

C ICT and science

Data about **ICT related R&D expenditures** are based on the results of the special module that is included in the **Czech Annual R&D survey**.

ICT products for R&D expenditures are classified into two main categories based on the following CPA 2008 divisions and groups:

- **ICT equipment** that includes Electronic components and boards (26.1); Computers and peripheral equipment (26.2); Communication equipment (26.3) and Consumer electronics (26.4)
- **Software** that includes Computer programming, consultancy and related services (62)

Research and development (R&D) is a systematic creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of human beings, culture and society. Software-related activities of a routine nature which do not involve scientific and/or technological advances or resolution of technological uncertainties are not to be included in R&D.

R&D expenditures include all current (wage and other) and capital expenditures determined for R&D performed in observed institutions on the territory of a given country made during the reference year regardless the source of the funds.

Data for **international comparison** of ICT R&D expenditures is based on the principal economic activity of the enterprises with intramural R&D expenditures within the ICT industries (ICT sector).

This data based on R&D expenditures of enterprises within the ICT sector are not comparable with the data based on special module on **ICT related R&D expenditures**. For more information about ICT sector see chapter E of this publication.

Further information on the **Czech R&D statistics** can be found at:

http://www.czso.cz/csu/redakce.nsf/i/statistika_vyzkumu_a_vyvoje

ICT patent statistics bring information about results and success of research, development and innovation activities in selected areas of information and communication technologies.

A patent is a public deed issued by the relevant patent office, which provides legal protection to an invention for the period of up to 20 years (provided that maintenance fees are paid), namely on the territory for which it was issued by the office.

Patent protection on the territory of the Czech Republic is ensured by the **Industrial Property Office of the Czech Republic** (hereinafter only IPO CR). Data in this chapter were processed by the Czech Statistical Office based on data sources of the IPO CR.

Patent data are broken down according to the **Patent Manual of the OECD (OECD, Paris 2009)**. Based on the International Patent Classification (IPC) it is possible to classify ICT related patents into four main categories as follows:

- Telecommunications
- Consumer electronics
- Computers and peripheral equipment
- Other ICT

Category 'other ICT' includes, compare to other chapters, invention in the field of ICT related medical and scientific equipment.

The following **OECD web site** was used as a data source for the international comparison: www.oecd.org/sti/ipr-statistics.

Further information on the **Czech patent statistics** can be found at:

http://www.czso.cz/csu/redakce.nsf/i/patentova_statistika.

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Table C1 ICT R&D expenditures in the Czech Republic

CZK million

	2010	2011	2012
Total	6 811	7 626	9 107
ICT equipment	3 147	3 951	4 628
Software	3 664	3 675	4 479
Sector of R&D performance			
Business enterprise	5 956	6 607	7 918
Government	180	204	129
Higher education	667	749	1 041
Private non-profit	9	66	18

Table C2 ICT R&D expenditures funded by Czech government

CZK million

	2010	2011	2012
Total	1 282	1 508	1 462
ICT equipment	947	1 117	982
Software	335	391	480
Sector of R&D performance			
Business enterprise	554	676	742
Government	162	187	113
Higher education	561	643	596
Private non-profit	5	3	11

Figure C1 Total ICT R&D expenditures

■ CZK million ◆ as percentage of total R&D expenditure (GERD)

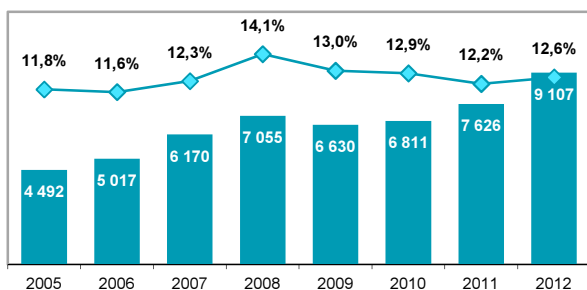
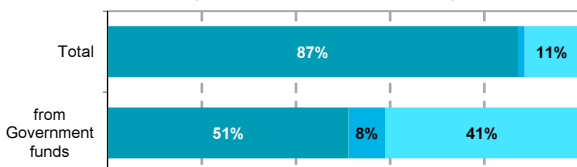


Figure C2 ICT R&D expenditures by sector of performance and source of funds, 2012

■ Business enterprise ■ Government ■ Higher education



Source: CZSO, Annual R&D survey

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Table C3 Software R&D expenditures in the Czech Republic

