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Contents

Introduction

This publication is devoted to the so-called digital economy, which is based on the rapid acquisition, processing and exchange of information through information and communication technologies (ICT). The effective use of modern ICT and related applications and services has a significant impact on increasing competitiveness and building an innovative and knowledge-based society.

One way to map developments in ICT and its impact on the economy is to compile a set of statistical indicators in this area. The CZSO has been publishing this statistical overview for more than ten years.

This brochure provide a comprehensive overview of statistical indicators about the development of the digital economy in the Czech Republic and where possible also in other, mainly EU, countries.

The brochure consists of the following **seven chapters:**

A. **ICT specialists:** this chapter provides information about **employment** in ICT specialist occupations both for ICT professionals and ICT technicians together with data about their **wages.**

B. **ICT students:** this chapter contains data on the number and structure of students and graduates of ICT disciplines at universities.

C. **ICT investments:** this chapter includes detail information about total ICT investment **by asset type** and **industry**. Data on **household expenditures** on ICT equipment and services is also included here.

D. **ICT research and development:** this chapter provides both data on the total financial resources invested in research and development (R&D) in ICT equipment and software and data about R&D expenditures and personnel in enterprises with the main economic activity that belongs to the ICT sector.

E. **International trade in ICT goods:** this year, for the first time, the publication provides an overview of international trade in ICT goods, when the ownership of goods changes between residents and non-residents, as well as the cross-border movements of ICT goods, which tells about the physical movement of goods, regardless of whether there is direct trade with the goods in question.

F. **International trade in ICT services:** this chapter informs the reader about the export and import of ICT services, both as a whole and broken down into different categories.

G. **ICT sector:** this chapter consists of main economic indicators for industries that are primarily engaged in the production of ICT goods and services.

In addition to detailed data for the Czech Republic, each chapter contains a methodological introduction and, for most indicators, an available international comparison.

Data given in this brochure were acquired, in most cases, from regular statistical surveys or databases of the **Czech Statistical Office**. International comparisons were compiled by the Czech Statistical Office based on freely available Eurostat, OECD or UN data sources.

For more information on digital economy statistics, visit our website:
https://csu.gov.cz/digital-economy.

In Prague, December 2024

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Department of Research, Development and Information Society Statistics

A ICT specialists

ICT specialists are **defined** as persons who have the ability to develop, operate and maintain ICT systems and for whom ICTs constitute the main part of their job. The occupations of ICT specialists are subdivided into **two major groups** and from 2011 are **assigned** to the groups, and subgroups of the **Classification of Occupations (CZ-ISCO)** as follows:

ICT managers, engineers and professionals

1330 Information and communications technology service managers;
2152 Electronics engineers;
2153 Telecommunications engineers;
2434 Information and communications technology sales professionals;
*Note: The 1330, 2152, 2153 and 2434 subgroups **are merged** into one category called **ICT managers, engineers and sales professionals**.*

25 Information and communications technology professionals
251 Software and applications developers and analysts;
252 Database and network professionals.

ICT technicians, installers and servicers

3114 Electronics engineering technicians;

35 Information and communications technicians
351 ICT operations and user support technicians;
352 Telecommunications and broadcasting technicians;

742 Electronics and telecommunications (ICT) installers and repairers.

*Note: Some data for the ICT specialists, such as wages, are available only for the ICT specialists defined **rather narrow**, which includes only two sub-major groups of CZ-ISCO: **25 ICT professionals** and **35 ICT technicians.***

Detail description of ISCO occupations is available here:
https://esco.ec.europa.eu/en/about-esco/escopedia/escopedia/international-standard-classification-occupations-isco

Numbers of ICT specialists

The data on the numbers of ICT specialists are taken from **the Labour Force Survey (LFS)**. *Note: In order to ensure higher reliability and to eliminate considerable year-on-year fluctuations of values for this group of employees, data is here provided as **three-year moving averages** (i.e., for example, the value for 2022 is calculated as an average from the values for 2021, 2022, and 2023).*

For further information on the **Czech LFS** see:
https://csu.gov.cz/vykazy/labour-force-sample-survey-lfss

The **Eurostat LFS Database** was used for the **international comparison**. *Note: Data for the Czech Republic from Eurostat **differ slightly** from the data published by the Czech Statistical Office. For instance, data from Eurostat are given for the relevant year and not as three-year moving averages.*

Wages of ICT specialists

Data on wages (average gross monthly wage) of the ICT specialists come from **the Structure of Earnings Survey (SES)** which is generated by merging of databases of the sample survey of the Information System on Average Earnings (ISPV) which covers the **wage sphere**, and from the database of the Salary Information System which covers the **salary sphere**. For more information see: https://www.ispv.cz/en/homepage.aspx.

For further information on the **Czech SES** see:
https://csu.gov.cz/produkty/structure-of-earnings-survey-2023

Data about ICT specialists is available by **several breakdowns**: by occupation and industry or by individual characteristics of ICT specialists such as gender, citizenship, age or highest education attainment.

For further information on ICT specialists see:
https://csu.gov.cz/ict-specialists-and-their-wages

A ICT specialists

Table A1 ICT specialists in Czechia

Thousand persons

	2020	2021	2022
Total	**219,8**	**226,3**	**226,1**
Women	20,8	22,1	23,6
Occupation			
professionals	119,1	125,0	129,3
ICT technicians, installers and servicers	100,6	101,2	96,8
Age group			
Under 25 years	9,9	10,0	11,0
25–34 years	66,4	66,0	65,5
35–44 years	79,8	79,4	76,8
45–54 years	41,9	47,7	48,8
55 + years	21,8	23,1	24,0
Highest level of education attainment			
Tertiary	123,5	129,2	128,8
Secondary with A-level examination	86,2	87,1	86,4
Other (lower)	10,1	10,0	10,9

Figure A1 ICT specialists

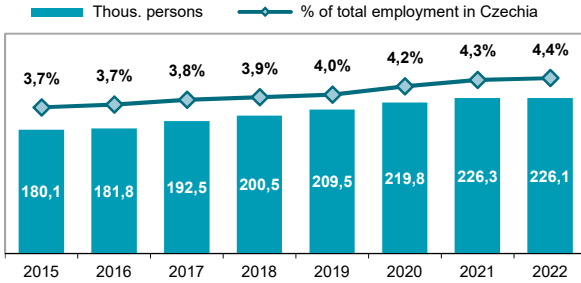
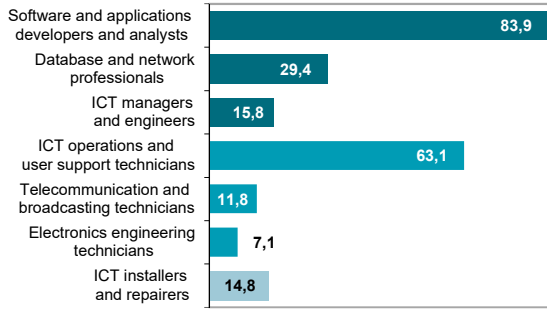


Figure A2 ICT specialists, by occupation (thousands); 2022



Note: The numbers of ICT experts are calculated from three-year moving averages for reasons of higher reliability (e.g. 2022 is the average of data for the years 2021 to 2023).

Source: CZSO, Labour Force Survey

A ICT specialists

Figure A3 ICT specialists; 2023
(% of total emloyment)

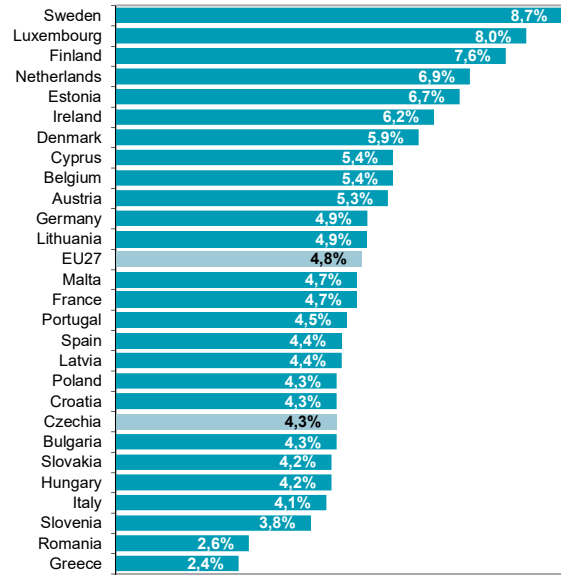
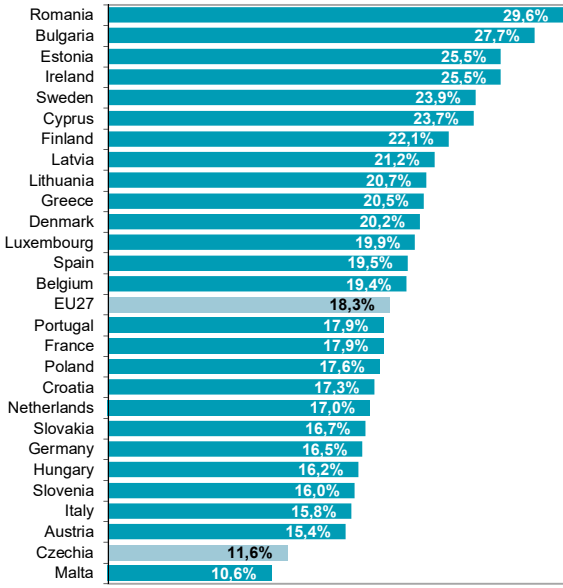


Figure A4 Share of women among ICT specialists; 2023



Source: CZSO calculation based on the Eurostat LFS Database

A ICT specialists

Tab. A2 ICT managers, engineers and professionals in Czechia

Thousand persons

	2020	2021	2022
Total	**119,1**	**125,0**	**129,3**
Women	13,0	14,6	15,6
Occupation			
ICT professionals, total	**106,1**	**109,8**	**113,4**
Software and app. developers and analysts	76,2	79,0	83,9
Database and network professionals	29,8	30,7	29,4
ICT managers, engineers and sales professionals	**13,0**	**15,2**	**15,8**
Age group			
25–34 years	38,3	38,6	39,5
35–44 years	44,0	45,1	45,9
45–54 years	23,1	27,4	28,9
55 + years	11,0	11,6	12,4
Highest level of education attainment			
Master's and Doctoral	77,6	82,5	83,6
Bachelor's and Higher professional	19,9	22,0	23,9
Other (lower)	21,4	20,3	21,1

Figure A5 ICT professionals

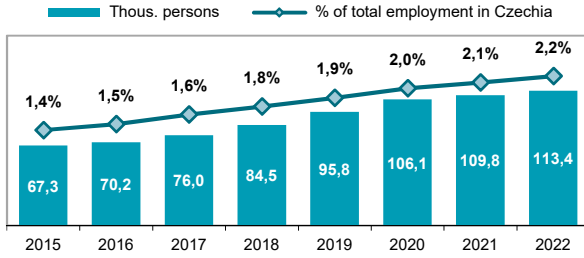


Figure A6 ICT professionals, by gender

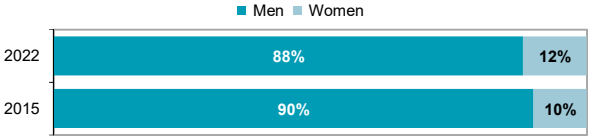
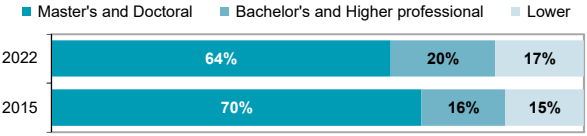


Figure A7 ICT professionals, by level of education



Note: The numbers of ICT experts are calculated from three-year moving averages for reasons of higher reliability (e.g. 2022 is the average of data for the years 2021 to 2023).

Source: CZSO, Labour Force Survey

A ICT specialists

Figure A8 ICT professionals; 2023
(% of total employment)

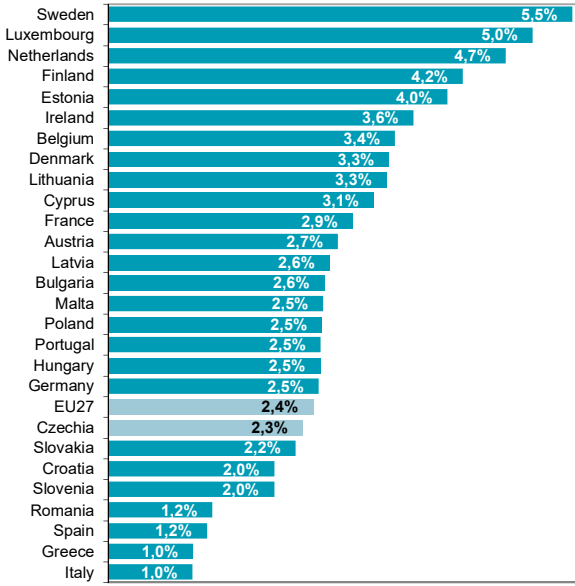
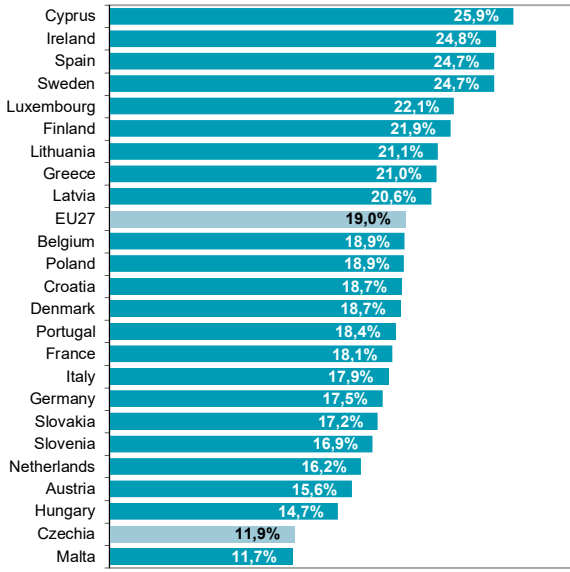


Figure A9 Share of women among ICT professionals; 2023



Source: CZSO calculation based on the Eurostat LFS Database

A ICT specialists

Table A3 ICT technicians, installers and servicers in Czechia

Thousand persons

	2020	2021	2022
Total	**100,6**	**101,2**	**96,8**
Women	7,8	7,5	8,0
Occupation			
ICT operations and user support technicians	63,4	65,5	63,1
Telecomm. and broadcasting technicians	11,5	11,2	11,8
Electronics engineering technicians	8,6	8,4	7,1
ICT installers and repairers	17,1	16,2	14,8
Age group			
Under 25 years	7,2	7,6	8,5
25–34 years	28,1	27,4	25,9
35–44 years	35,8	34,3	30,9
45–54 years	18,8	20,4	19,9
55 + years	10,8	11,5	11,6
Highest level of education attainment			
Tertiary	26,0	24,7	21,3
Secondary with A-level examination	64,8	66,8	65,2
Other (lower)	9,8	9,8	10,3

Figure A10 ICT technicians

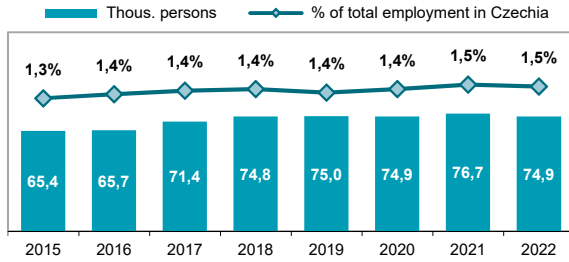


Figure A11 ICT technicians, by gender

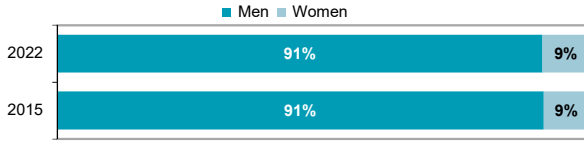
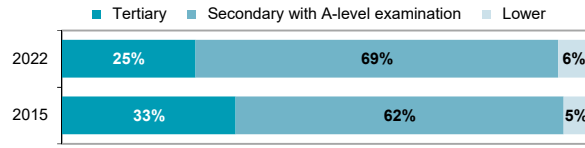


Figure A12 ICT technicians, by level of education



Note: The numbers of ICT experts are calculated from three-year moving averages for reasons of higher reliability (e.g. 2022 is the average of data for the years 2021 to 2023).

Source: CZSO, Labour Force Survey

A ICT specialists

Figure A13 ICT technicians; 2023
(% of total employment)

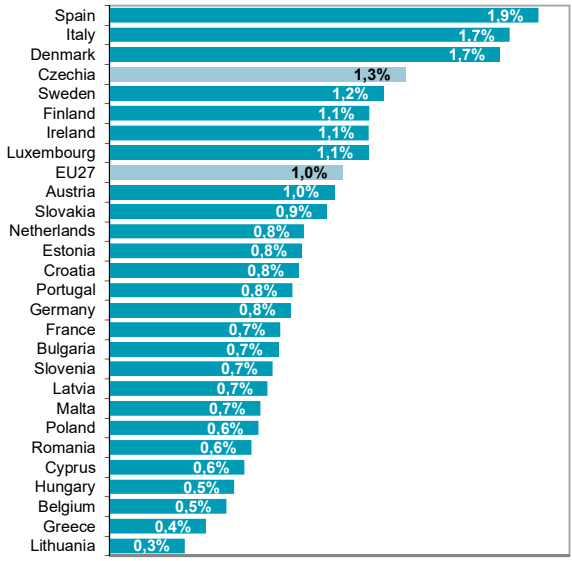
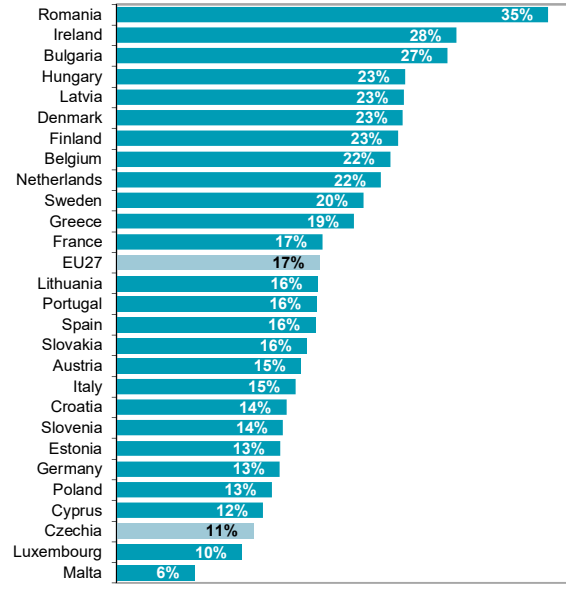


Figure A14 Share of women among ICT technicians; 2023



Source: CZSO calculation based on the Eurostat LFS Database

A ICT specialists

Table A4 Wages of ICT professionals in Czechia

Average gross monthly wage in CZK

	2021	2022	2023
Total	**74 157**	**82 441**	**88 025**
Men	76 360	84 526	90 633
Women	62 499	70 492	74 394
Citizenship			
Czech citizens	70 622	78 013	83 898
Foreigners	92 358	104 184	105 636
Sphere of activity (remuneration)			
Business (wage) sphere	75 718	84 052	89 651
Government (salary) sphere	47 968	49 736	52 907
Age group			
25–34 years	67 447	74 824	79 970
35–44 years	83 448	92 140	96 912
45–54 years	79 959	89 164	97 178
55 + years	64 402	72 319	76 992
Highest level of education attainment			
Master's and Doctoral	81 694	90 757	96 352
Bachelor's and Higher professional	70 524	78 783	84 997
Secondary with A-level examination	62 720	69 472	74 996

Figure A15 Wages of ICT professionals

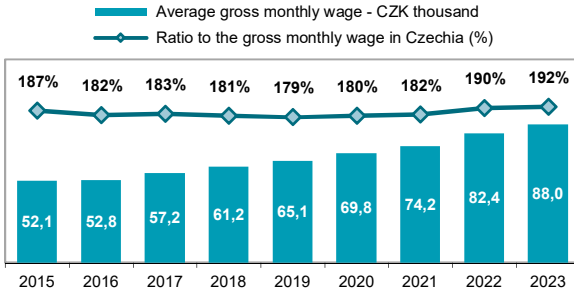
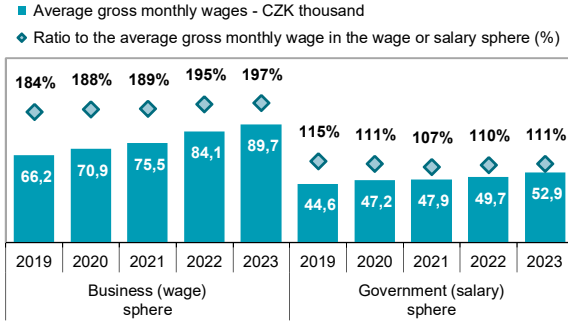


