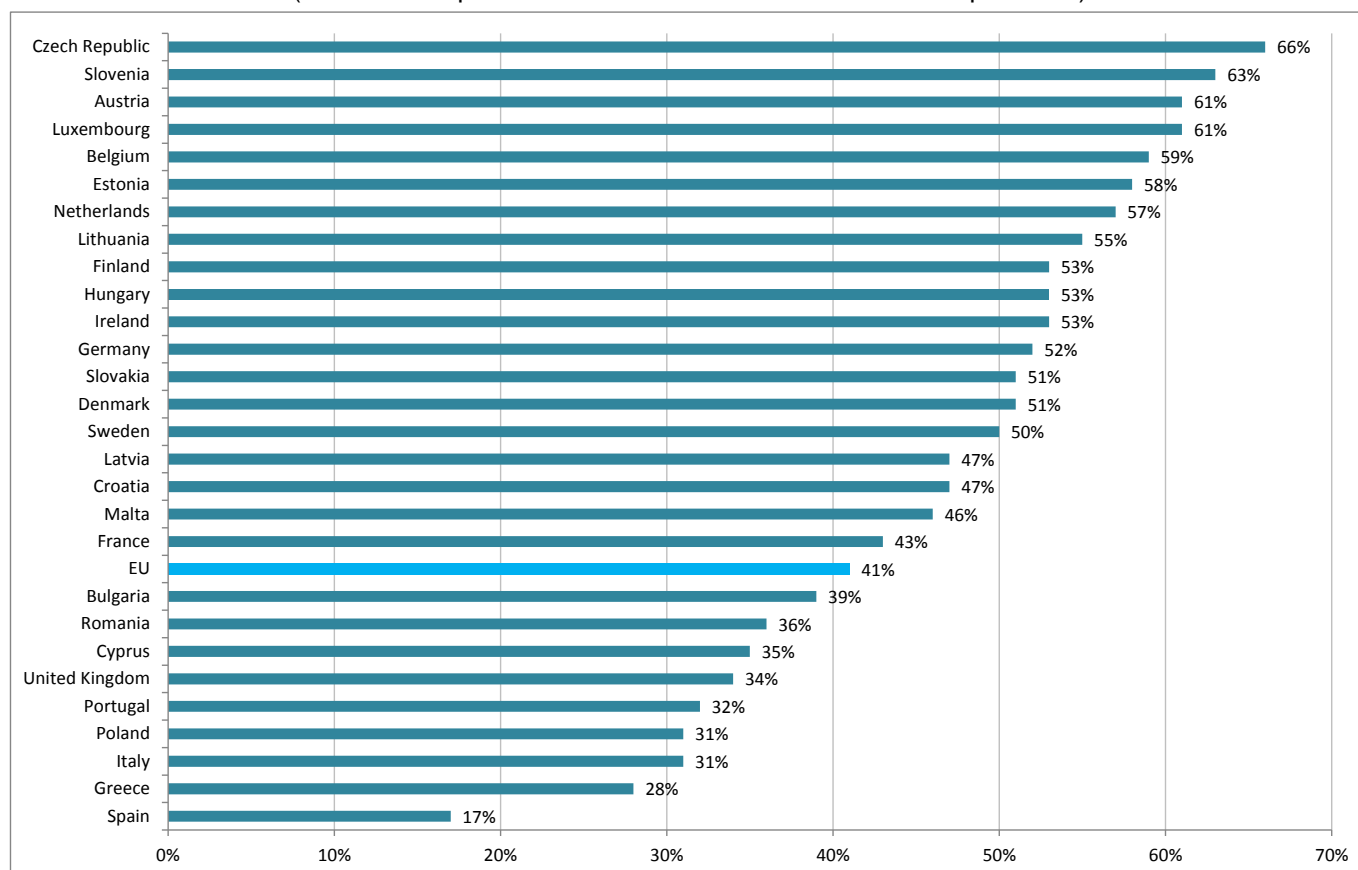
	Men		With tertiary education level		Younger than 35	
	In total employment	Among ICT specialists employed	In total employment	Among ICT specialists employed	In total employment	Among ICT specialists employed
EU	53.9	83.3	33.9	61.8	30.7	36.3
Belgium	53.6	85.9	43.8	76.2	31.2	35.1
Bulgaria	53.1	69.8	32.4	64.6	27.2	47.4
Czech Republic	55.9	88.8	23.8	56.3	28.0	44.0
Denmark	52.4	80.0	34.4	53.5	34.9	30.4
Germany	53.2	83.4	28.7	49.6	30.8	35.9
Estonia	51.8	81.3	39.8	57.6	32.5	48.6
Ireland	53.7	81.0	46.1	82.4	32.8	33.6
Greece	57.9	87.3	35.3	59.4	26.0	39.4
Spain	54.5	84.6	42.1	79.1	25.3	35.7
France	51.7	81.9	39.6	78.4	30.6	33.8
Croatia	54.0	86.7	28.0	52.5	32.2	39.8
Italy	57.8	85.8	21.2	32.8	22.7	24.5
Cyprus	51.3	80.6	46.1	72.9	36.3	45.8
Latvia	49.3	75.2	37.0	67.7	32.5	54.1
Lithuania	48.8	75.2	44.4	80.7	31.8	50.2
Luxembourg	54.7	86.3	41.6	71.1	33.9	33.4
Hungary	54.2	86.9	26.1	65.6	28.7	36.1
Malta	60.8	88.3	25.6	53.7	41.4	63.1
Netherlands	53.3	84.4	35.7	60.9	36.4	35.0
Austria	52.8	82.8	34.0	61.9	35.5	40.6
Poland	54.9	85.5	33.6	69.8	34.4	53.6
Portugal	50.6	83.9	26.9	51.2	27.1	37.0
Romania	57.2	73.7	21.1	70.0	30.3	48.4
Slovenia	53.6	82.7	34.6	56.6	29.8	35.3
Slovakia	55.3	90.8	23.5	59.3	32.0	46.6
Finland	51.5	78.1	43.1	64.1	32.9	28.6
Sweden	51.9	79.2	40.7	56.4	33.9	30.0
United Kingdom	52.9	83.8	43.4	64.7	36.5	36.1
Iceland	52.5	78.0	36.1	58.9	38.3	41.8
Norway	52.2	80.6	43.6	62.2	35.1	32.6
Switzerland	53.1	85.4	39.2	60.5	35.2	37.5
Turkey	69.3	90.1	22.7	55.3	43.8	65.2