CZK million

	2010	2011	2012
Total	3 664	3 675	4 479
Sector of R&D performance			
Business enterprise	3 415	3 382	4 168
Government	13	6	2
Higher education	235	282	305
Private non-profit	1	6	4

Table C4 Software R&D expenditures funded by government

CZK million

	2010	2011	2012
Total	335	391	480
Sector of R&D performance			
Business enterprise	137	143	210
Government	11	6	2
Higher education	187	242	266
Private non-profit	1	1	2

Figure C3 Total software R&D expenditures

■ CZK million ◆ as percentage of total R&D expenditure (GERD)

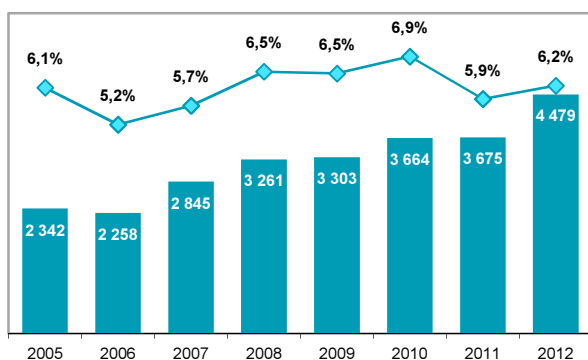
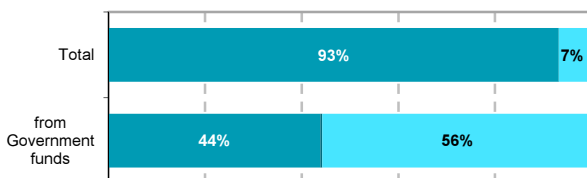


Figure C4 Software R&D expenditures by sector of performance and source of funds, 2012

■ Business enterprise ■ Government ■ Higher education



Source: CZSO, Annual R&D survey

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Table C5 ICT R&D expenditures in Czech enterprises, 2012

CZK million

	Total	ICT equipment	SW
Total	7 918	3 750	4 168
<i>thereof financed from government funds</i>	742	532	210
Size class of enterprises			
Small (0-49 employees)	1 434	555	879
Medium (50-249 employees)	2 844	1 433	1 411
Large (250 or more employees)	3 640	1 762	1 879
Ownership of enterprises			
Public	90	61	29
National private	3 633	1 920	1 713
Foreign controlled	4 196	1 769	2 427
Industry (CZ-NACE)			
Manufacturing, total	962	637	325
ICT manufacturing (261-264)	292	195	97
Other manufacturing industries	670	442	228
IT services (582+62+63)	4 496	1 415	3 081
Telecommunications (61)	607	415	192
Research and development (72)	516	501	15
Other industries	1 336	782	555

Figure C5 ICT R&D expenditures in enterprises

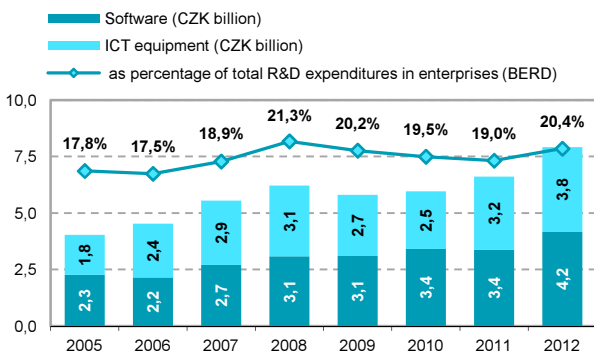
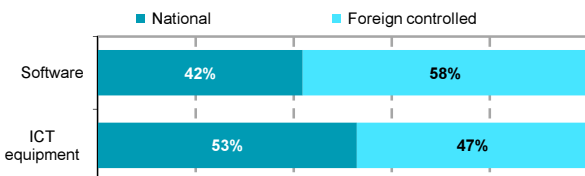