Figure A16 Wages of ICT professionals, by sphere



Source: CZSO, Structural Earnings Statistics

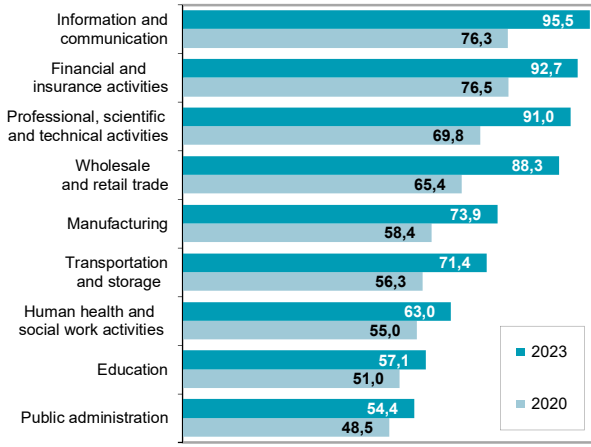
A ICT specialists

Table A5 Wages of ICT professionals in Czechia by occupation and industry

Average gross monthly wage in CZK

	2021	2022	2023
Total	**74 157**	**82 441**	**88 025**
Occupation			
Software and app. developers & analysts	**77 642**	**86 473**	**92 332**
Systems analysts	76 049	82 521	83 735
Software developers	83 504	93 017	102 875
Web and multimedia developers	57 992	63 172	80 568
Applications programmers	73 210	81 813	84 977
Other software developers and analysts	73 252	84 542	80 344
Database and network professionals	**65 651**	**72 033**	**76 675**
Database designers	66 790	73 234	74 468
Systems administrators	62 746	68 462	73 870
Computer network professionals	74 647	81 458	84 834
Data security professionals	75 184	83 350	85 637
Industry (CZ-NACE Section)			
Manufacturing (C)	61 486	68 028	73 879
Wholesale and retail trade (G)	72 415	80 375	88 276
Transporting and storage (H)	59 176	65 510	71 386
Information and communication (J)	81 184	89 641	95 462
Financial and insurance activities (K)	77 515	86 134	92 718
Professional, scientific and techn. act. (M)	76 211	82 735	90 978
Public administration (O)	49 029	51 040	54 376
Education (P)	50 788	52 567	57 101
Human health and social work act. (Q)	57 417	59 473	63 014
Arts, entertainment and recreation (R)	56 843	60 769	68 383

Figure A17 Average gross monthly wage of ICT professionals in selected industries (CZK thousand)



Source: CZSO, Structural Earnings Statistics

A ICT specialists

Table A6 Wages of ICT technicians in Czechia

Average gross monthly wage in CZK

	2021	2022	2023
Total	**48 352**	**51 688**	**56 024**
Men	49 046	52 428	56 685
Women	43 312	46 823	51 699
Citizenship			
Czech citizens	47 033	50 296	54 398
Foreigners	60 029	64 620	71 168
Sphere of activity (remuneration)			
Business (wage) sphere	48 923	52 368	56 777
Government (salary) sphere	40 527	42 379	45 559
Age group			
25–34 years	45 525	49 129	54 802
35–44 years	51 697	55 204	60 826
45–54 years	53 203	56 255	58 255
55 + years	45 724	48 372	50 991
Highest level of education attainment			
Master's and Doctoral	57 542	60 426	63 768
Bachelor's and Higher professional	52 228	55 333	60 034
Secondary with A-level examination	43 658	47 467	52 730
Other (lower)	39 776	43 568	45 415
Occupation			
ICT operations and user support technicians	48 911	52 489	57 417
Telecomm. and broadcasting technicians	43 896	45 505	45 726

Figure A18 Wages of ICT technicians

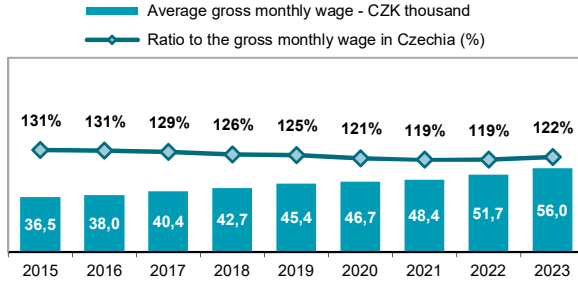
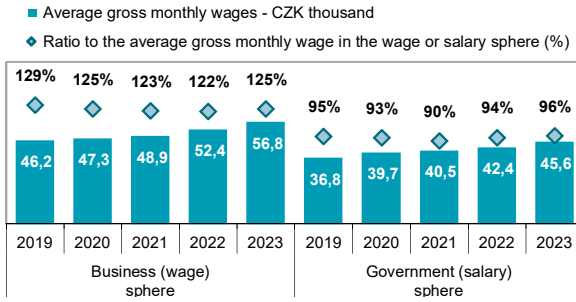


Figure A19 Wages of ICT technicians, by sphere



Source: CZSO, Structural Earnings Statistics

B ICT students

Students of and graduates from ICT fields of education (in short ICT students and graduates) are **defined** by the International Standard Classification of Education: Fields of Education and Training 2013 used in the Czech Republic **(CZ-ISCED-F 2013).** ICT-related studies correspond to the broad filed of education **Information and Communication Technologies (class 06)** of this classification that involves detailed defined fields of education as follows:

Computer use (0611);

Database and network design and administration (0612);

Software and applications development and analysis (0613);

ICT not elsewhere classified (0619) and

Inter-disciplinary programmes and qualifications involving ICT (0688).

Note: The 0619 and 0688 fields of education are merged into one category called here ICT n.e.c. and Inter-disciplinary ICT fields. The field of study Computer Use (0611) is not part of the study plan at universities.

Detail description of **ISCED-F 2013** is available here: https://uis.unesco.org/en/topic/international-standard-classification-education-isced.

Education at universities presented in this chapter for Czechia belongs to the tertiary level of education and **includes bachelor, follow-up master, master and doctoral study programmes.** Master and follow-up master study programmes together are called here master programmes. Studies can be delivered in full-time, distance, or combined type of education.

Data for the Czech Republic were obtained from data sources of the **Ministry of Education, Youth, and Sports (MEYS)**, namely from **the Union Information from Students' Registers (SIMS)**. The source database of SIMS is continually completed and updated, including retrospective corrections. Detailed information about the SIMS database is available here *(only in Czech)*: https://msmt.gov.cz/vzdelavani/vysoke-skolstvi/sdruzene-informace-matrik-studentu-sims.

Data on university students are always as at **31 December of the reference year**; data on graduates are **for the entire school year**.

Numbers of students and graduates are given **as headcount**, i.e. each student is included in a particular piece of data only once, including students, who study in more study programmes or fields of education at the same time. The total numbers of students and graduates thus do not have to be equal to the sums of students and graduates of respective types of study programmes or field of education.

Eurostat database was used for **the international comparisons.** Data about number of students of and graduates from ICT fields of education contain information for tertiary level of education, i.e. including, for example, higher vocational schools. For this reason, the data for the Czech Republic from Eurostat differ from the data published by the CZSO available in the SIMS database. The main reason is mainly a slightly different definition of levels of tertiary education.

For more information on ICT students see*:*
https://csu.gov.cz/students-of-ict-fields

B ICT students and graduates

Table B1 University students of ICT fields of education in Czechia by gender, age and citizenship

Number of students

	2021	2022	2023
Total	**22 442**	**23 494**	**24 515**
Men	18 554	19 319	20 117
Women	3 888	4 175	4 398
Age			
Under 20 years	2 710	3 039	3 057
20-24 years	14 607	15 303	16 134
25-29 years	3 438	3 554	3 646
30-34 years	923	884	900
35 + years	764	714	778
Citizenship			
Czech citizens	15 550	15 897	16 540
Foreigners, total	**6 892**	**7 597**	**7 975**
Slovakia	3 164	3 146	3 305
Russia	1 318	1 340	1 162
Ukraine	659	1 081	1 257
other countries	1 751	2 030	2 251

Figure B1 University students of ICT fields of education

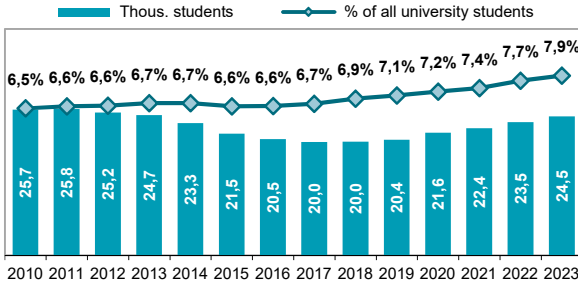


Figure B2 University students of ICT, by gender

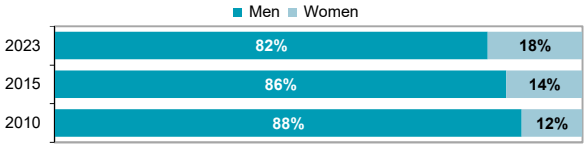
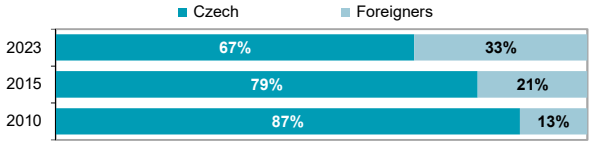


Figure B3 University students of ICT, by citizenship



Source: CZSO calculation based on MEYS database

B ICT students and graduates

Figure B4 Tertiary students of ICT; 2022
(% of all tertiary students)

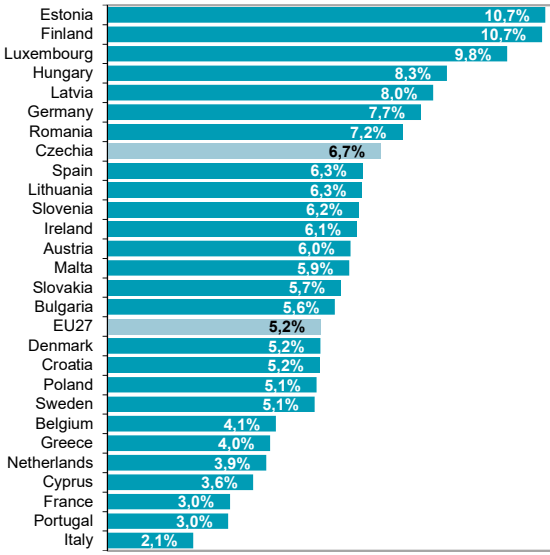
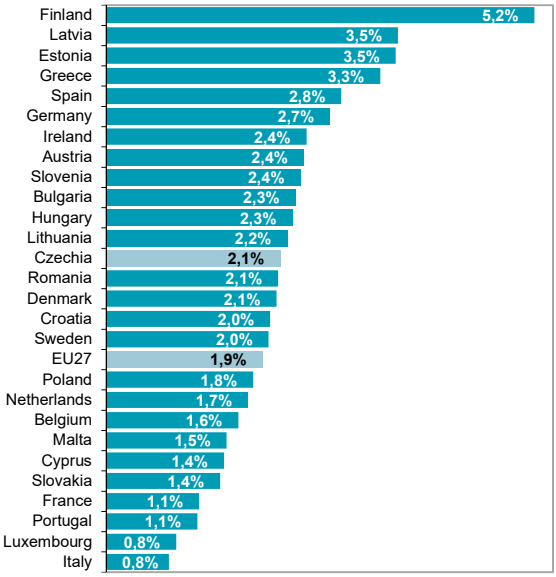


Figure B5 Tertiary students of ICT; 2022
(% of population aged 20 to 29 years)



Source: CZSO calculation based on Eurostat database

B ICT students and graduates

Table B2 University students of ICT fields of education in Czechia by selected characteristics

Number of students

	2021	2022	2023
Total	**22 442**	**23 494**	**24 515**
Students of public universities	21 617	22 639	23 478
Students of private universities	828	861	1 053
Studies			
Full-time studies	19 653	20 926	21 834
Distance and combined studies	2 803	2 586	2 716
Study programme			
Bachelor	16 330	17 200	17 959
Master	5 188	5 411	5 637
Doctoral	931	893	925
Field of study			
Software and applications development and analysis	16 131	17 467	18 603
Database and network design and administration	1 097	945	938
Inter-disciplinary and other ICT fields	5 257	5 114	5 029

Figure B6 University students of ICT, by studies

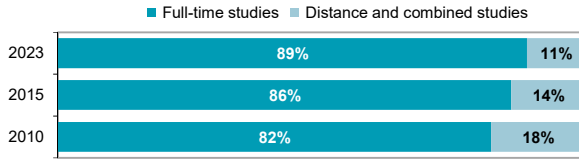


Figure B7 University students of ICT, by study programme

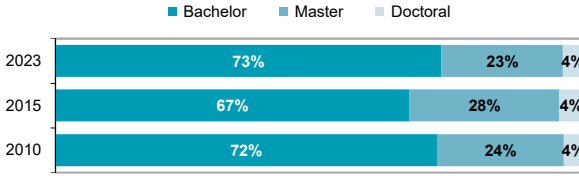
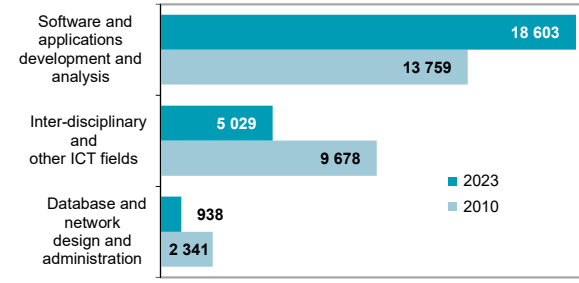


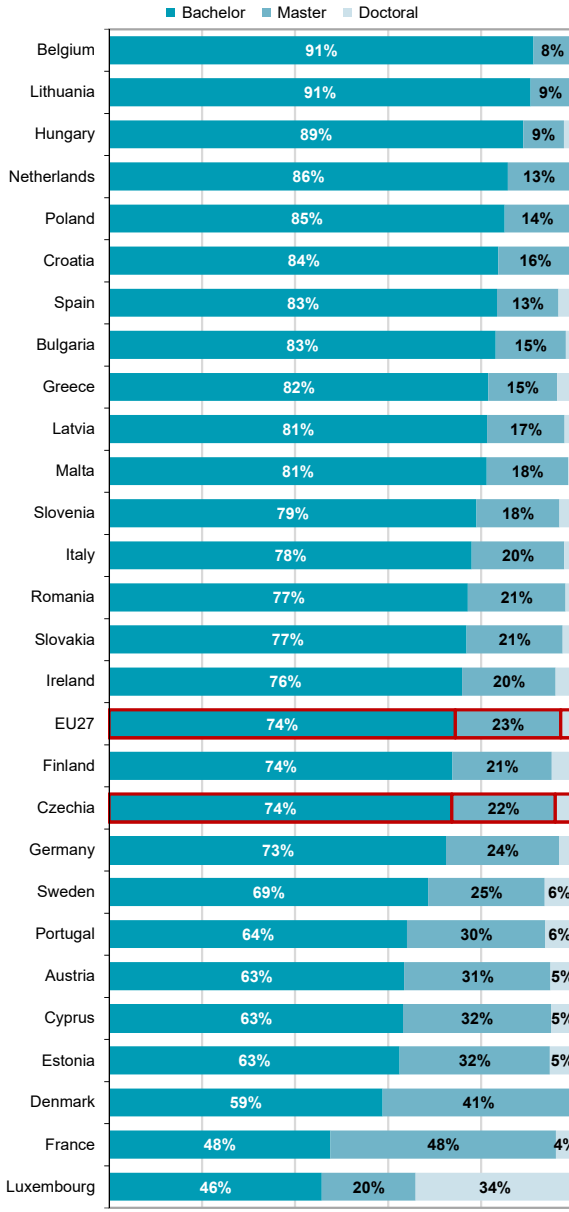
Figure B8 University students of ICT, by field of study



Source: CZSO calculation based on MEYS database

B ICT students and graduates

Figure B9 Tertiary students of ICT field of education by study programme; 2022



Source: CZSO calculation based on Eurostat database

B ICT students and graduates

Table B3 University graduates from ICT fields of education in Czechia by gender, age and citizenship

Number of graduates

	2021	2022	2023
Total	**3 801**	**3 585**	**3 947**
Men	3 091	2 962	3 216
Women	710	623	731
Age			
20-24 years	2 039	1 936	2 057
25-29 years	1 525	1 383	1 590
30-34 years	135	154	174
35 + years	102	112	126
Citizenship			
Czech citizens	2 786	2 579	2 846
Foreigners, total	**1 015**	**1 006**	**1 101**
Slovakia	721	683	679
Russia	89	111	126
Ukraine	61	58	74
other countries	144	154	222

Figure B10 University graduates from ICT fields of education

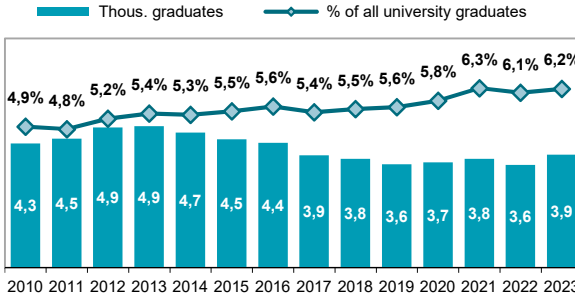


Figure B11 University graduates from ICT, by gender

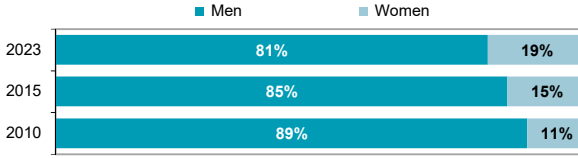
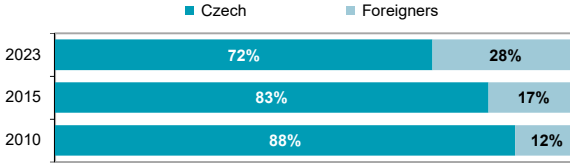


Figure B12 University graduates from ICT, by citizenship



Source: CZSO calculation based on MEYS database

B ICT students and graduates

Figure B13 Tertiary graduates from ICT; 2022
(% of all tertiary graduates)

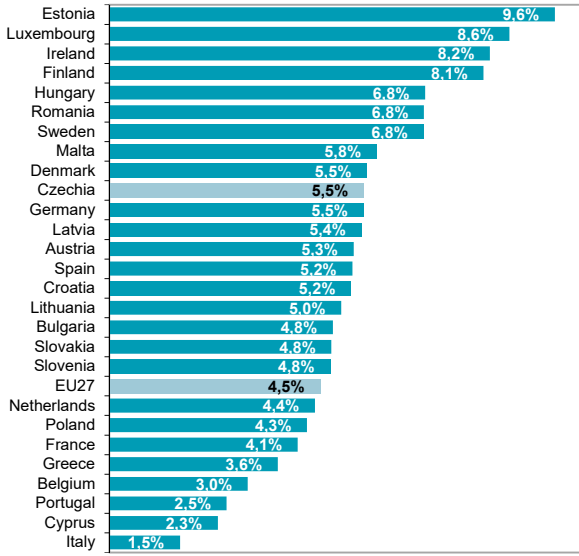
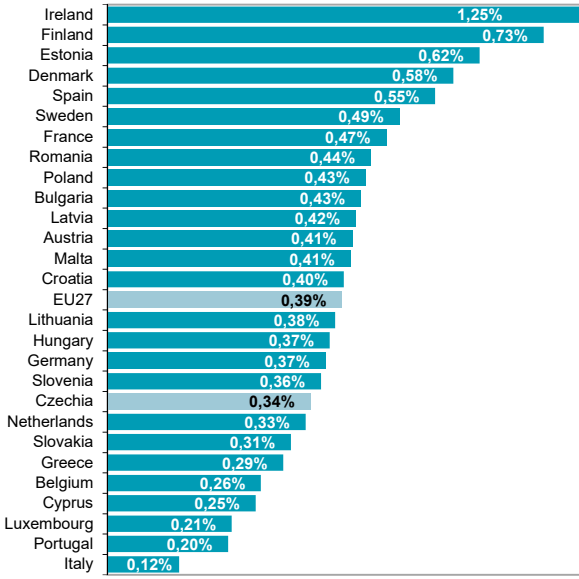


Figure B14 Tertiary graduates from ICT; 2022
(% of population aged 20 to 29 years)



Source: CZSO calculation based on Eurostat database

B ICT students and graduates

Table B4 University graduates from ICT fields of education in Czechia by selected characteristics

Number of graduates

	2021	2022	2023
Total	**3 801**	**3 585**	**3 947**
Graduates from public universities	3 732	3 535	3 875
Graduates from private universities	69	50	72
Studies			
Full-time studies	3 503	3 269	3 602
Distance and combined studies	298	316	345
Study programme			
Bachelor	2 241	2 197	2 395
Master	1 497	1 302	1 477
Doctoral	63	86	75
Field of study			
Software and applications development and analysis	2 011	2 264	2 663
Database and network design and administration	431	279	240
Inter-disciplinary and other ICT fields	1 268	913	841

