

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>

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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

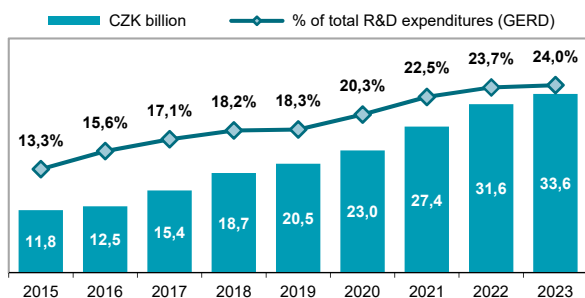


Figure D2 ICT R&D expenditures, by type of product

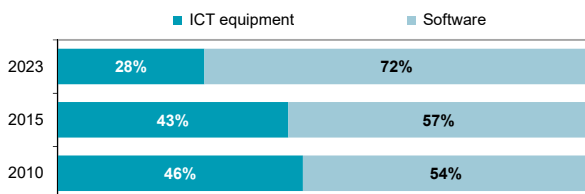
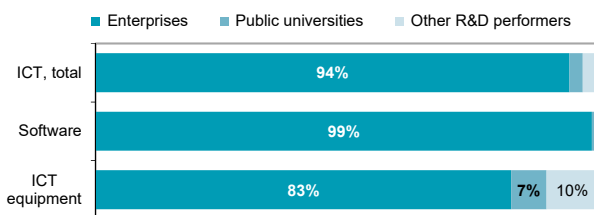


Figure D3 ICT R&D expenditures, by type of performer; 2023



Source: CZSO, Annual R&D survey

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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

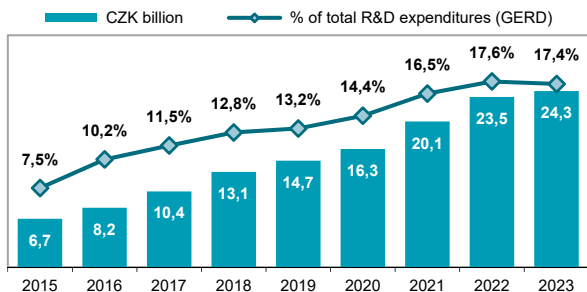


Figure D5 Software R&D expenditures, by performer; 2023

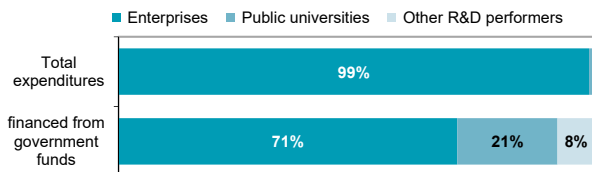
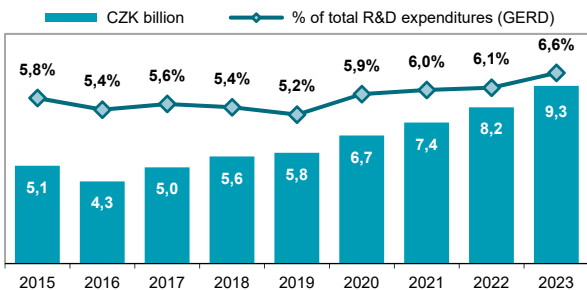


Figure D6 ICT equipment R&D expenditures



Source: CZSO, Annual R&D survey

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Table D3 ICT R&D expenditures in enterprises 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 enterprises

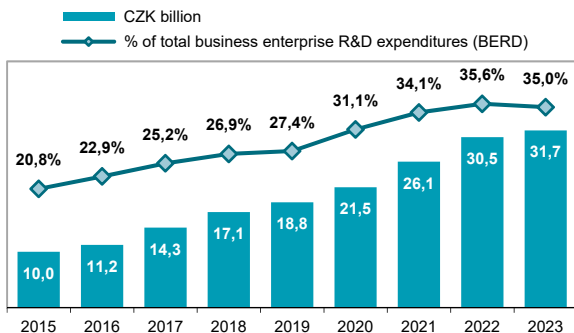
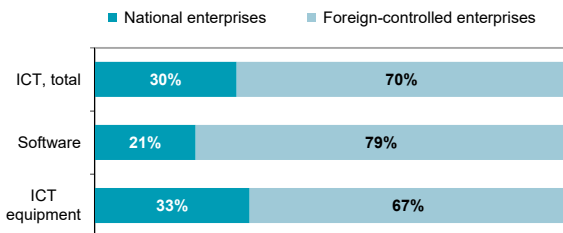


Figure D8 ICT R&D expenditures in enterprises, by ownership; 2023



Source: CZSO, Annual R&D survey

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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

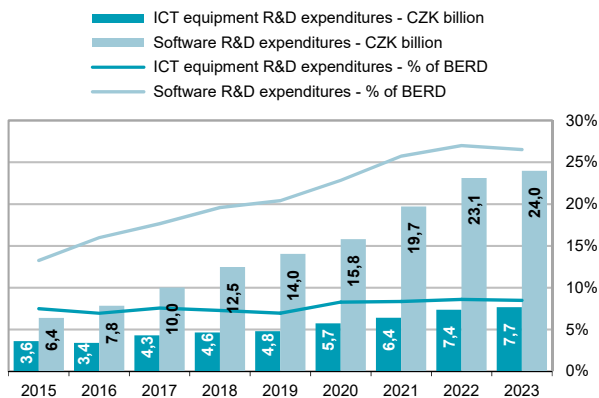
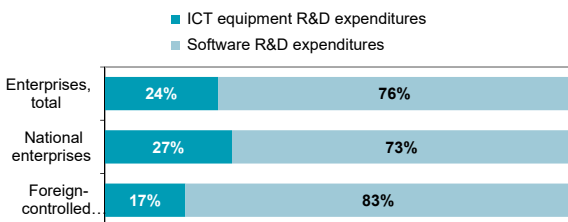