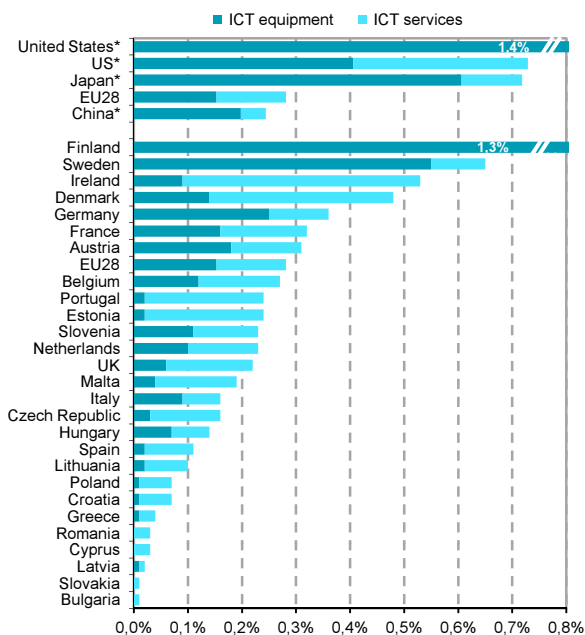
Figure C6 ICT R&D expenditures in enterprises by ownership, 2012



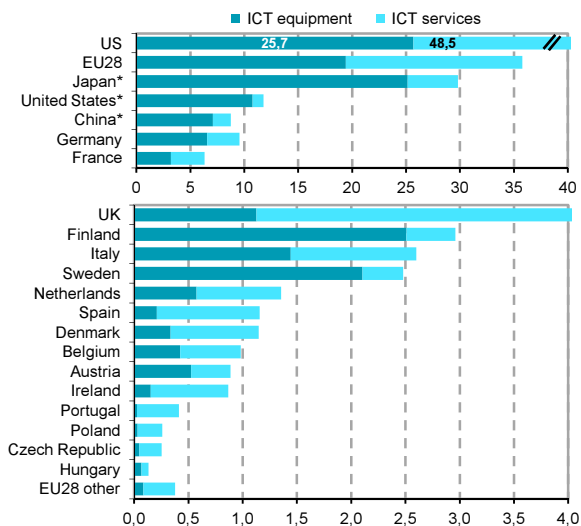
Source: CZSO, Annual R&D survey

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**Figure C7 R&D expenditures in ICT sector, 2012
(as % of GDP)**



**Figure C8 R&D expenditures in ICT sector, 2012
(EUR billion)**



* Year 2010

Source: CZSO calculations based on OECD and Eurostat data

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Table C6 ICT patents granted or validated in the CR

	number		
	2010	2011	2012
Total	304	356	480
Telecommunications	79	91	130
Consumer electronics	33	40	40
Computers	41	62	120
Other ICT	151	163	190
Applicant's country of origin			
Czech Republic, total	37	54	64
Business enterprise sector	7	11	15
Government sector	3	8	6
Higher education sector	26	33	39
Private persons	1	3	4
Foreign applicants, total	267	302	416
Germany	72	76	80
United States	53	65	60
Japan	17	27	46

Figure C9 ICT patents granted or validated in the CR

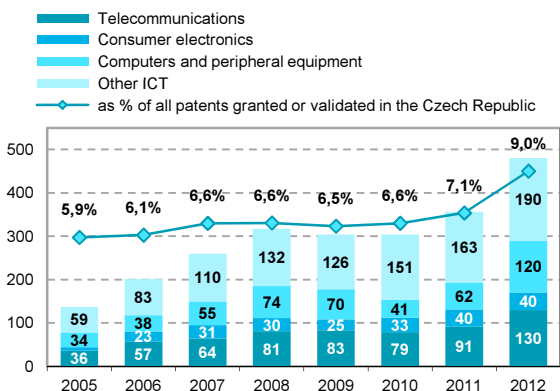
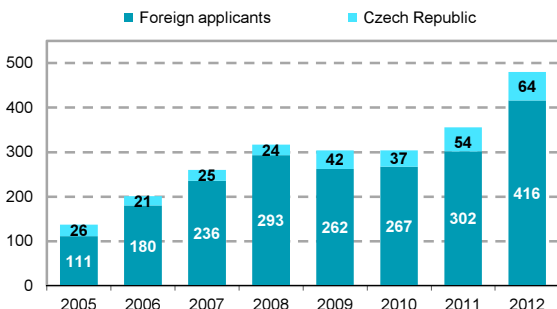


Figure C10 ICT patents granted or validated in the Czech Republic by applicant's country of origin



Source: IPO of the Czech Republic and CZSO calculations

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Table C7 ICT patents valid in the CR as of 31.12.2012

	Total	Applicant's country of origin	
		Czech	Foreign
Total	1 980	238	1 742
Telecommunications	532	27	505
Consumer electronics	219	3	216
Computers	398	29	369
Other ICT	831	179	652