Figure B15 University graduates from ICT, by studies

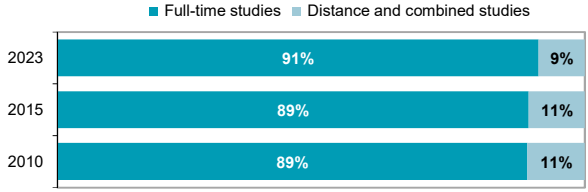


Fig. B16 University graduates from ICT, by study programme

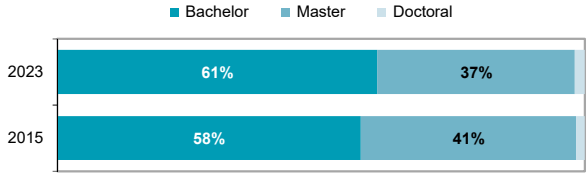
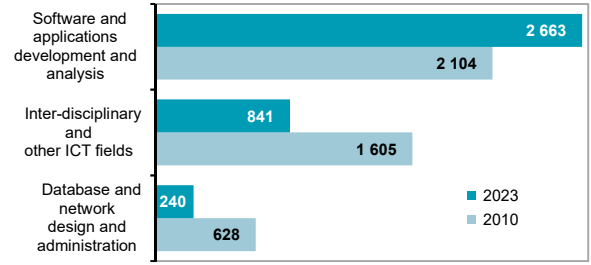
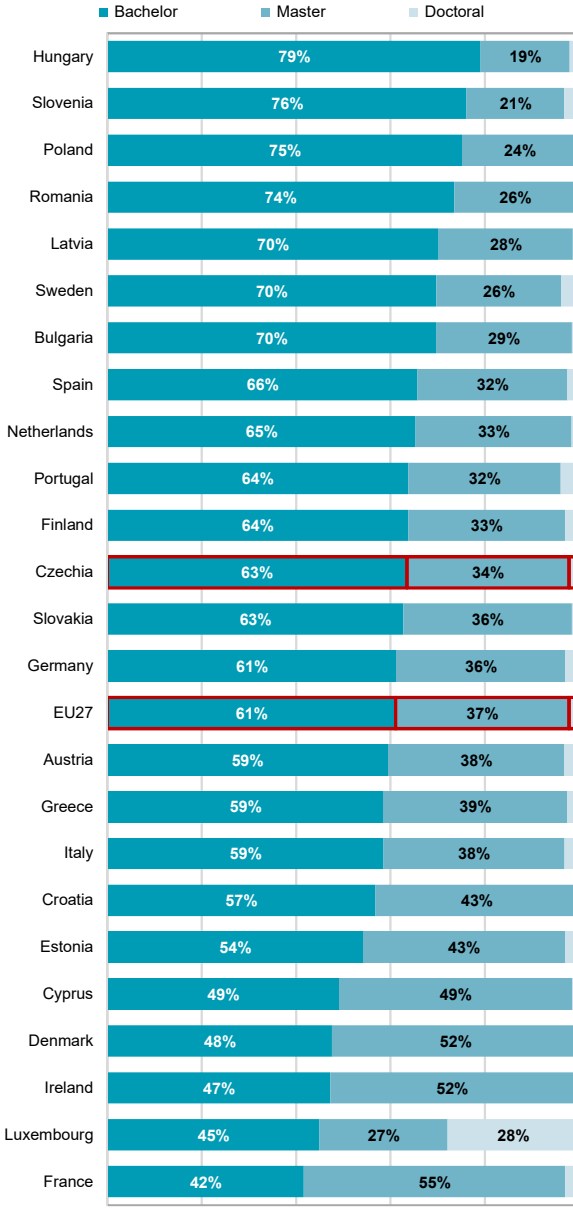


Figure B17 University graduates from ICT fields of education in Czechia, by field of study



Source: CZSO calculation based on MEYS database

Figure B18 University graduates from ICT, by study programme; 2022



Source: CZSO calculation based on Eurostat database

B ICT students and graduates

Figure B19 Share of women among all tertiary students of ICT fields of education; 2022

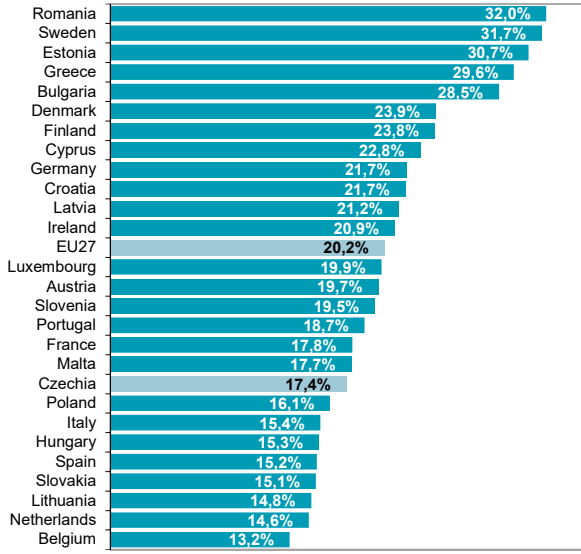
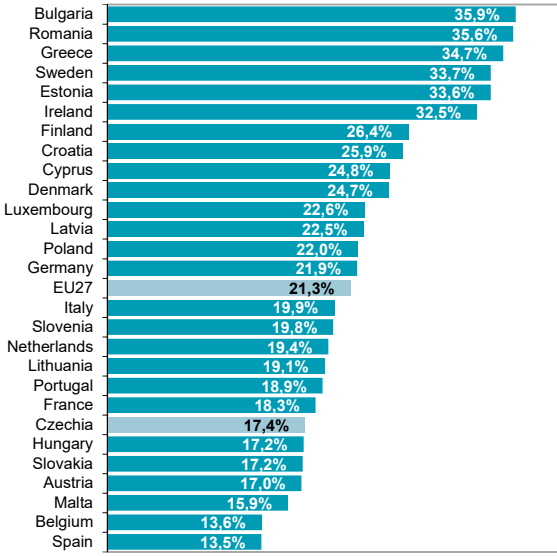


Figure B20 Share of women among all tertiary graduates from ICT fields of education; 2022



Source: CZSO calculation based on Eurostat database

C ICT investment

Investments into ICT equipment and software

Investment into ICT equipment and software (hereafter **ICT investment**) is **defined** as the acquisition of equipment and computer software that is used in production for more than one year. ICT has **three components**: information technology equipment (computers and related hardware); communications equipment; and software.

Investment here shall mean the **gross fixed capital formation** (GFCF: P.51), which includes mainly acquisitions of fixed assets (P.511) and expenses for transition of non-produced assets into ownership (P.512). The definition of GFCF follows **The European System of Regional and National Accounts** (ESA 2010): http://ec.europa.eu/eurostat/web/esa-2010

According to **the ESA 2010**, the investments into computer and communication equipment became a part of an item of non-financial assets as **ICT equipment (AN.1132)**.

Computer software and databases (AN.1173) involve according to the ESA 2010 two sub-items as follows: **Computer software (AN.11731)** involves computer programs, program descriptions and supporting materials for both systems & application SW and **Databases (AN.11732) that** include data files organized so as to enable cost-effective data access and use.

Data on investments into ICT equipment and software are available by **Sector** (ESA 2010 Institutional Sectors Classification**)** and **Industry** (CZ NACE classification) of the monitored entities.

Household consumption expenditures on ICT equipment and services

Data on ICT investment within Czechia are supplemented with data on the final consumption of households in the **national concept**, which includes the expenditure of residents, both inland and abroad. In international comparisons, the **domestic concept** is used.

ICT is classified **within Czechia** to the **International standard of the Classification of Individual Consumption by Purpose (CZ-COICOP)** effective from 1 January 2024 as follows:

- **ICT equipment:** Telephone equipment, computers and their accessories, other ICT equipment and accessories, software.
- **ICT services:** fixed and mobile communication and internet services (separately accounted), bundled telecommunication services.

ICT is classified in **international comparisons** to the COICOP effective in Czechia until 31 December 2023 as follows:

- **ICT equipment:** 08.2 Telephone equipment and 09.1 Audio-visual and information processing equipment (Computers and other ICT equipment).
- **ICT services:** 08.3 Telephone services that include primarily payments for calls via landline, mobile phone and payments for Internet connection.

Detail description of COICOP is available here: https://unstats.un.org/unsd/classifications/Econ/Download/COICOP_2018_pre_copy_edit_publication.pdf.

The both data, the total ICT investment and final household consumption expenditure on ICT come from **the Annual National Accounts Statistics. Data for the 2023 are preliminary.** For more information, see: http://apl.czso.cz/pll/rocenka/rocenka.indexnu?mylang=EN

Data for the **international comparisons** come from the **Eurostat database** and refer to the reported or nearest available year.

For more information on ICT investment see*:*
https://csu.gov.cz/investment-in-ict

C ICT investment

Table C1 ICT investment in Czechia

CZK million

	2021	2022	2023
Total	**289 905**	**317 382**	**353 085**
ICT equipment	91 510	90 302	93 978
Software	198 395	227 080	259 107
Industry (CZ-NACE Section)			
Agriculture, forestry and fishing	2 227	2 890	1 424
Mining and quarrying	752	484	298
Manufacturing	64 789	66 989	77 819
Electricity, gas and water supply	9 846	9 660	12 827
Construction	6 538	6 838	5 497
Wholesale and retail trade	19 391	23 679	21 801
Transportation and storage	8 815	9 579	10 708
Accommodation and food service activ.	1 786	1 899	2 011
Information and communication	104 220	117 628	132 452
Financial and insurance activities	28 836	28 721	32 897
Real estate activities	3 973	3 862	3 803
Professional, scientific and technical activ.	13 063	16 955	18 408
Administrative and support service activ.	4 462	5 041	5 813
Public administration and defence	10 304	12 357	14 288
Education	2 754	2 736	3 012
Human health and social work activities	5 289	4 685	6 453
Arts, entertainment and recreation	1 874	2 503	2 715
Other services	986	876	859

Figure C1 ICT investment

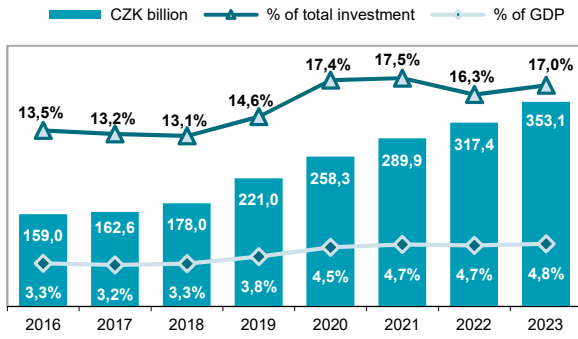
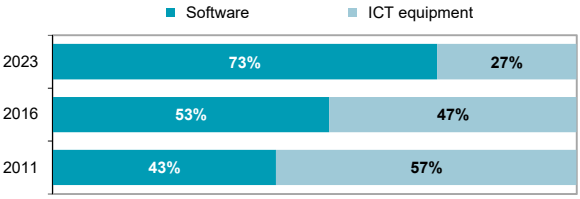


Figure C2 ICT investment, by asset



Source: CZSO, Annual National Accounts Statistics

C ICT investment

Figure C3 ICT investment; 2023* (% of GDP)

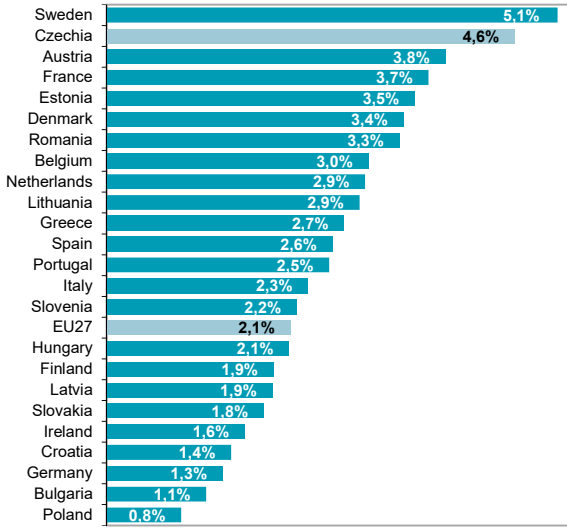
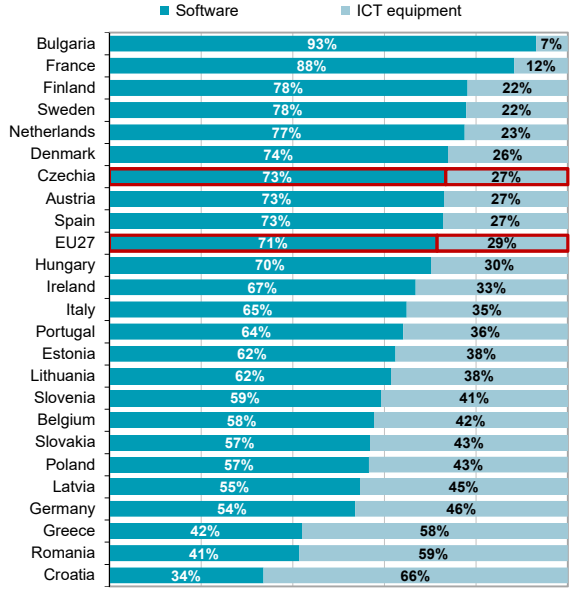


Figure C4 ICT investment, by asset (%)**; 2023***



** or the nearest available year*

Source: CZSO calculations based on Eurostat data

C ICT investment

Table C2 ICT equipment investment in Czechia

CZK million

	2021	2022	2023
Total	**91 510**	**90 302**	**93 978**
in government institutions	6 188	7 646	10 177
Industry (CZ-NACE Section)			
Agriculture, forestry and fishing	1 998	2 644	1 120
Mining and quarrying	451	248	100
Manufacturing	45 871	44 006	51 874
Electricity, gas and water supply	4 674	4 007	2 269
Construction	4 953	5 004	3 322
Wholesale and retail trade	7 247	7 343	3 470
Transportation and storage	2 622	2 328	1 545
Accommodation and food service activ.	1 423	1 237	985
Information and communication	5 154	4 227	3 850
Financial and insurance activities	3 256	4 244	5 744
Real estate activities	1 552	1 885	1 284
Professional, scientific and technical activ.	2 292	3 629	6 845
Administrative and support service activ.	1 189	1 186	664
Public administration and defence	2 570	3 153	3 959
Education	1 536	1 451	1 671
Human health and social work activities	3 579	2 533	3 954
Arts, entertainment and recreation	589	631	804
Other services	554	546	518

Figure C5 ICT equipment investment

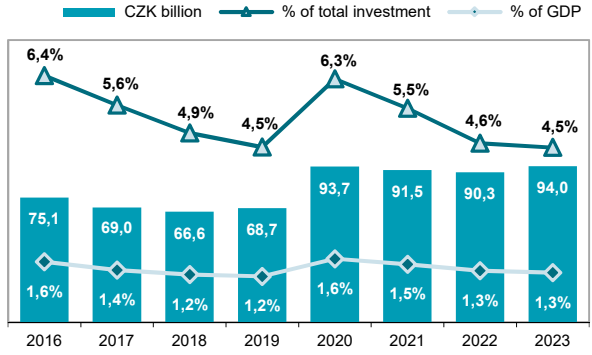
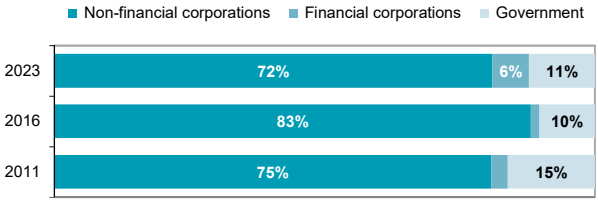


Figure C6 ICT equipment investment, by sector



Source: CZSO, Annual National Accounts Statistics

C ICT investment

Figure C7 ICT equipment investment; 2023* (% of GDP)

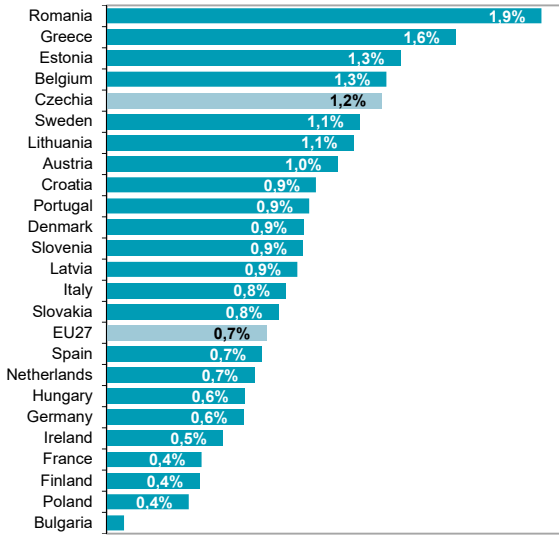
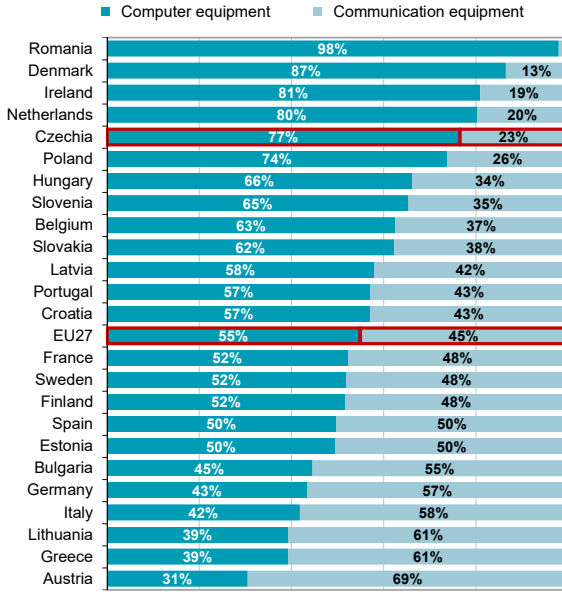


Figure C8 ICT equipment investment, by asset (%); **2023***



* or the nearest available year

Source: CZSO calculations based on Eurostat data

C ICT investment

Table C3 Software investment in Czechia

CZK million

	2021	2022	2023
Total	**198 395**	**227 080**	**259 107**
in government institutions	9 948	11 747	13 678
Industry (CZ-NACE Section)			
Agriculture, forestry and fishing	229	246	304
Mining and quarrying	301	236	198
Manufacturing	18 918	22 983	25 945
Electricity, gas and water supply	5 172	5 653	10 558
Construction	1 585	1 834	2 175
Wholesale and retail trade	12 144	16 336	18 331
Transportation and storage	6 193	7 251	9 163
Accommodation and food service activ.	363	662	1 026
Information and communication	99 066	113 401	128 602
Financial and insurance activities	25 580	24 477	27 153
Real estate activities	2 421	1 977	2 519
Professional, scientific and technical activ.	10 771	13 326	11 563
Administrative and support service activ.	3 273	3 855	5 149
Public administration and defence	7 734	9 204	10 329
Education	1 218	1 285	1 341
Human health and social work activities	1 710	2 152	2 499
Arts, entertainment and recreation	1 285	1 872	1 911
Other services	432	330	341

Figure C9 Software investment

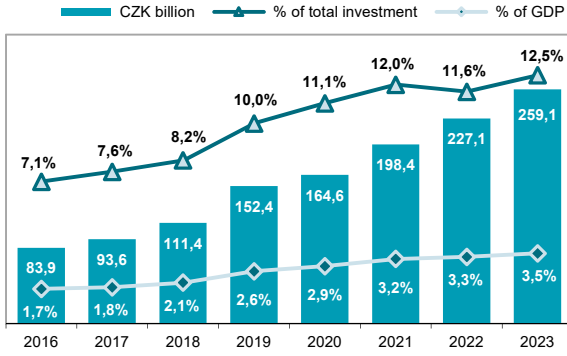
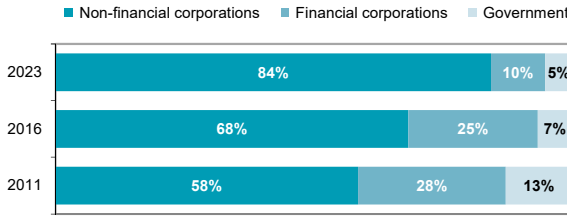


Figure C10 Software investment, by sector



Source: CZSO, Annual National Accounts Statistics

C ICT investment

Figure C11 Software investment; 2023*
(% of total investment)

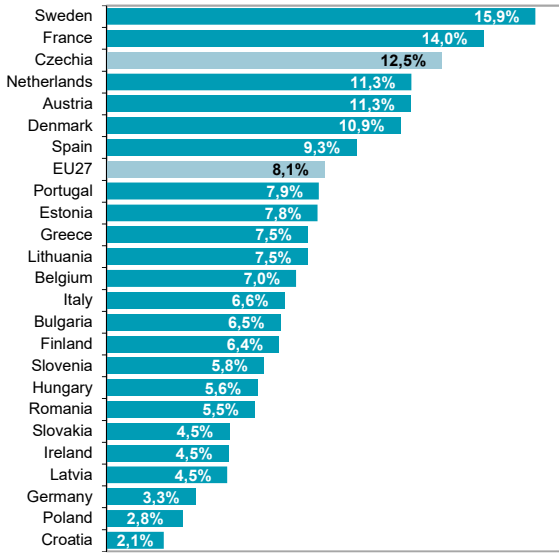
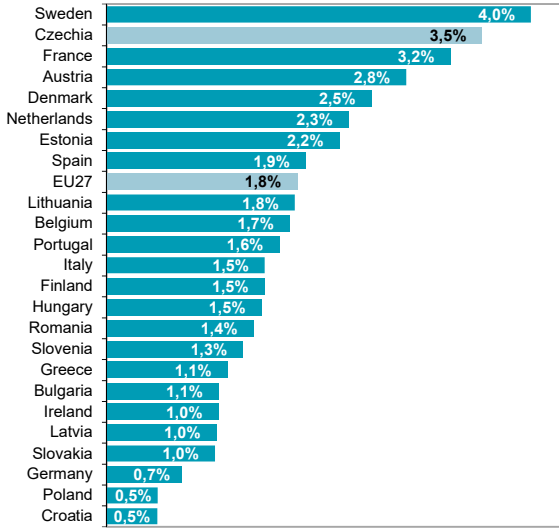


Figure C12 Software investment, 2023* (% of GDP)