Figure D10 ICT R&D expenditures in enterprises, by ownership of R&D performers; 2023



Source: CZSO, Annual R&D survey

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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

- R&D expenditures in ICT manufacturing industries - CZK billion
- R&D expenditures in ICT services industries - CZK billion
- ◆ R&D expenditures in the ICT sector, total - % of BERD

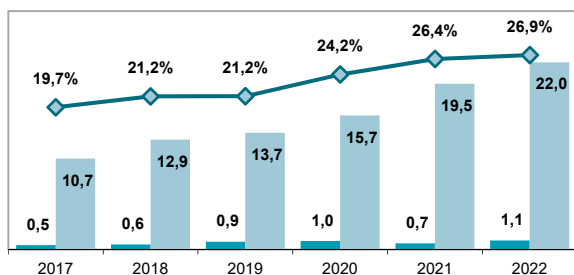
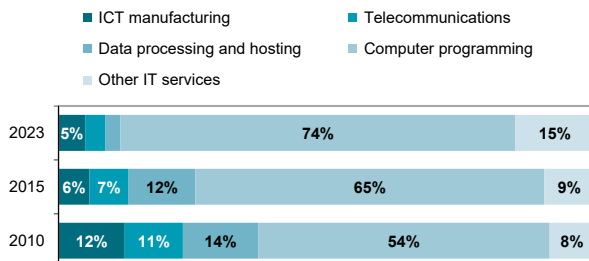


Figure D12 R&D expenditures in the ICT sector, by industry



Source: CZSO, Annual R&D survey

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

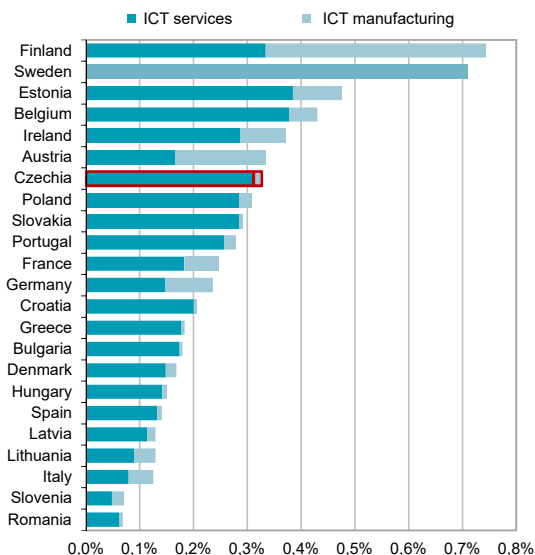
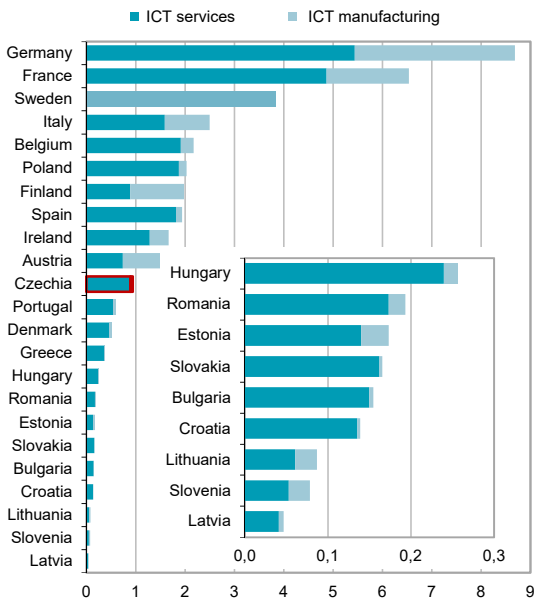


Figure D14 R&D expenditures in the ICT sector; 2022
(EUR billion)



Source: CZSO calculations based on Eurostat data

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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

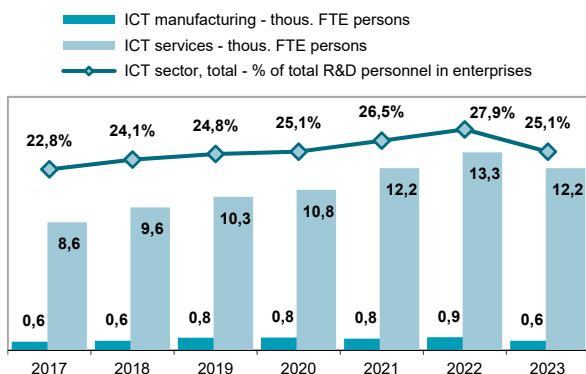
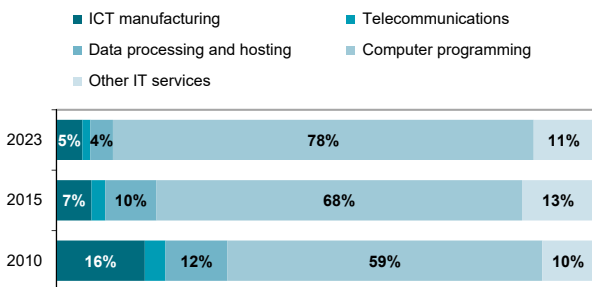


Figure D16 R&D personnel in the ICT sector, by industry



Source: CZSO, Annual R&D survey