Figure C11 ICT patents valid in the CR as of 31.12.2012 by technology and applicant's country of origin

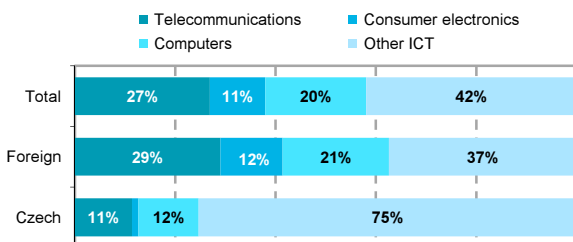
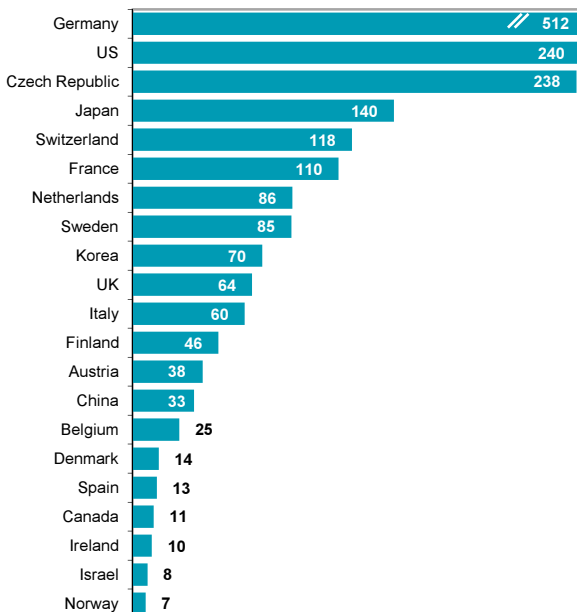


Figure C12 ICT patents valid in the Czech Republic as of 31.12.2012 by applicant's country of origin



Source: IPO of the Czech Republic and CZSO calculations

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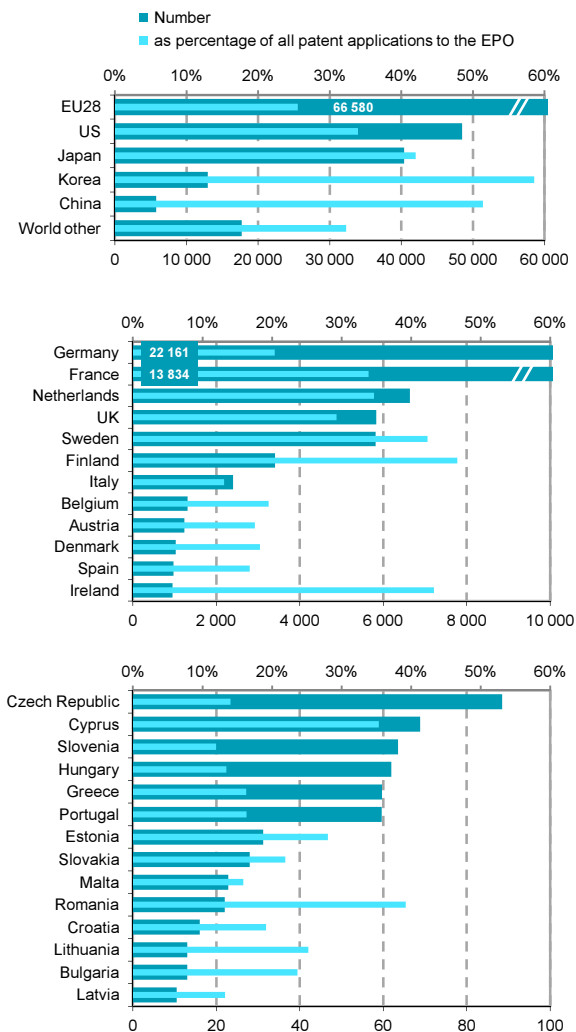
Table C8 ICT patents filed by Czech applicants abroad

	2009	2010	2011
ICT patent applications to the EPO	22	19	21
ICT patents granted by EPO	4	5	3
ICT patents granted by USPTO	6	3	5

EPO: European Patent Office

USPTO: United States Patent and Trademark Office

Figure C13 ICT patent applications to the EPO, 2007-2011



Source: OECD and CZSO calculations