* or the nearest available year

Source: CZSO calculations based on Eurostat data

C ICT investment

Table C4 Household consumption expenditures on ICT equipment and services in Czechia

CZK million

	2021	2022	2023
Total	**114 794**	**115 076**	**122 371**
ICT equipment	**40 829**	**41 855**	**43 126**
Telephone equipment	7 532	7 880	8 115
Computers and their accessories	21 277	21 441	21 672
Other ICT equipment and accessories	12 020	12 534	13 339
Software	**1 138**	**1 373**	**1 329**
ICT services	**72 827**	**71 848**	**77 916**
Fixed communication services	14 449	14 926	15 928
Mobile communication services	35 894	34 380	34 388
Bundled telecommunication services	22 484	22 542	27 600

Figure C13 Household consumption expenditures on ICT equipment and services

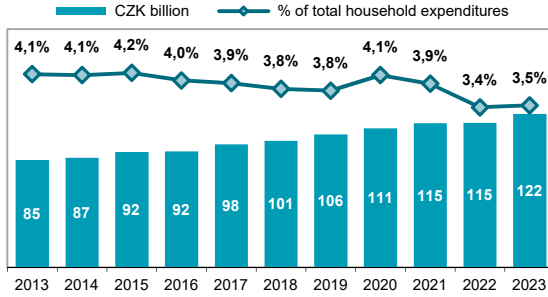


Figure C14 Household expenditures on ICT, by product

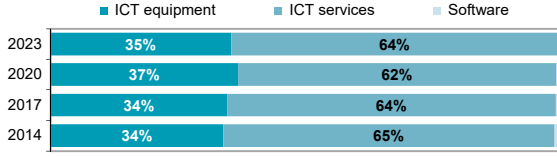
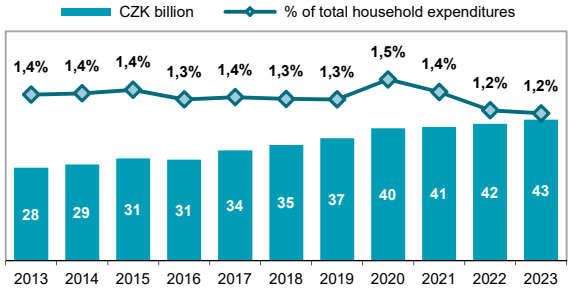


Figure C15 Households expenditures on ICT equipment



Source: CZSO, Annual National Accounts Statistics

C ICT investment

Figure C16 Household expenditures on ICT; 2023*
(% of total households consumption expenditures)

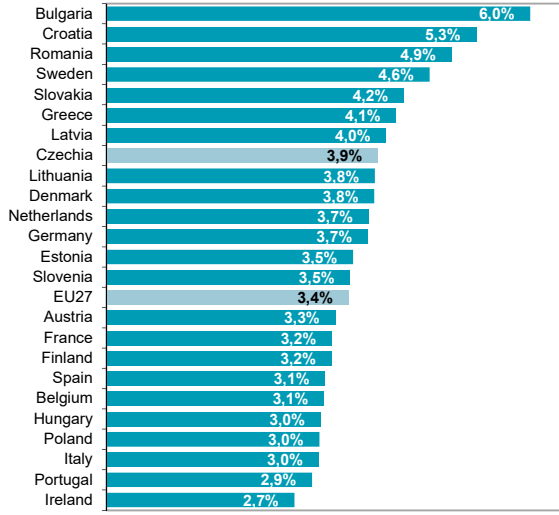
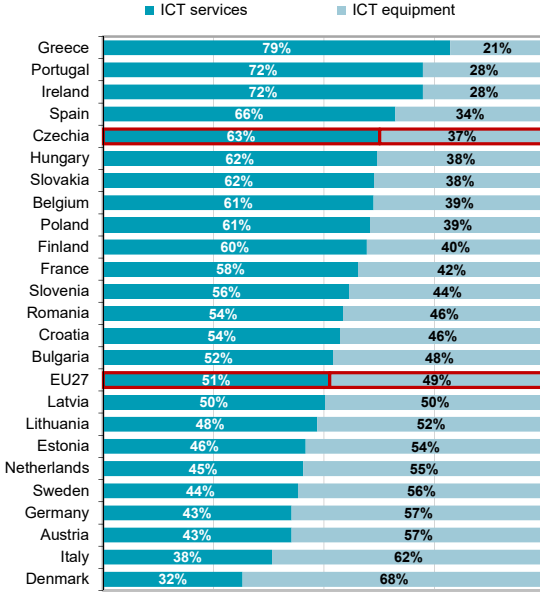


Figure C17 Household expenditures on ICT, by type of product; 2023* (%)



* or the nearest available year

Source: CZSO calculations based on Eurostat data

C ICT investment

Figure C18 Household expenditures on ICT services; 2023* (% of total households expenditures)

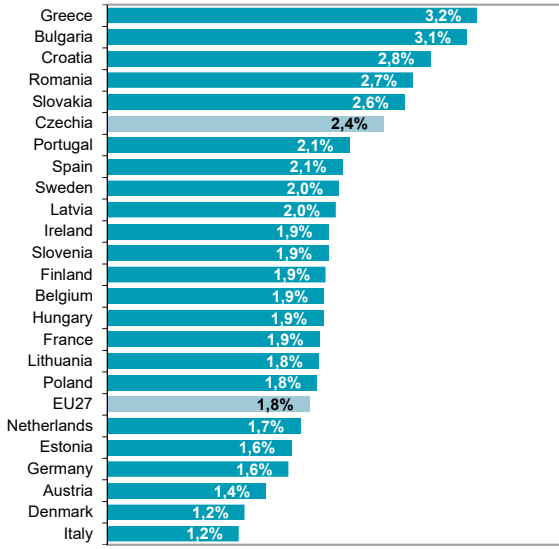
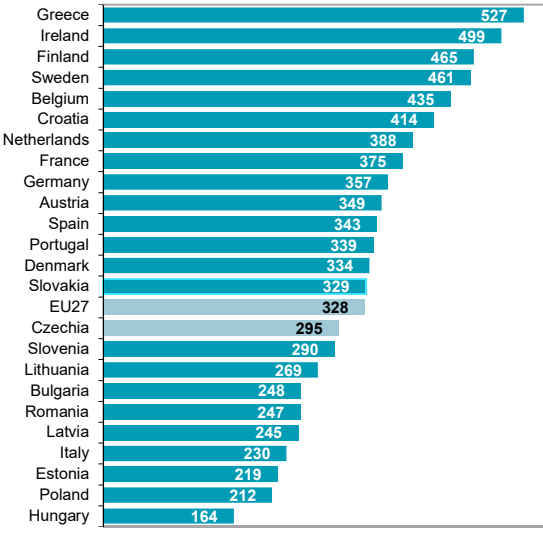


Figure C19 Household expenditures on ICT services; 2023* (EUR per capita)



* or the nearest available year

Source: CZSO calculations based on Eurostat data

D ICT research and development

Research and experimental development (R&D) comprise creative and systematic work undertaken in order to increase the stock of knowledge – including knowledge of humankind, culture and society – and to devise new applications of available knowledge (OECD 2015, Frascati manual).

ICT R&D expenditure

This sub-chapter presents data on financial resources devoted in research and development of ICT equipment and software (hereafter **ICT R&D expenditure**) regardless of the main economic activity and sector of R&D performers. ICT is **classified** here into two main categories according to the groups of **the Classification of Products by Activity (CZ-CPA)** as follows:

- **ICT equipment includes:** 26.1 Electronic components and boards; 26.2 Computers and peripheral equipment; 26.3 Communication equipment; 26.4 Consumer electronics and 26.8 Magnetic and optical media.
- **Software includes:** 58.2 Software publishing; 61 Telecommunications services; 62 Computer programming, consultancy & related services and 63.1 Data processing, hosting & related services; web portals.

Data in this sub-chapter are based on the results of **the special module** on R&D expenditures in selected **technological areas** that is included in the Czech annual questionnaire on R&D. ICT R&D expenditure figures **are available** by sectors of R&D performance and industry (CZ-NACE) classification. **International comparison is not available** for this data set. For more information see:
https://csu.gov.cz/research-and-development-rad

R&D expenditures and personnel in the ICT sector industries

This sub-chapter focuses on R&D expenditures and R&D personnel in enterprises with the main economic activity that belongs to the **ICT sector.** In general, the term ICT sector includes both: **ICT manufacturing** and **ICT services** which are associated with the production and/or distribution of information and communication technologies (ICT) and a provision of related services.

Industries of ICT sector includes all enterprises with the prevailing economic activity according to the codes of the Classification of Economic Activities (**CZ-NACE**) that fulfill the OECD official definition of ICT sector. For more information, see **Chapter G** or **dedicated website** to the measurement of **information economy industries***:*
https://csu.gov.cz/ict-sector

Data for the **international comparisons** come from the **Eurostat database** and refer to the reported or nearest available year.

Note: Data on R&D expenditures in the ICT sector has less predictive value than the figures for the total ICT R&D expenditures included in first sub-chapter. Enterprises within the ICT sector can perform their R&D activities in areas other than ICT and vice versa enterprises outside the ICT sector can exercise their R&D activities in the ICT field.

For detailed data and information for the ICT sector see:
https://csu.gov.cz/ict-sector

D ICT research and development

Table D1 Total ICT R&D expenditures in Czechia

CZK million

	2021	2022	2023
Total	**27 450**	**31 643**	**33 556**
financed from government funds	1 979	1 668	1 810
Type of ICT product			
ICT equipment	7 372	8 164	9 278
Software	20 078	23 479	24 278
Type of R&D performer			
Enterprises, total	**26 096**	**30 469**	**31 651**
National enterprises	8 607	9 822	9 511
Foreign-controlled enterprises	17 489	20 647	22 140
Public universities	**1 267**	**1 049**	**885**
Other R&D performers	**86**	**126**	**1 020**

Figure D1 Total ICT R&D expenditures

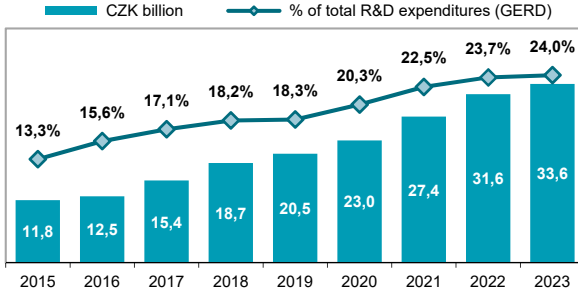


Figure D2 ICT R&D expenditures, by type of product

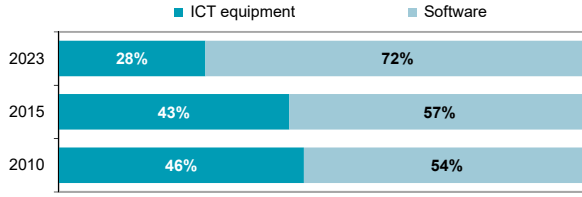
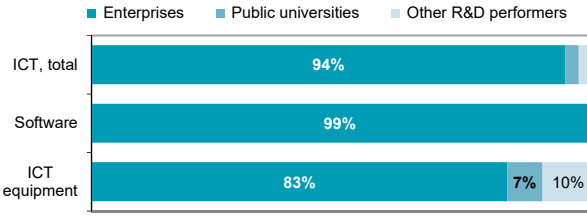


Figure D3 ICT R&D expenditures, by type of performer; 2023



Source: CZSO, Annual R&D survey

D ICT research and development

Table D2 Software R&D expenditures in Czechia

CZK million

	2021	2022	2023
Total	**20 078**	**23 479**	**24 278**
financed from government funds	611	581	551
Type of R&D performer			
Enterprises, total	**19 699**	**23 108**	**23 978**
National enterprises	6 246	7 331	7 872
Foreign-controlled enterprises	13 453	15 777	16 107
Public universities	**342**	**298**	**231**
Other R&D performers	**37**	**73**	**69**

Figure D4 Software R&D expenditures

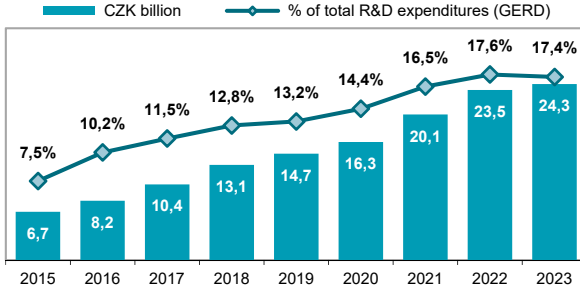


Figure D5 Software R&D expenditures, by performer; 2023

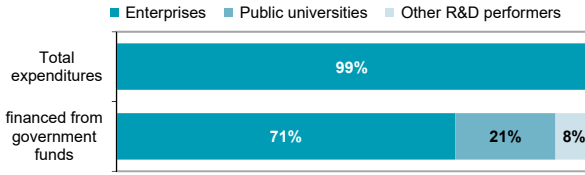
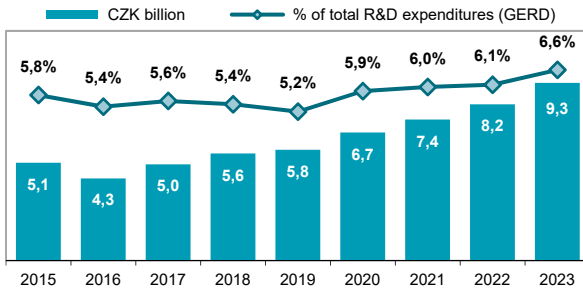


Figure D6 ICT equipment R&D expenditures



Source: CZSO, Annual R&D survey

D ICT research and development

Table D3 ICT R&D expenditures in enteprises in Czechia

CZK million

	2021	2022	2023
Total	**26 096**	**30 469**	**31 651**
financed from government funds	945	849	545
Type of ICT product			
ICT equipment	6 397	7 361	7 673
Software	19 699	23 108	23 978
Size group (employees)			
Small enterprises (0-49)	2 582	3 436	3 810
Medium enterprises (50-249)	4 938	4 819	5 133
Large enterprises (250+)	18 576	22 214	22 708
Ownership			
National enterprises	8 607	9 822	9 511
Foreign-controlled enterprises	17 489	20 647	22 140
Industry (CZ-NACE)			
ICT sector industries, total	**18 906**	**21 895**	**22 233**
ICT manufacturing	374	484	530
ICT services	18 533	21 412	21 703
Other industries	**7 190**	**8 574**	**9 418**

Figure D7 ICT R&D expenditures in enteprises

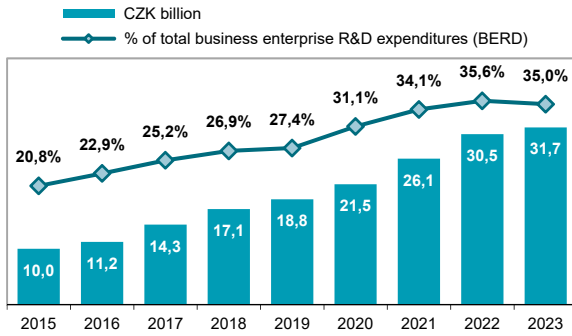
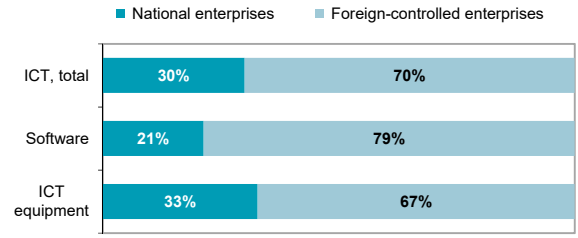


Figure D8 ICT R&D expenditures in enteprises, by ownership; 2023



Source: CZSO, Annual R&D survey

D ICT research and development

Table D4 ICT R&D expenditures in enterprises in Czechia by type of product; 2023

CZK million

	Total	ICT equipment	Software
Total	**31 651**	**7 673**	**23 978**
financed from government funds	545	153	392
Size group (employees)			
Small enterprises (0-49)	3 810	658	3 152
Medium enterprises (50-249)	5 133	1 239	3 894
Large enterprises (250+)	22 708	5 776	16 933
Ownership			
National enterprises	9 511	1 639	7 872
Foreign-controlled enterprises	22 140	6 033	16 107
Industry (CZ-NACE)			
ICT sector industries, total	**22 233**	**1 322**	**20 911**
ICT manufacturing	530	300	230
ICT services	21 703	1 022	20 681
Other industries	**9 418**	**6 350**	**3 068**

Figure D9 ICT R&D expenditures in enterprises, by product

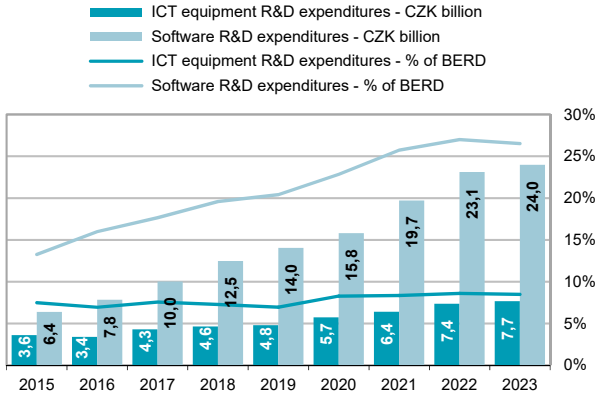
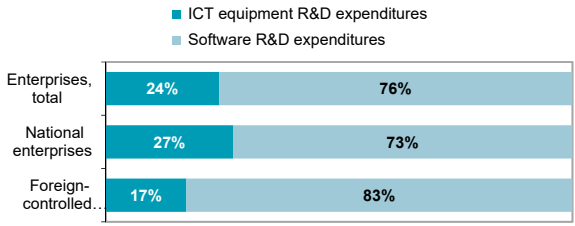


Figure D10 ICT R&D expenditures in enterprises, by ownership of R&D performers; 2023



Source: CZSO, Annual R&D survey

D ICT research and development

Table D5 R&D expenditures in the ICT sector in Czechia

CZK million

	2021	2022	2023
Total	**20 190**	**23 035**	**23 530**
financed from government funds	1 715	1 777	978
Type of product			
ICT equipment	1 837	1 789	1 322
Software	17 069	20 107	20 911
Other non ICT related products	1 284	1 140	1 298
Size group (employees)			
Small enterprises (0-49)	2 332	2 918	3 643
Medium enterprises (50-249)	4 230	3 959	3 948
Large enterprises (250+)	13 628	16 159	15 939
Ownership			
National enterprises	6 851	8 134	7 688
Foreign-controlled enterprises	13 339	14 901	15 842
ICT sub-sectors			
ICT manufacturing	727	1 054	1 172
ICT services, total	**19 463**	**21 982**	**22 359**
Computer programming	15 005	17 056	17 347
Data processing and Other IT services	4 458	4 926	5 012

Figure D11 R&D expenditures in the ICT sector

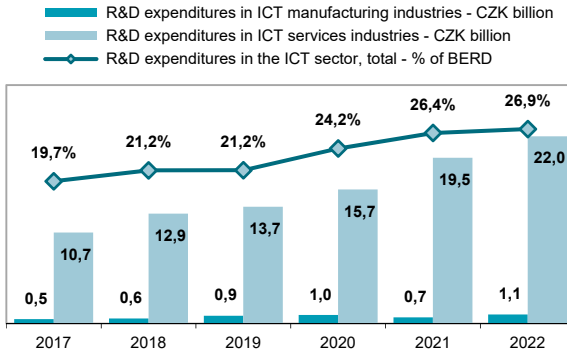
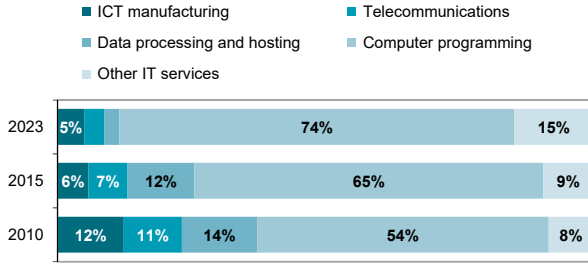


Figure D12 R&D expenditures in the ICT sector, by industry



Source: CZSO, Annual R&D survey

D ICT research and development

Figure D13 R&D expenditures in the ICT sector; 2022
(% of GDP)

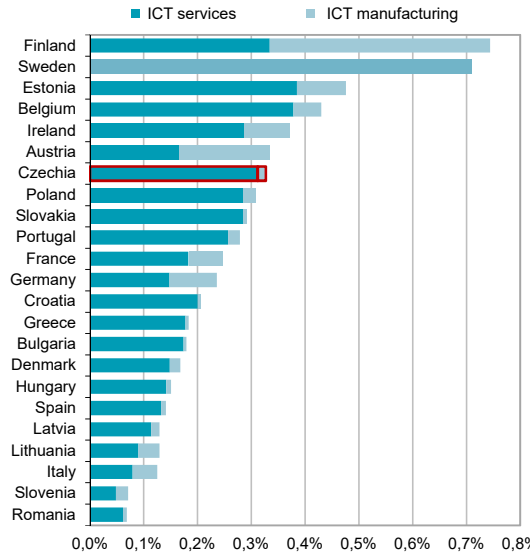
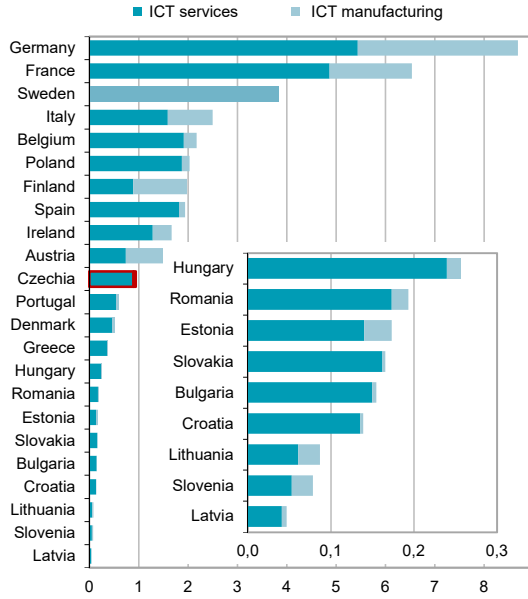