The source dataset can be found [here](#) for data by gender, [here](#) for data by level of education and [here](#) for data by age group.

Difficulties in recruiting ICT specialists reported in every Member State

In the **EU** in 2016, 41% of enterprises which recruited or tried to recruit ICT specialists reported hard-to-fill vacancies. The highest percentages were recorded in the **Czech Republic** (66% of enterprises which recruited or tried to recruit ICT specialists), followed by **Slovenia** (63%), **Luxembourg** and **Austria** (both 61%), **Belgium** (59%), **Estonia** (58%) and the **Netherlands** (57%). In contrast, this share was lowest in **Spain** (17%), **Greece** (28%), **Poland** and **Italy** (both 31%) as well as **Portugal** (32%).

Share of enterprises which had hard-to-fill vacancies for ICT specialists, 2016 (as % of enterprises which recruited / tried to recruit ICT specialists)



The source dataset can be found [here](#), where dimension "Time" refers to the survey year.

Methods and definitions

Data on **employment** presented in this News Release mainly come from the secondary statistics on ICT specialists, derived from the EU-Labour Force Survey (LFS) data on employment. ICT specialists' data cover persons aged 15 to 74 employed in all sectors of the economy. The ICT specialists' indicator is constructed using the Eurostat-OECD statistical definition based on International Standard Classification of Occupations (ISCO). Data are available starting from 2004. However, due to a change in classification in 2011, data prior to 2011 are not fully comparable with the most recent ones.

Data on **enterprises** come from the 2016 Community survey on ICT usage and e-commerce in enterprises. Data on enterprises which recruited or tried to recruit ICT specialists and on hard-to-fill vacancies refer to the year 2015.

ICT specialists are defined as those who have the ability to develop, operate and maintain ICT systems and for whom ICT constitute the main part of their job (see [OECD Information Technology Outlook, 2004](#)).

For more information

Eurostat [website section](#) on digital economy and society statistics.

Eurostat [database](#) on digital economy and society.

Eurostat [Statistics Explained article](#) on hard-to-fill vacancies in enterprises for ICT specialists.

Eurostat digital publication: [Digital economy & society in the EU](#).

European Commission [Digital Single Market strategy](#).

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