Figure D14 R&D expenditures in the ICT sector; 2022
(EUR billion)



Source: CZSO calculations based on Eurostat data

D ICT research and development

Table D6 R&D personnel in the ICT sector in Czechia

Full Time Equivalent Numbers

	2021	2022	2023
Total	**12 971**	**14 132**	**12 826**
Men	11 106	11 911	10 912
Women	1 866	2 221	1 914
Size group (employees)			
Small enterprises (0-49)	2 225	2 588	2 672
Medium enterprises (50-249)	3 093	2 779	2 574
Large enterprises (250+)	7 653	8 765	7 580
Ownership			
National enterprises	5 380	6 070	5 056
Foreign-controlled enterprises	7 591	8 062	7 770
ICT sub-sectors			
ICT manufacturing	761	857	620
ICT services, total	**12 210**	**13 276**	**12 206**
Computer programming	9 858	10 879	10 033
Data processing and Other IT services	2 352	2 397	2 173

Figure D15 R&D personnel in the ICT sector

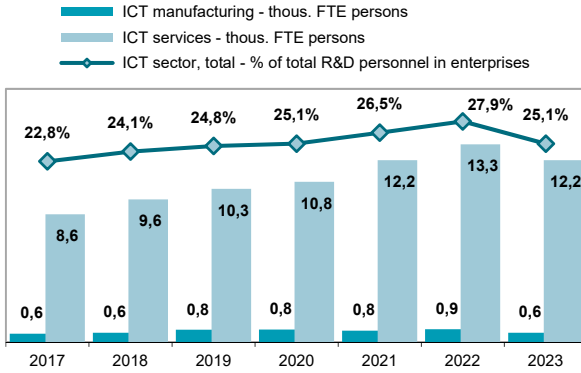
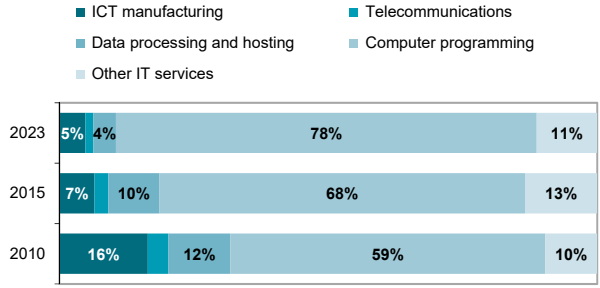


Figure D16 R&D personnel in the ICT sector, by industry



Source: CZSO, Annual R&D survey

E International trade in ICT goods

Goods in the field of information and communication technologies (hereinafter referred to as ICT goods) are defined as goods whose main function is to carry out or enable communication or processing of information, including their recording, transmission and display by electronic means (OECD 2009).

Statistics on international trade in goods track actual trade in goods between Czech and foreign entities, i.e. trade where there is a change of ownership between residents and non-residents. Internationally comparable data for foreign trade with goods respecting change of ownership are currently only available for the total export/import of goods.

Statistics on Cross-border movements of goods tell exclusively about the physical movement of goods across the borders of the Czech Republic, regardless of whether there is trade between Czech and foreign entities. These data are available for international comparison and in a more detailed breakdown, however, they do not indicate the actual trade in these goods.

More detailed information on the issue of the dual concept of international trade can be found on the link: https://csu.gov.cz/2-vzonu_m.

The main link to CZSO International trade statistics is available here: https://csu.gov.cz/international-trade-in-goods-change-of-ownership.

The list of ICT goods was first defined in 2003 by the OECD according to the International Customs Nomenclature of the **Harmonized Commodity Description** and Coding System of the World Customs Organization of 2002. At present, the list of ICT goods from the HS is based on 2017.

The Czech Statistical Office has grouped individual items of ICT goods defined according to the HS 2017 nomenclature and the **Combined Nomenclature** (CN) of the European Union into the following five main categories:

- **Computer equipment and peripherals,**
- **Communication equipment,**
- **Consumer electronics,**
- **Electronic components,**
- **ICT parts n.e.s.**

Detailed information to Combined Nomenclature are here*:*
https://ec.europa.eu/eurostat/web/international-trade-in-goods/methodology#Goods.

Data for the Czech Republic comes from External Trade Statistics Database (https://apl.czso.cz/pll/stazo/STAZO_ZO.STAZO) and the Cross-border movements of goods database (http://apl.czso.cz/pll/stazo/STAZO.STAZO).

Data for **international comparisons** come from **Eurostat** data sources. Data for international comparisons refer to the reported or nearest available year. More information at.:
https://ec.europa.eu/eurostat/web/international-trade-in-goods/overview

For further information on ICT external trade see:
https://csu.gov.cz/international-trade-in-ict-goods

E International trade in ICT goods

Table E1 International trade in ICT goods in Czechia

CZK million

	2021	2022	2023
Export, total	**339 541**	**333 182**	**277 097**
Computers and peripheral equipment	157 467	147 037	110 971
Communication equipment	58 785	58 437	59 781
Consumer electronics	57 698	47 621	43 519
Electronic components	29 425	31 060	27 845
ICT parts n.e.s.	36 165	49 028	34 981
% of total goods exports from Czechia	***8,7%***	***7,6%***	***6,2%***
Import, total	**395 524**	**403 689**	**368 375**
Computers and peripheral equipment	114 513	124 702	103 653
Communication equipment	86 227	86 352	92 821
Consumer electronics	45 003	43 417	38 935
Electronic components	81 866	97 826	90 997
ICT parts n.e.s.	67 915	51 392	41 969
% of total goods imports to Czechia	***10,2%***	***8,8%***	***8,5%***

Figure E1 International trade in ICT goods in Czechia, by commodities, 2023

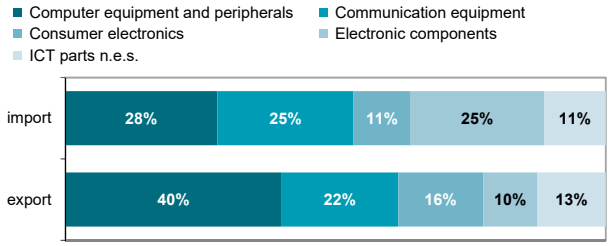


Figure E2 ICT goods exports from Czechia, by countries

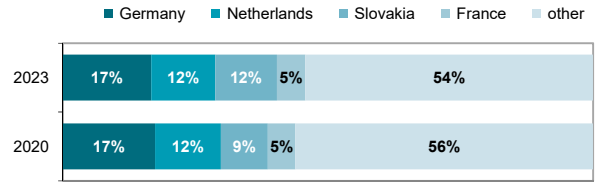
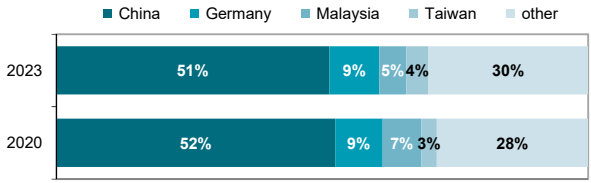


Figure E3 ICT goods imports to Czechia, by countries



Source: CZSO, External Trade Statistics Database

E International trade in ICT goods

Table E2 International trade in Computers and peripheral equipment in Czechia

CZK million

	2021	2022	2023
Export, total	**157 467**	**147 037**	**110 971**
Portable computers	13 935	10 764	11 993
Other computers	85 120	76 917	53 247
Computer peripherals, total	**58 412**	**59 356**	**45 731**
Storage units	36 280	32 461	12 826
Sound, video, network and similar cards	12 251	13 922	15 513
Monitors used with computers	2 528	3 983	4 489
Printers, copying or faxing machines	1 549	3 703	7 161
Other input or output peripherals*	5 805	5 286	5 743
% of total goods exports from Czechia	***4,1%***	***3,3%***	***2,5%***
Import, total	**114 513**	**124 702**	**103 653**
Portable computers	33 372	33 080	26 684
Other computers	17 874	32 780	24 344
Computer peripherals, total	**63 268**	**58 841**	**52 624**
Storage units	29 215	21 655	14 734
Sound, video, network and similar cards	16 154	18 301	15 472
Monitors used with computers	4 908	5 473	6 764
Printers, copying or faxing machines	3 651	5 754	7 357
Other input or output peripherals*	9 340	7 658	8 296
% of total goods imports to Czechia	***2,9%***	***2,7%***	***2,4%***

** Keyboards; joysticks, computer mice, scanners or optical readers*

Figure E4 International trade in Computers and peripheral equipment in Czechia, by commodities, 2023

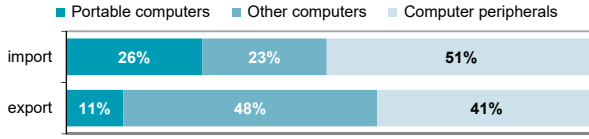


Figure E5 Computers and peripheral equipment exports from Czechia, by countries

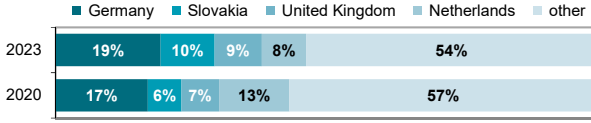
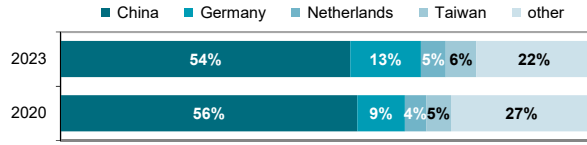


Figure E6 Computers and peripheral equipment imports to Czechia, by countries



Source: CZSO, External Trade Statistics Database

E International trade in ICT goods

Table E3 International trade in Communication equipment in Czechia

CZK million

	2021	2022	2023
Export, total	**58 785**	**58 437**	**59 781**
Mobile phones	28 544	24 568	28 695
Other communication equipment	30 241	33 869	31 086
% of total goods exports from Czechia	***1,5%***	***1,3%***	***1,3%***
Import, total	**86 227**	**86 352**	**92 821**
Mobile phones	47 611	48 942	51 204
Other communication equipment	38 616	37 410	41 617
% of total goods imports to Czechia	***2,2%***	***1,9%***	***2,1%***

Figure E7 International trade in Communication equipment in Czechia, by commodities, 2023

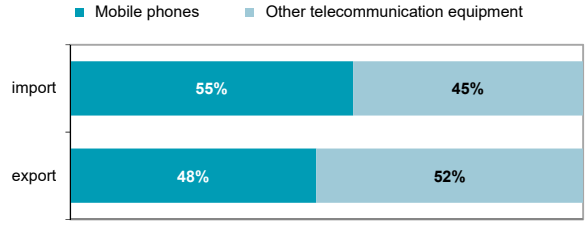


Figure E8 Communication equipment exports from Czechia, by countries

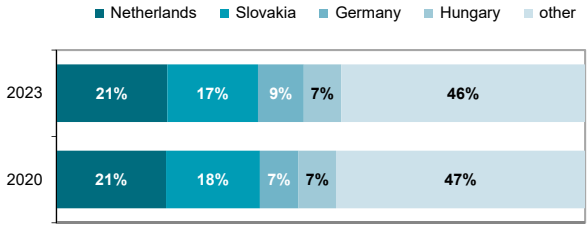
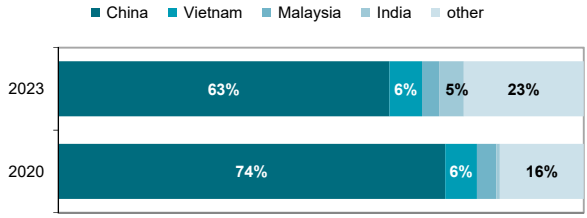


Figure E9 Communication equipment imports to Czechia, by countries



Source: CZSO, External Trade Statistics Database

E International trade in ICT goods

Table E4 International trade in Consumer electronics in Czechia

CZK million

	2021	2022	2023
Export, total	**57 698**	**47 621**	**43 519**
Radio and TV receivers	20 669	9 646	8 734
Sound and image recording and reproducing apparatuses	11 253	10 295	8 954
Consumer electronics accessories*	25 775	27 679	25 831
% of total goods exports from Czechia	***1,5%***	***1,1%***	***1,0%***
Import, total	**45 003**	**43 417**	**38 935**
Radio and TV receivers	14 882	11 073	8 489
Sound and image recording and reproducing apparatuses	15 699	16 111	15 184
Consumer electronics accessories*	14 422	16 234	15 262
% of total goods imports to Czechia	***1,2%***	***0,9%***	***0,9%***

** Monitors and projectors; Microphones and stands there for; Loudspeakers; Headphones, earphones and combined microphone/speaker sets; Audio-frequency electric amplifiers; Electric sound amplifier sets; Non-recorded media*

Figure E10 International trade in Consumer electronics in Czechia, by commodities, 2023

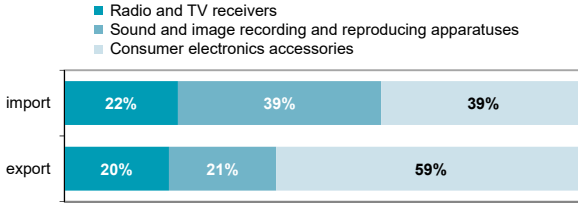


Figure E11 Consumer electronics exports from Czechia, by countries

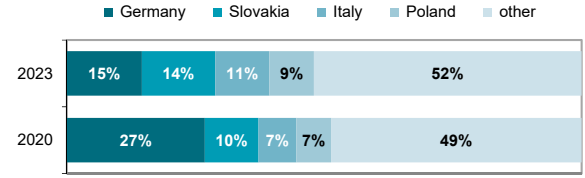
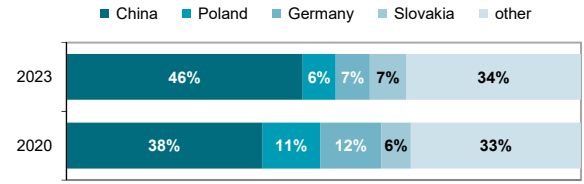


Figure E12 Consumer electronics imports to Czechia, by countries



Source: CZSO, External Trade Statistics Database

E International trade in ICT goods

Table E5 International trade in Electronic components in Czechia

CZK million

	2021	2022	2023
Export, total	**29 425**	**31 060**	**27 845**
Electronic integrated circuits	20 819	18 556	16 094
Printed circuits	4 219	4 042	4 525
Other electronic components	4 387	8 462	7 225
% of total goods exports from Czechia	***0,8%***	***0,7%***	***0,6%***
Import, total	**81 866**	**97 826**	**90 997**
Electronic integrated circuits	57 896	58 314	54 228
Printed circuits	11 584	13 307	11 922
Other electronic components	12 386	26 205	24 848
% of total goods imports to Czechia	***2,1%***	***2,1%***	***2,1%***

Figure E13 International trade in Electronic components in Czechia, by commodities, 2023

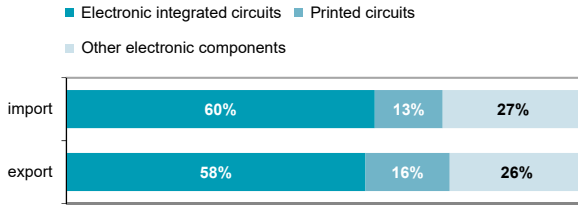


Figure E14 Electronic components exports from Czechia, by countries

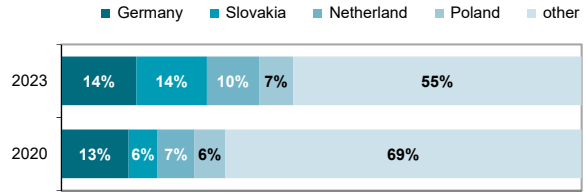
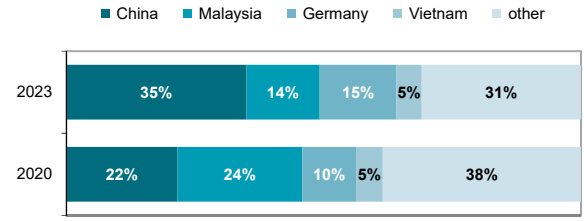


Figure E15 Electronic components imports to Czechia, by countries



Source: CZSO, External Trade Statistics Database

E International trade in ICT goods

Table E6 International trade in ICT parts n.e.s. in Czechia

CZK million

	2021	2022	2023
Export, total	**36 165**	**49 028**	**34 981**
Parts and accessories n.e.s. of:			
computer equipment	26 603	41 925	28 925
telecommunication equipment	1 701	1 611	1 818
consumer electronics	7 860	5 492	4 238
% of total goods exports from Czechia	***0,9%***	***1,1%***	***0,8%***
Import, total	**67 915**	**51 392**	**41 969**
Parts and accessories n.e.s. of:			
computer equipment	37 305	25 891	24 236
telecommunication equipment	8 321	8 541	8 296
consumer electronics	22 288	16 960	9 436
% of total goods imports to Czechia	***1,7%***	***1,1%***	***1,0%***

Figure E16 International trade in ICT parts n.e.s. in Czechia, by commodities, 2023

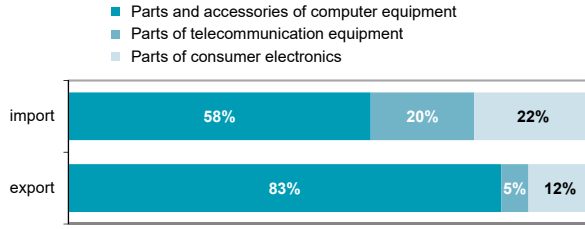


Figure E17 ICT parts n.e.s. exports from Czechia, by countries

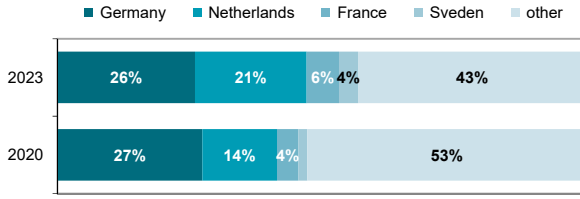
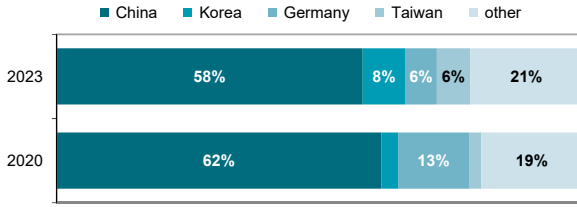


Figure E18 ICT parts n.e.s. imports to Czechia, by countries



Source: CZSO, External Trade Statistics Database

E International trade in ICT goods

Table E7 Cross-border movements of ICT goods from Czechia

CZK million

	2021	2022	2023
Total	**766 230**	**918 558**	**827 185**
Computers and peripheral equipment	356 328	370 289	299 083
Communication equipment	235 585	366 595	364 758
Consumer electronics	73 694	66 180	62 205
Electronic components	47 816	50 330	47 382
ICT parts n.e.s.	52 806	65 164	53 758

Figure E19 Cross-border movements of ICT goods from Czechia

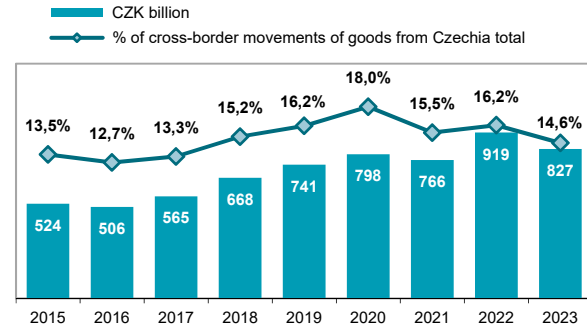


Figure E20 Cross-border movements of ICT goods from Czechia

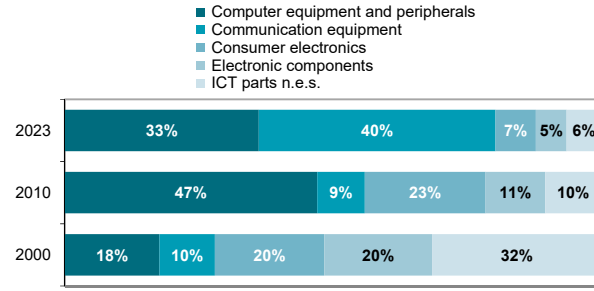
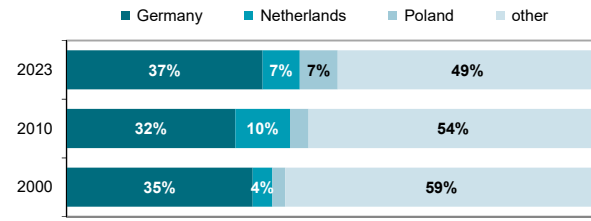


Figure E21 Cross-border movements of ICT goods from Czechia



Source: CZSO, Cross-border movements of goods database

E International trade in ICT goods

Figure E22 Cross-border movements of ICT goods from countries; 2023
(% of total movements of goods from the given countries)

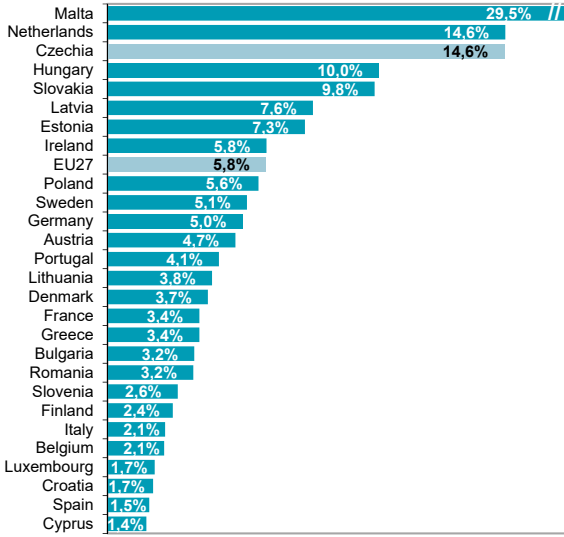
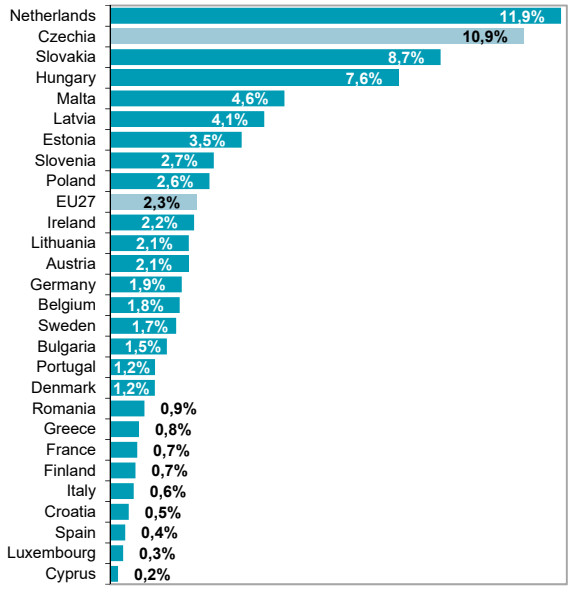


Figure E23 Cross-border movements of ICT goods from countries; 2023 (% GDP)



Source: CZSO calculations based on Eurostat

E International trade in ICT goods

Table E8 Cross-border movements of ICT goods to Czechia

CZK million

	2021	2022	2023
Total	**780 412**	**934 907**	**776 788**
Computers and peripheral equipment	275 788	288 174	219 117
Communication equipment	223 242	369 518	327 302
Consumer electronics	56 583	56 465	51 596
Electronic components	105 822	128 965	120 317
ICT parts n.e.s.	118 976	91 785	58 456

Figure E24 Cross-border movements of ICT goods to Czechia

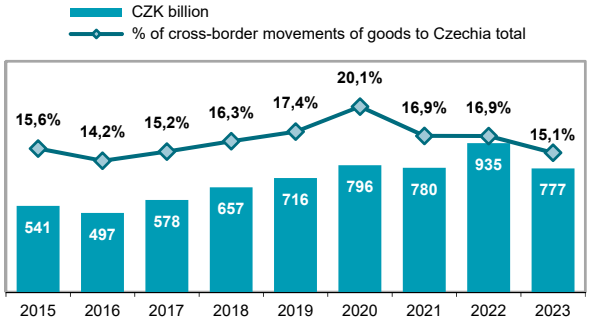


Figure E25 Cross-border movements of ICT goods to Czechia, by commodities

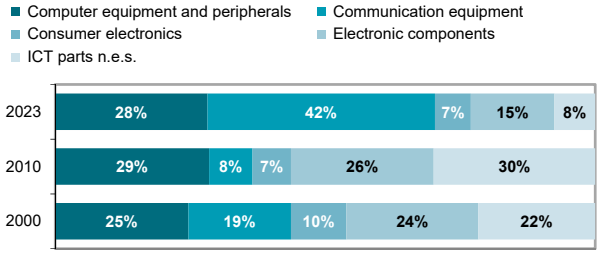
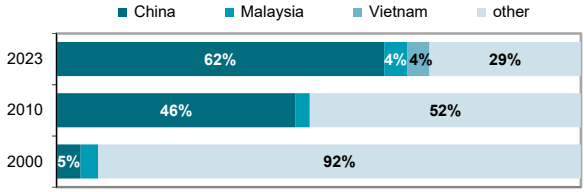


Figure E26 Cross-border movements of ICT goods to Czechia, by countries



Source: CZSO, Cross-border movements of goods database

E International trade in ICT goods

Figure E27 Cross-border movements of ICT goods to countries; 2023
(% of total movements of goods to the given countries)

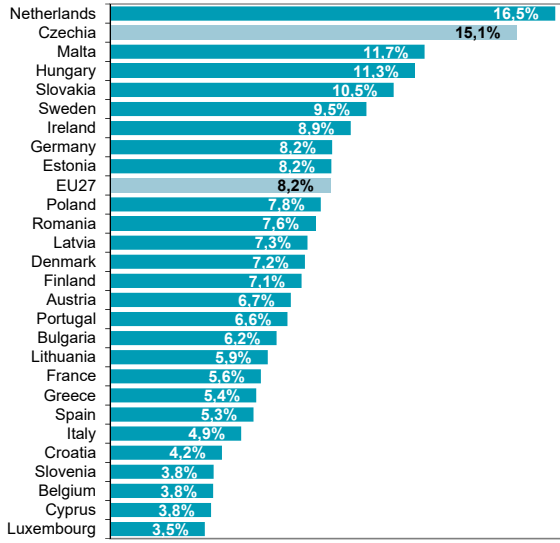
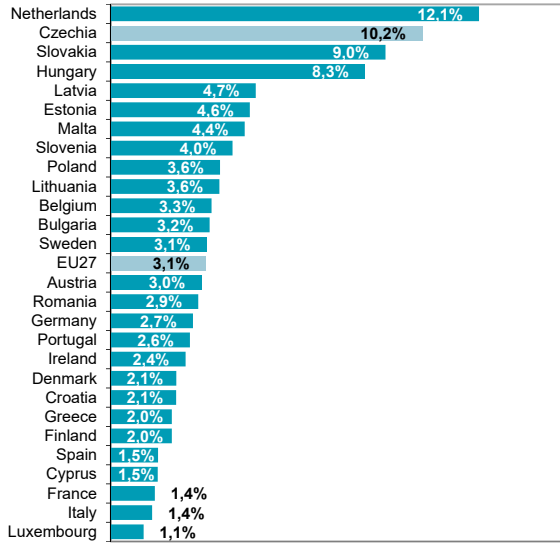


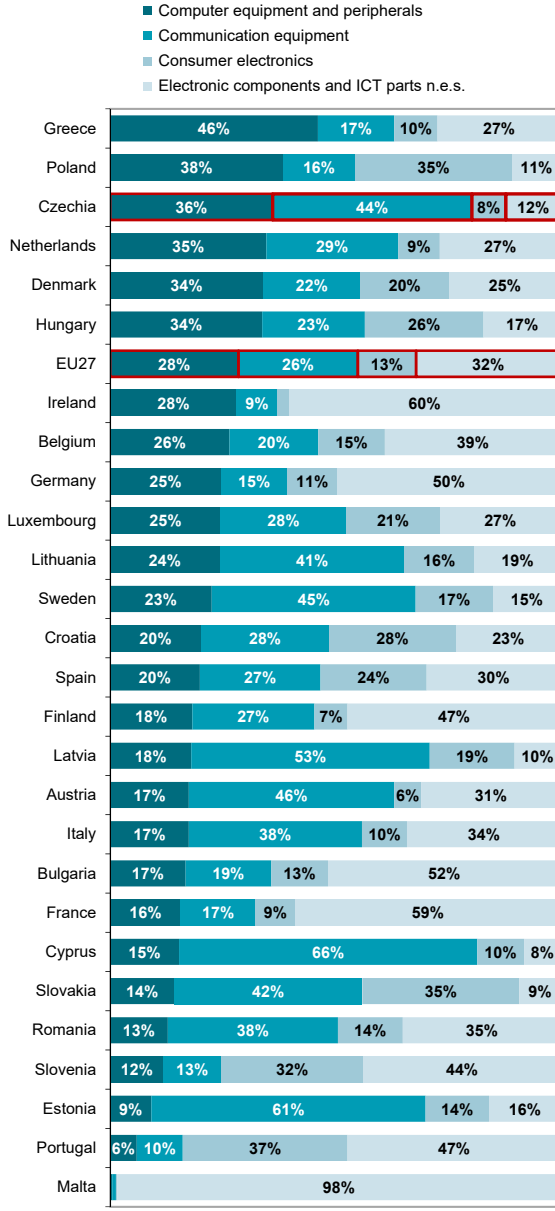
Figure E28 Cross-border movements of ICT goods to countries; 2023 (% GDP)



Source: CZSO calculations based on Eurostat

E International trade in ICT goods

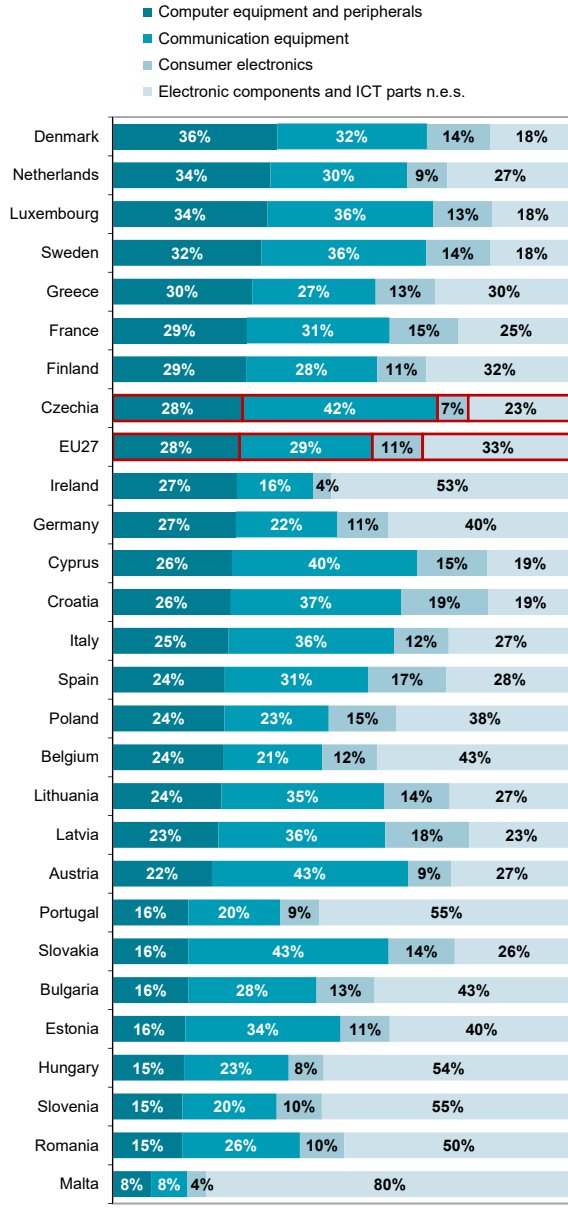
Figure E29 Cross-border movements of ICT goods from countries by commodities; 2023



Source: CZSO calculations based on Eurostat

E International trade in ICT goods

Figure E30 Cross-border movements of ICT goods to countries by commodities; 2023



Source: CZSO calculations based on Eurostat

E International trade in ICT goods

Figure E31 Balance of cross-border movement of Computer equipment and peripherals (CZK billion)

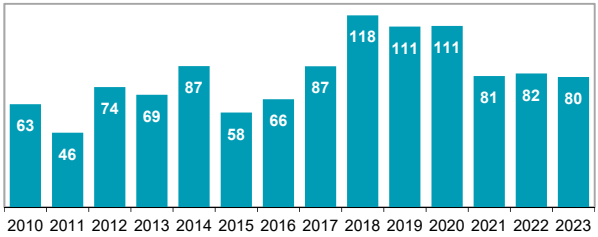


Figure E32 Balance of cross-border movement of Communication equipment (CZK billion)

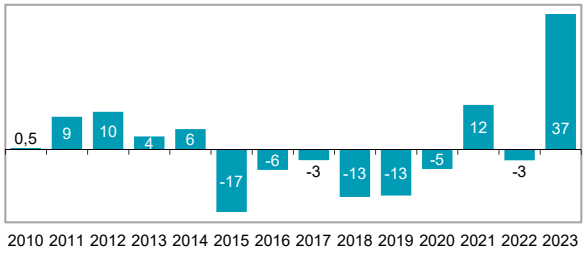


Figure E33 Balance of cross-border movement of Consumer electronics (CZK billion)

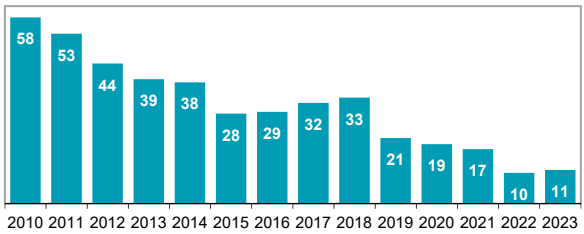
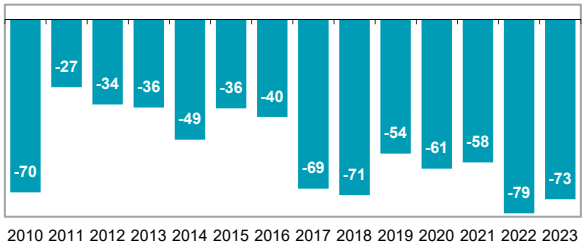


Figure E34 Balance of cross-border movement of Electronic components (CZK billion)



Source: CZSO, Cross-border movements of goods database

F International trade in ICT services

Services in the field of information and communication technologies (hereinafter as the **ICT services**) are defined as services that must primarily be intended to fulfil or enable the function of information processing and communication **by electronic means**, including their record, transmission, and display (OECD, 2009).

Respective items of the ICT services are defined based on the **Extended Balance of Payment Services Classification (EBOPS 2010)** and subdivided into **two main categories** as follows:

- **Telecommunication services (code SI1/9.1)** include, first of all, transactions of Czech and foreign telecommunication operators for implemented international calls by means of fixed or mobile telephone networks. Other telecommunication services involve payments for the access to the Internet, cable television, and to other computer networks, including providing of services as e-mail, video conferences, or transmitting of audio-visual signal over the Internet, cable networks or satellites.
- **Computer services (code SI22/9.2.2)** consist mainly of consultancy services in the fields of hardware and software of computers, including maintenance and repairs of both hardware and software and services related to data processing.
- **Computer software (code SI21/9.2.1)** involves purchase and sale of tailor-made software and application (original computer software), including purchase and sale of ownership rights to such software or licence fees for the software use. Furthermore, it is also purchase and sale of standard software and applications supplied over the Internet, including purchase and sale of ownership rights to such software or licence fees for the software use. *Note 1: Computer services does not include purchase and sale of standard software packages supplied on physical media carriers (CD-ROMs, flash disks, etc.), or as a part of hardware (as Microsoft products, for instance), which are considered to be goods and are reported within the statistics on international trade in goods.* *Note 2: The computer software category* ***includes here*** *also* ***licences to reproduce and/or distribute computer software (code SH3).***

Data on exports and imports of the ICT services come from the **Sample survey on exports and imports of services (ZO 1-04)** carried by the Czech Statistical Office (CZSO) quarterly. For more information about international trade in services statistics in the CZSO, see: https://csu.gov.cz/international-trade-in-services.

Note: The international trade in ICT services in the Czech Republic is dominated ***by transactions of foreign-controlled enterprises****, units of multinationals enterprise groups.*

Data on international trade in ICT services for the Czech Republic for 2020 are preliminary.

The **Eurostat Balance of Payments Database** was used as a data source for the **international comparison**. Data for international comparisons refer **to the reported or nearest available year**.

In the international comparison data for computer software do not include data for Licenses for the distribution or distribution of computer software (EBOPS 2010 code SH3) as for most countries these data are not available separately in the Eurostat database.

For further information on trade in ICT services, see*:*
https://csu.gov.cz/international-trade-in-ict-services.

F International trade in ICT services

Table F1 ICT services exports from Czechia

CZK million

	2021	2022	2023
Total	**130 626**	**150 482**	**147 813**
Telecommunication services	21 143	24 000	25 119
Computer services and software	109 483	126 481	122 695
by selected countries			
EU27, total	64 863	76 364	73 447
Germany	19 262	24 446	24 933
France	3 510	4 025	6 040
Netherland	3 966	4 765	5 794
others	38 126	43 128	36 680
Other countries, total	65 763	74 118	74 366
United states	31 597	37 295	32 955
United Kingdom	9 575	10 738	11 387
Switzerland	4 611	6 841	8 598
others	19 980	19 244	21 426

Figure F1 ICT services exports

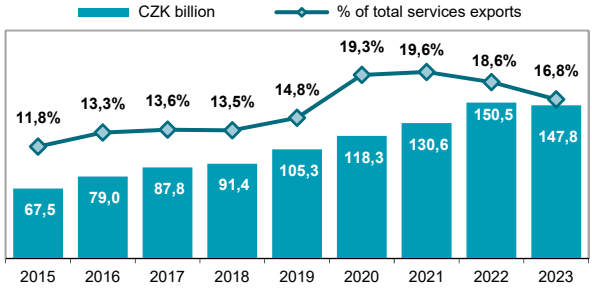


Figure F2 ICT services exports, by type of ICT services

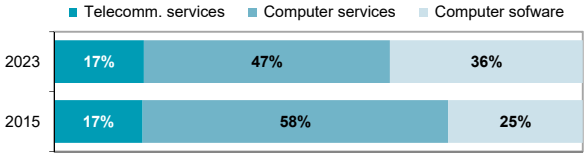
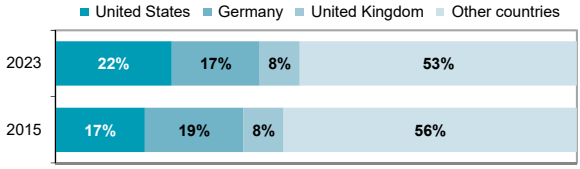


Figure F3 ICT services exports, by countries



Source: CZSO, Survey on exports and imports of services

F International trade in ICT services

Figure F4 ICT services exports; 2022
(% of total services exports)

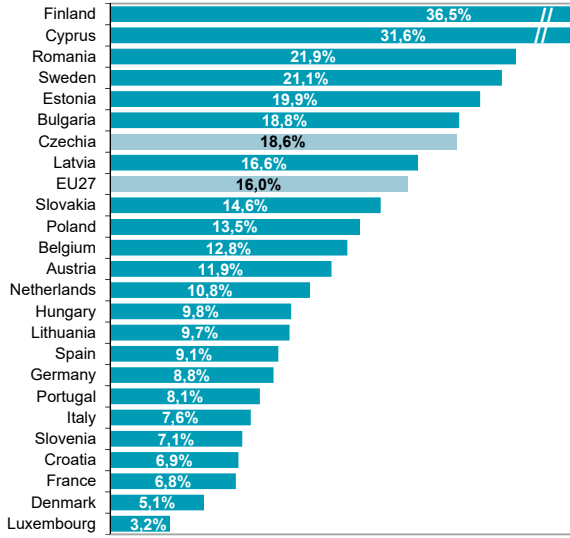
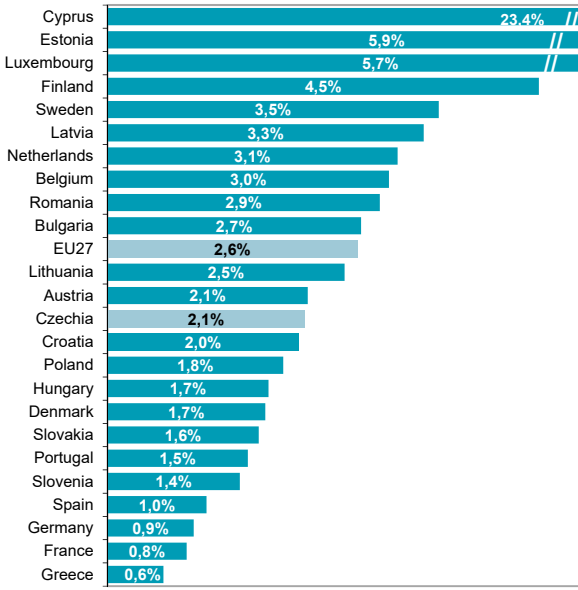


Figure F5 ICT services exports; 2022 (% of GDP)



Source: CZSO calculations based on Eurostat

F International trade in ICT services

Table F2 ICT services imports to Czechia

CZK million

	2021	2022	2023
Total	**69 512**	**82 911**	**89 716**
Telecommunication services	19 537	20 506	22 337
Computer services and software	49 976	62 405	67 380
by selected countries			
EU27, total	41 831	54 744	58 916
Germany	13 466	16 217	16 614
Ireland	7 837	11 737	12 454
Netherland	3 860	4 585	7 584
others	16 668	22 205	22 265
Other countries, total	27 681	28 167	30 800
United Kingdom	7 605	6 916	7 145
United states	3 192	4 168	4 513
Switzerland	3 115	3 226	3 053
others	13 769	13 858	16 089

Figure F6 ICT services imports

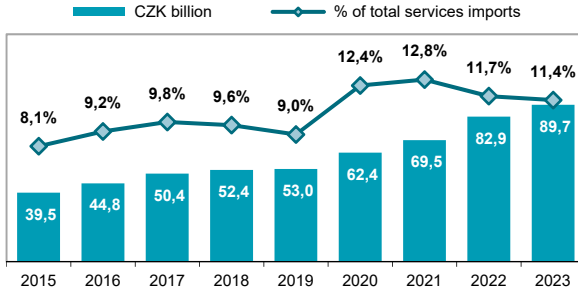


Figure F7 ICT services imports, by type of ICT services

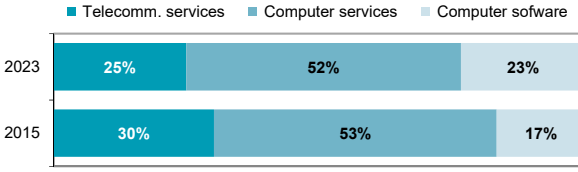
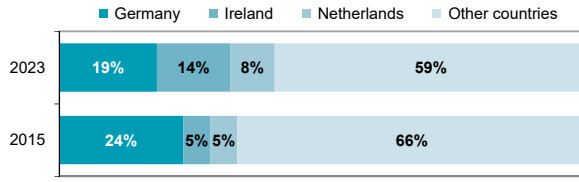


Figure F8 ICT services imports, by countries



Source: CZSO, Survey on exports and imports of services

F International trade in ICT services

Figure F9 ICT services imports, 2022
(% of total services imports)

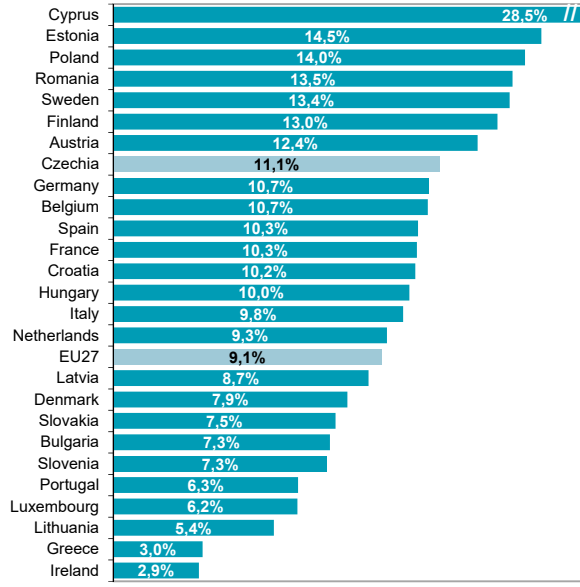
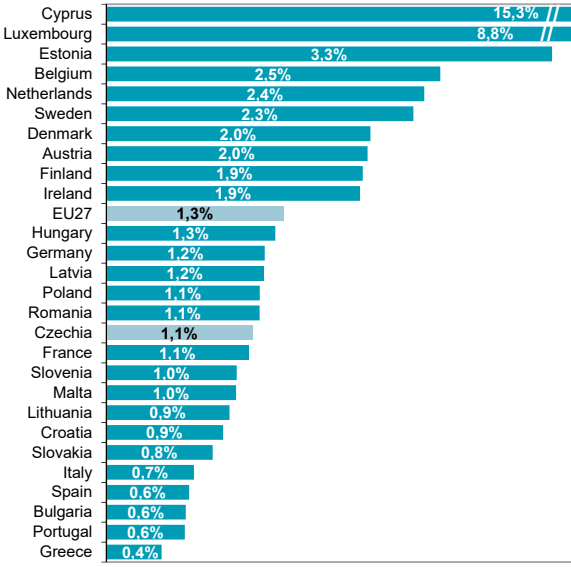


Figure F10 ICT services imports, 2022 (% of GDP)



Source: CZSO calculations based on Eurostat

F International trade in ICT services

Tab F3 Computer services and software exports from Czechia

CZK million

	2021	2022	2023
Total	**109 483**	**126 481**	**122 695**
Computer services	60 954	72 677	68 791
Computer software	48 529	53 804	53 904
by selected countries			
EU27, total	56 578	65 637	60 964
Germany	17 978	23 039	23 652
France	2 835	3 452	5 611
Netherland	3 252	4 035	4 935
others	32 513	35 112	26 766
Other countries, total	52 905	60 844	61 731
United states	29 177	35 082	31 075
United Kingdom	7 034	7 920	8 578
Switzerland	4 484	6 564	8 360
others	12 210	11 278	13 718

Figure F11 Computer services and software exports

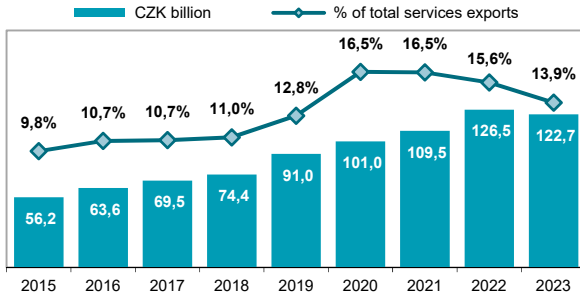


Figure F12 Computer services and software exports, by type of services

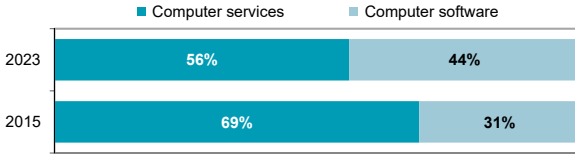
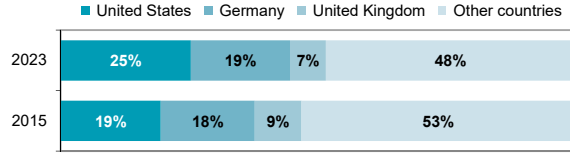


Figure F13 Computer services and software exports, by countries



Source: CZSO, Survey on exports and imports of services

F International trade in ICT services

Tab F4 Computer services and software imports to Czechia

CZK million

	2021	2022	2023
Total	**49 976**	**62 405**	**67 380**
Computer services	33 526	41 682	46 338
Computer software	16 450	20 723	21 041
by selected countries			
EU27, total	34 397	45 236	49 438
Germany	12 089	14 983	15 523
Ireland	7 134	10 859	11 411
Netherland	3 587	4 223	7 277
others	11 587	15 171	15 227
Other countries, total	15 578	17 169	17 942
United Kingdom	3 346	4 121	4 275
United states	2 600	3 303	3 674
Switzerland	2 746	3 163	1 694
others	6 886	6 583	8 299

Figure F14 Computer services and software imports

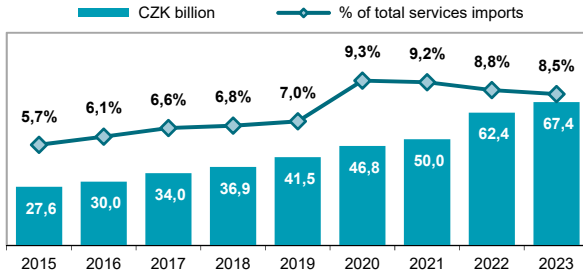


Figure F15 Computer services and software imports, by type of services

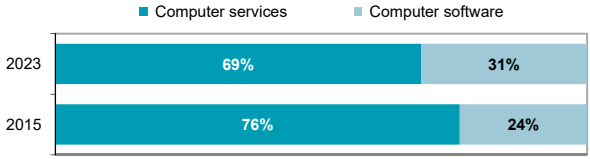
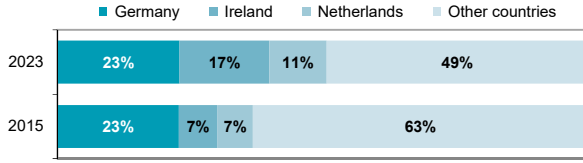


Figure F16 Computer services and software imports, by countries



Source: CZSO, Survey on exports and imports of services

F International trade in ICT services

Figure F17 Computer services and software exports; 2022 (% of GDP)

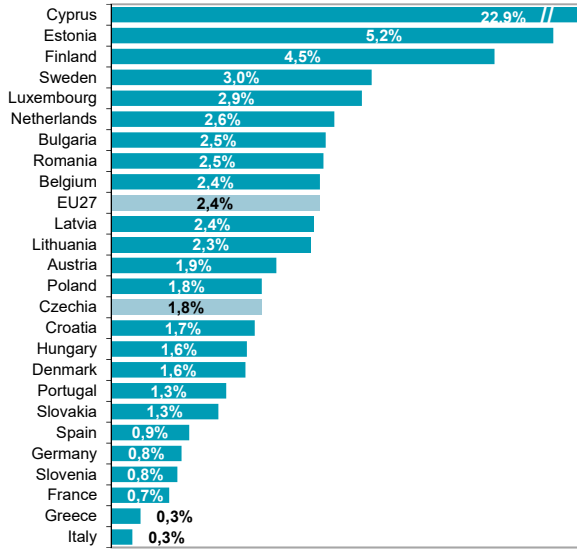
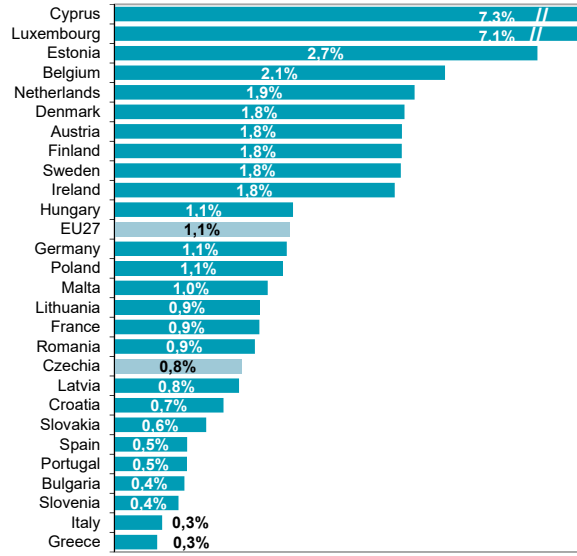


Figure F18 Computer services and software imports; 2022 (% of GDP)



Source: CZSO calculations based on Eurostat

G ICT sector

Information and Communication Technology Sector (hereafter **ICT sector**) is **defined** as a combination of **economic activities** of **manufacturing products** and **providing services** primarily dedicated to processing, communication, and distribution of information **electronically**, including information capture, storage, transmission, and display (OECD, 2006).

ICT sector together with Content and media sector was in 2007 recognized by the **United Nation Statistics Division** as a new alternative grouping of economic activities called **information economy** following the International Standard Industrial Classification of All Economic Activities (**ISIC Revision 4**). For more information see following web page: https://ec.europa.eu/eurostat/cache/metadata/en/isoc_se_esms.htm.

ICT sector includes a combination of **ICT manufacturing** and **ICT services** industries. ICT sector involves all enterprises with the prevailing economic activity according to the divisions, groups and classes of the **Classification of Economic Activities (CZ-NACE)** as follows:

ICT manufacturing:

- Manufacture of electronic components and boards (26.1)
- Manufacture of computers and peripheral equipment (26.2)
- Manufacture of communication equipment (26.3)
- Manufacture of consumer electronics and media (26.4 and 26.8)

ICT services:

ICT wholesale:

- Wholesale of information and communication equipment (46.5)

Telecommunications:

- Wired telecommunications activities (61.1)
- Wireless telecommunications activities (61.2)
- Satellite and other telecommunications activities. (61.3 and 61.9)

IT services:

- Software publishing (58.2) and Computer programming, consultancy and related activities (62.0)
- Data processing, hosting and related activities; web portals (63.1)
- Repair of computers and communication equipment (95.1)

More detailed information of the **CZ-NACE** can be found at: https://apl2.czso.cz/iSMS/en/klasstru.jsp?kodcis=80004.

Data for this chapter, except for R&D expenditures (source: **R&D annual survey – see chapter D**), were obtained from the Annual structural survey of business entities from selected production industries (**SBS – Structural Business Statistics).** For more information about Czech SBS, see: https://csu.gov.cz/annual-structural-business-statistics-methodology.

All 2022 data are preliminary.

The **Eurostat Structural Business Statistics Database** was used as a data source for the **international comparison** (except for R&D expenditure). More information about this data source can be found at: http://ec.europa.eu/eurostat/web/structural-business-statistics/overview.

Data for international comparisons refer to **the reported or nearest available year.**

Further information on ICT sector can be found at:
https://csu.gov.cz/ict-sector.

G ICT sector

Table G1 Employment in the ICT sector in Czechia

Number of persons employed - headcount persons

	2021	2022	2023
Total	**187 579**	**197 754**	**201 228**
ICT manufacturing, total	**24 745**	**25 853**	**25 518**
Manufacture of electronic components	8 540	9 192	10 179
Manuf. of computers and peripheral equip	6 918	7 219	6 855
Manuf. of communication equipment	5 511	5 635	5 507
Manufacture of consumer electronics	3 777	3 807	2 977
ICT services, total	**162 833**	**171 901**	**175 710**
ICT wholesale	11 703	12 120	11 224
Telecommunications	21 916	21 513	21 403
IT services	129 214	138 269	143 082

Figure G1 Employment in the ICT sector

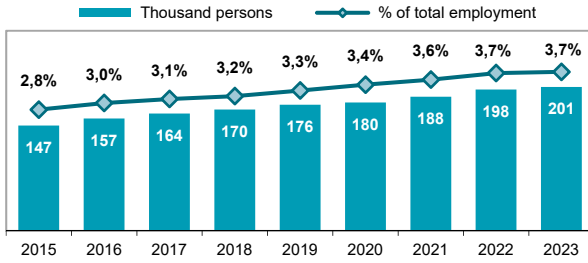


Figure G2 Employment in the ICT sector, by industry

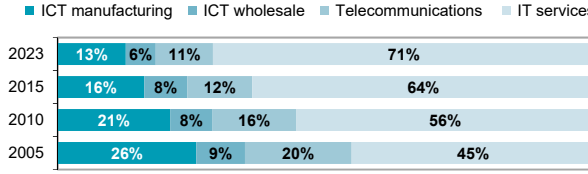


Figure G3 Employment in the ICT sector, by ownership; 2023

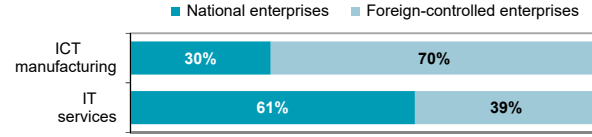
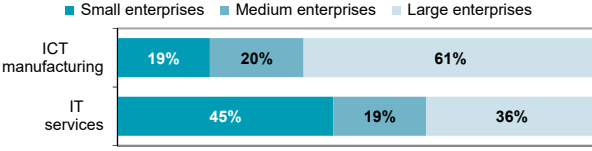


Figure G4 Employment in the ICT sector, by size; 2023



Source: CZSO, Structural Business Statistics

Figure G5 Employment in the ICT sector; 2022
(% of total employment)

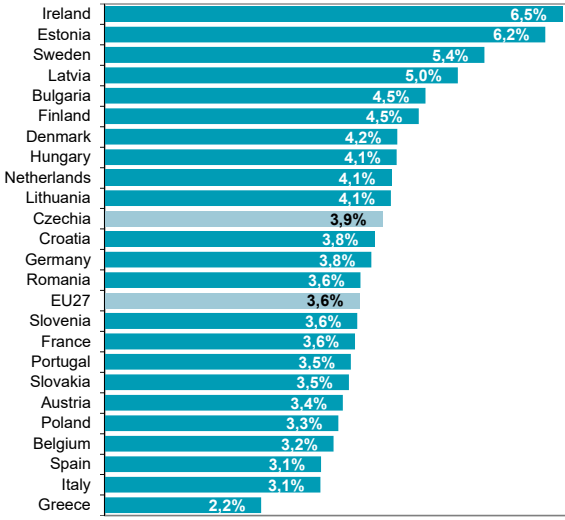
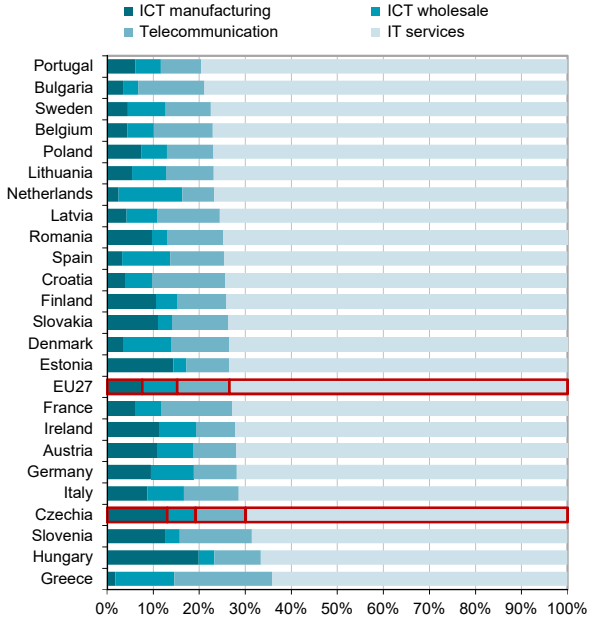


Figure G6 Employment in the ICT sector, by industry; 2022



Source: CZSO calculations based on the Eurostat SBS database

G ICT sector

Figure G7 Employment in ICT manufacturing in Czechia

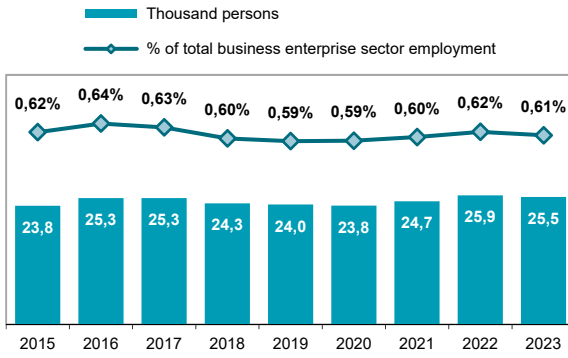


Figure G8 Employment in Telecommunications in Czechia

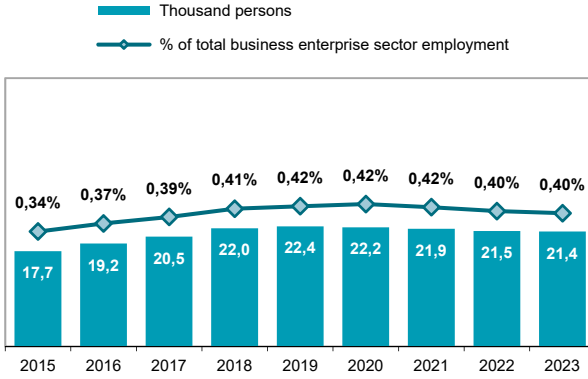
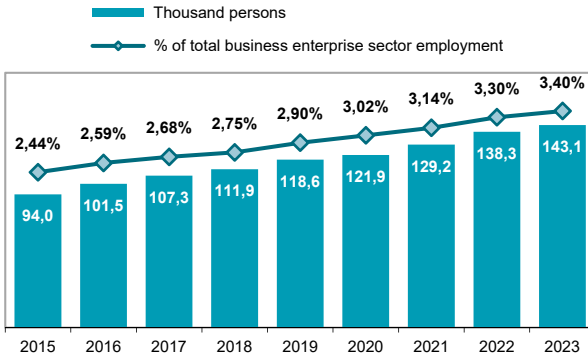


Figure G9 Employment in IT services in Czechia



Source: CZSO, Structural Business Statistics

G ICT sector

Figure G10 Employment in ICT manufacturing; 2022
(% of total business enterprise sector employment)

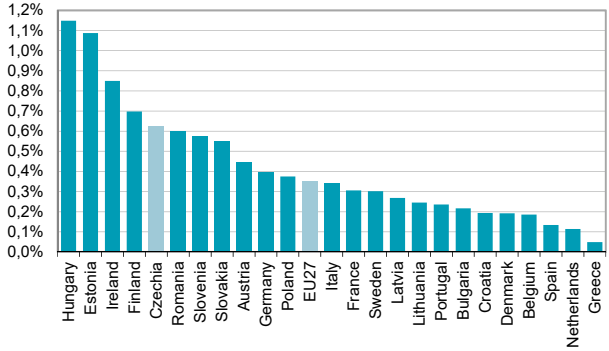


Figure G11 Employment in Telecommunications; 2022
(% of total business enterprise sector employment)

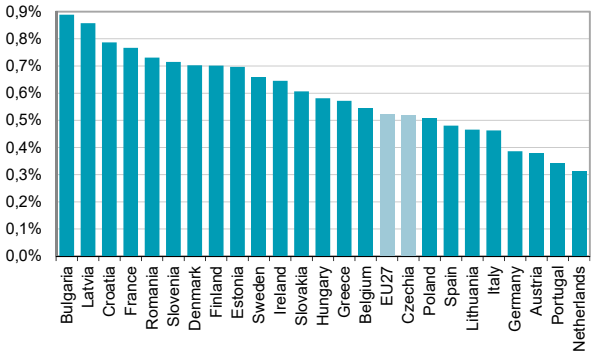
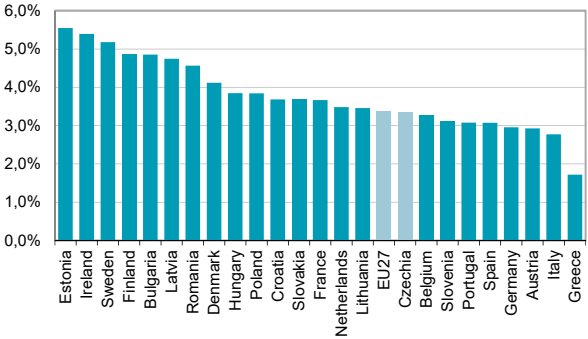


Figure G12 Employment in IT services; 2022
(% of total business enterprise sector employment)



Source: CZSO calculations based on the Eurostat SBS database

G ICT sector

Table G2 Turnover in the ICT sector in Czechia

CZK million

	2021	2022	2023
Total	**950 061**	**1 045 980**	**1 069 501**
ICT manufacturing, total	**231 257**	**240 848**	**210 047**
Manufacture of electronic components	20 591	26 723	32 419
Manuf. of comp. and peripheral equip.	158 124	166 828	136 086
Manuf. of communication equipment	18 711	19 107	19 775
Manufacture of consumer electronics	33 831	28 191	21 766
ICT services, total	**718 804**	**805 132**	**859 454**
ICT wholesale	184 748	205 071	203 211
Telecommunications	140 307	146 234	158 024
IT services	393 750	453 827	498 219

Figure G13 Turnover in the ICT sector

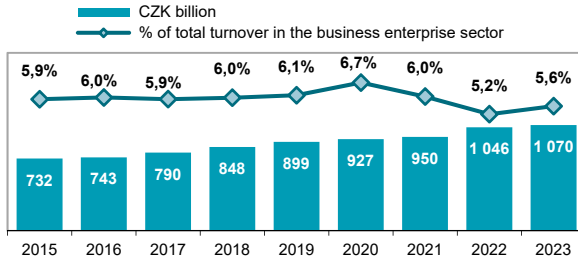


Figure G14 Turnover in the ICT sector, by industry

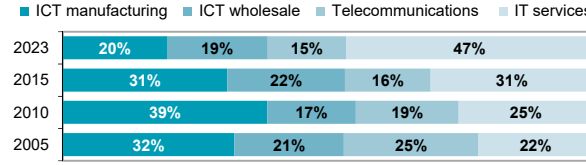


Figure G15 Turnover in the ICT sector, by ownership; 2023

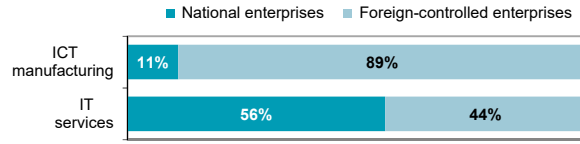
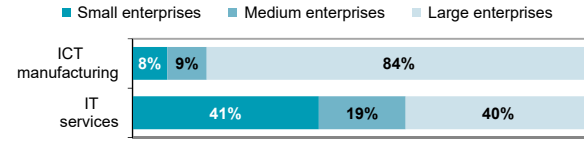


Figure G16 Turnover in the ICT sector, by size; 2023



Source: CZSO, Structural Business Statistics

Figure G17 Turnover in the ICT sector; 2022
(% of total turnover in the business enterprise sector)

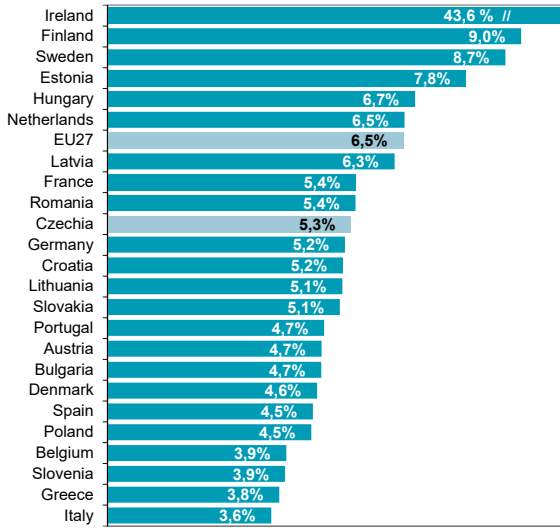
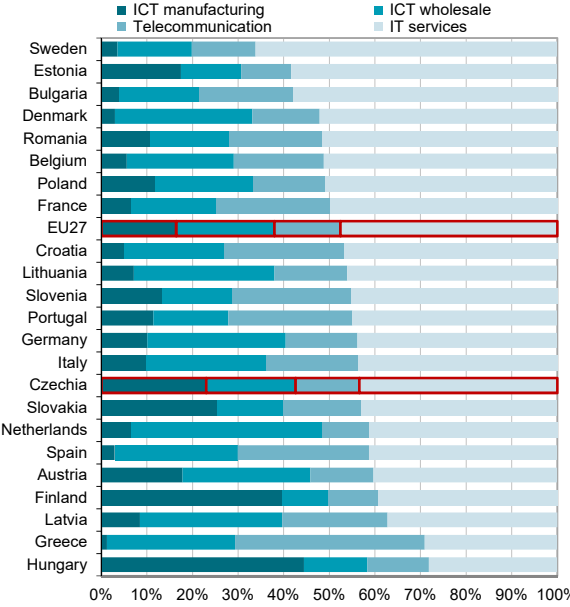


Figure G18 Turnover in the ICT sector, by industry; 2022 (%)



Source: CZSO calculations based on the Eurostat SBS database

G ICT sector

Figure G19 Turnover in ICT manufacturing in Czechia

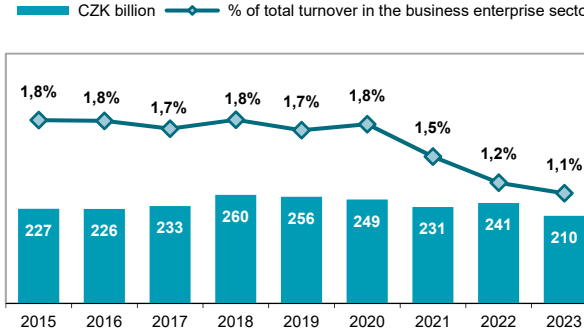


Figure G20 Turnover in Telecommunications in Czechia

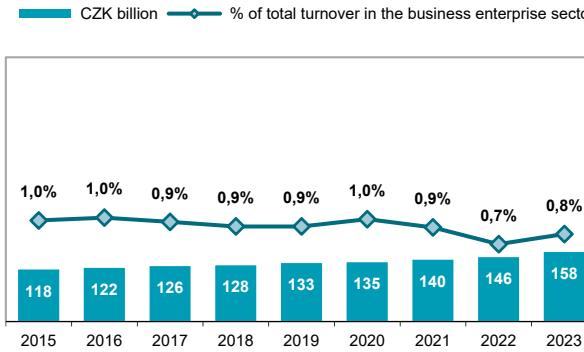
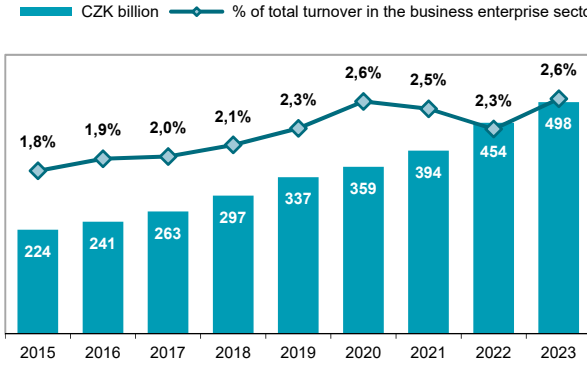


Figure G21 Turnover in IT services in Czechia



Source: CZSO, Structural Business Statistics

G ICT sector

Figure G22 Turnover in ICT manufacturing; 2022
(% of total turnover in the business enterprise sector)

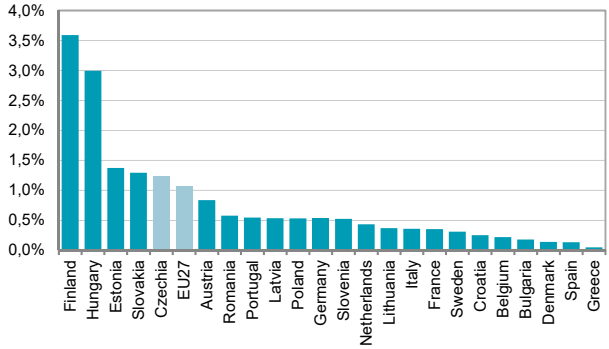


Figure G23 Turnover in Telecommunications; 2022
(% of total turnover in the business enterprise sector)

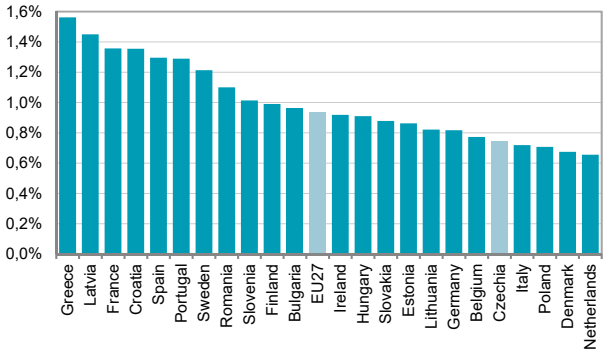
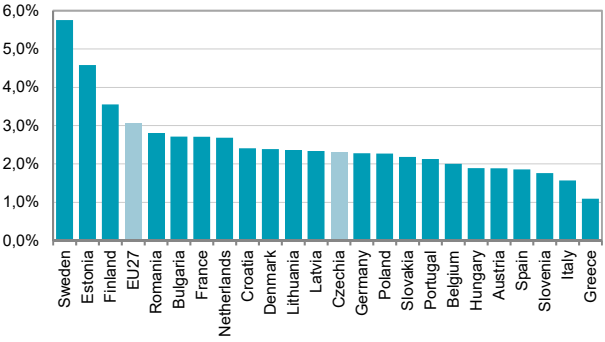


Figure G24 Turnover in IT services; 2022
(% of total turnover in the business enterprise sector)



Source: CZSO calculations based on the Eurostat SBS database

G ICT sector

Table G3 R&D expenditure in the ICT sector in Czechia

CZK million

	2021	2022	2023
Total	**20 190**	**23 035**	**23 530**
ICT manufacturing, total	**727**	**1 054**	**1 172**
Manufacture of electronic components	304	498	569
Manuf. of computers and peripheral equip	33	37	35
Manuf. of communication equipment	349	466	521
Manufacture of consumer electronics	42	53	47
ICT services, total	**19 463**	**21 982**	**22 359**
ICT wholesale	207	196	342
Telecommunications	780	836	893
IT services	18 475	20 950	21 124

Figure G25 R&D expenditure in the ICT sector

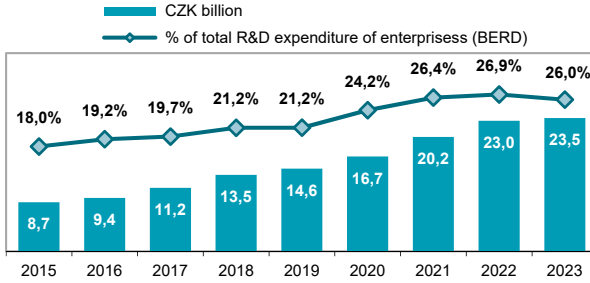


Figure G26 R&D expenditure in the ICT sector, by industry

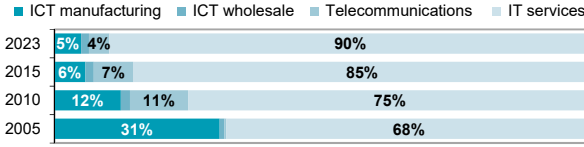


Fig.G27 R&D expenditure in the ICT sector, by ownership; 2023

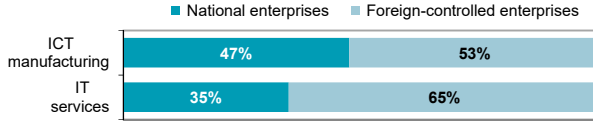
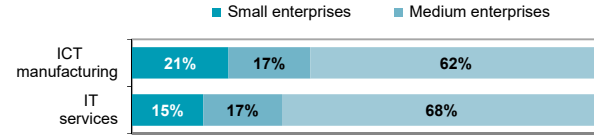


Figure G28 R&D expenditure in the ICT sector, by size; 2023



Source: CZSO, Annual R&D survey

Figure G29 R&D expenditure in the ICT sector; 2022
(% of total R&D expenditure of enterprises)

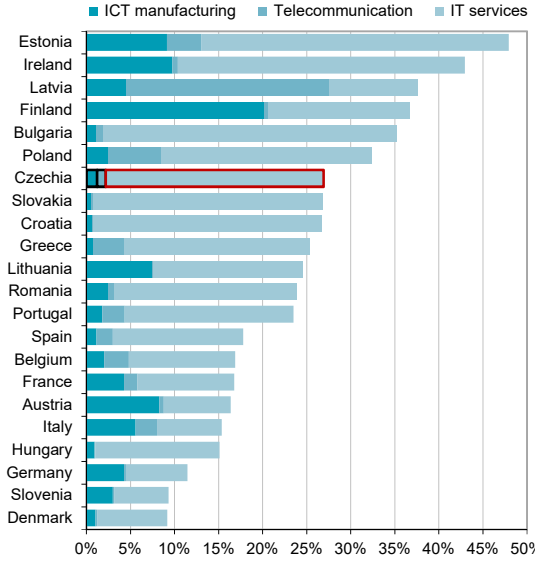
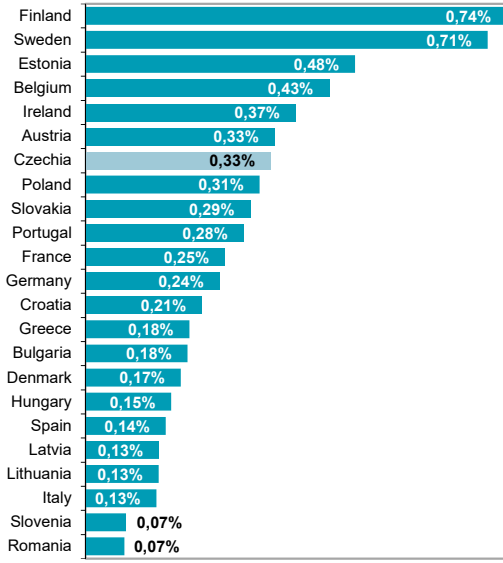


Figure G30 R&D expenditure in the ICT sector; 2022
(% of GDP)



Source: CZSO calculations based on the Eurostat STI Database

G ICT sector

Figure G31 R&D expenditure in ICT manufacturing in Czechia

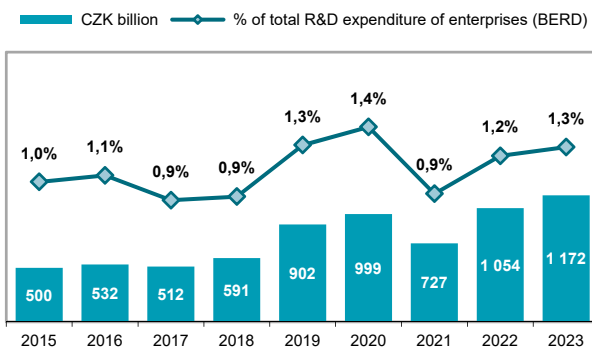


Figure G32 R&D expenditure in Telecommunications in Czechia

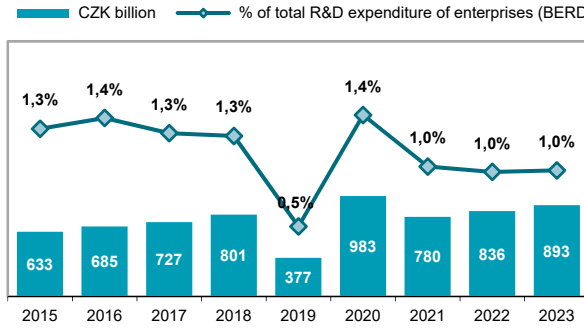
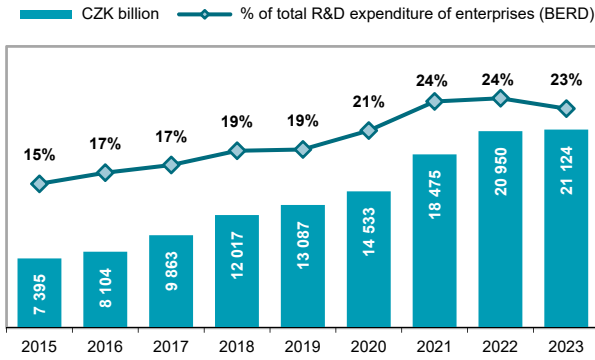


Figure G33 R&D expenditure in IT services in Czechia



R&D - Research and development

Source: CZSO, Annual R&D survey

G ICT sector

Figure G34 R&D expenditure in ICT manufacturing; 2022
(% of total R&D expenditure of enterprises)

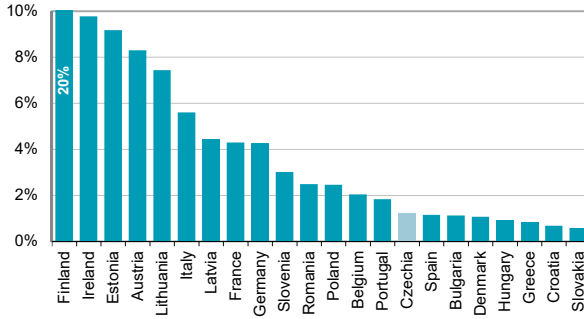


Figure G35 R&D expenditure in Telecommunications; 2022
(% of total R&D expenditure of enterprises)

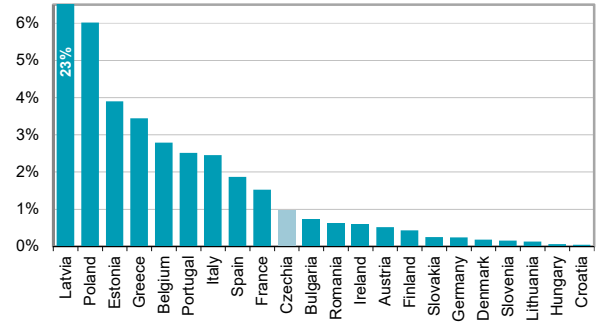
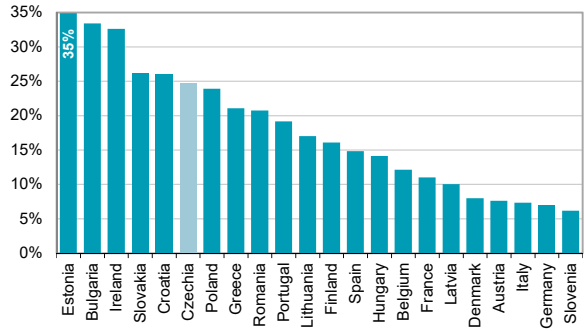


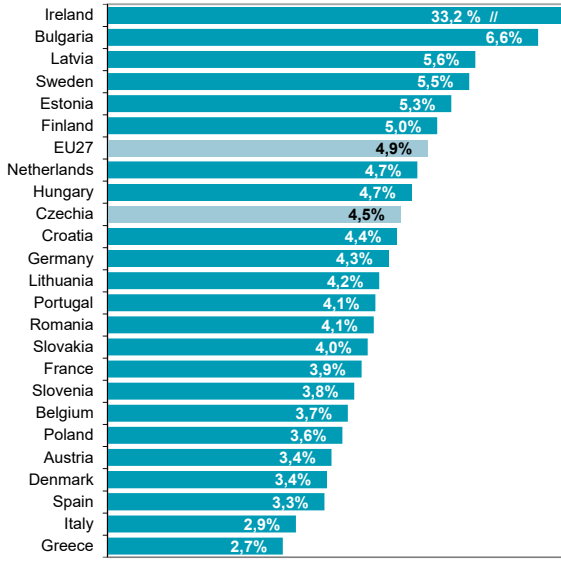
Figure G36 R&D expenditure in IT services; 2022
(% of total R&D expenditure of enterprises)



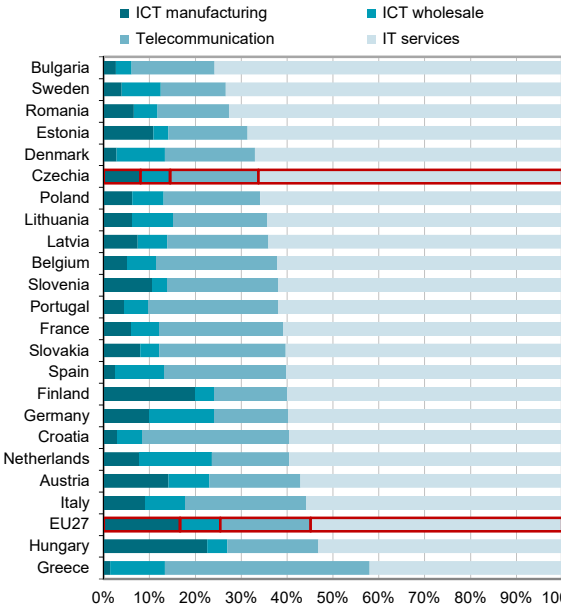
Source: CZSO calculations based on the Eurostat STI Database

G ICT sector

Graf G37 Value added in ICT sector; 2022
(% GDP)



Graf G38 Value added in ICT sector, by industry; 2022 (%)



Source: CZSO calculations based on the Eurostat SBS database