A ICT professionals

ICT professionals have the capability to specify, design, develop, install, operate, support, maintain, manage, evaluate and research ICT and ICT systems. They also develop and put in place the ICT tools for others. It includes following tasks:

- business software development, programming, web development, database development, communication network development, systems integration and installation,

- technical support, user help and support, network administration, web administration, database administration.

ICT professionals are **defined** as persons employed in the national economy whose principal activity comes within the following two main occupations groups expressed in terms of the current International Standard Classification of Occupations 1998 (CZ-ISCO-88 in the Czech Republic):

CZ-ISCO 213 – Computing professionals
- 2131 Computer systems designers and analysts
- 2132 Computer programmers
- 2139 Computing professionals not elsewhere classified

CZ-ISCO 312 – Computer associate professionals
- 3121 Computer assistants
- 3122 Computer equipment operators
- 3123 Industrial robot controllers
- 3129 Computer associate professionals not elsewhere classified

Computing professionals conduct research, plan, develop and improve computer based information systems, software and related concepts, develop principles and operational methods as well as maintain data dictionary and management systems of databases to ensure integrity and security of data.

Computer associate professionals provide assistance to users of computers and standard software packages, control and operate computers and peripheral equipment and carry out limited programming tasks connected with the installation and maintenance of computer hardware and software.

The Czech Labour Force Survey (VŠPS) is used as a data source for ICT professionals in the Czech Republic (since 1993). It provides population estimates of ICT professionals for the main socio-demographic characteristics, such as sex, age, education and regions of residence. ICT professionals can be further breakdown according by employment according to industry (CZ- NACE activity) classification and by occupation categories according to CZ-ISCO 88 classification.

Note: Presented data are always average numbers for each year. Generally in the whole chapter, the annual averages lower than 3 000 persons must be considered as a data with very low reliability. In real terms it means that their relative standard error (i.e. coefficient of variation) is higher than 20%. For more information about data reliability see:
Labour Market in the CR 1993 – 2006; Code: 3103-07
http://www.czso.cz/csu/2007edicniplan.nsf/engp/3103-07

The European Union Labour Force Survey (EU LFS) was used as a data source for an international comparison.
http://circa.europa.eu/irc/dsis/employment/info/data/eu_lfs/index.htm

A ICT professionals

Table A1 ICT professionals part 1.

thousand persons

	2004	2005	2006	2007
Total	**72.8**	**78.7**	**87.6**	**96.3**
by gender				
Male	61.0	66.1	74.6	84.1
Female	11.9	12.6	13.0	12.2
by age groups				
15-24 years	8.8	7.1	6.9	9.1
25-34 years	31.6	34.5	42.3	42.6
35-44 years	17.3	19.2	21.2	23.4
45-54 years	10.9	12.7	10.6	15.3
55-64 years	4.4	5.1	6.1	5.7
65+ years	0.0	0.1	0.4	0.2
by qualification				
Tertiary	31.6	35.6	38.8	42.4
of which in Computing	5.1	7.0	7.0	7.3
Upper secondary	35.4	37.3	42.1	45.3
of which in Computing	3.4	2.3	2.7	3.1
Other	5.8	5.8	6.6	8.6
of which in Computing	.	.	.	.
by occupation				
Computing professionals	36.5	36.8	40.0	44.8
Computer associate professionals	36.4	41.9	47.6	51.5

Figure A1 ICT professionals

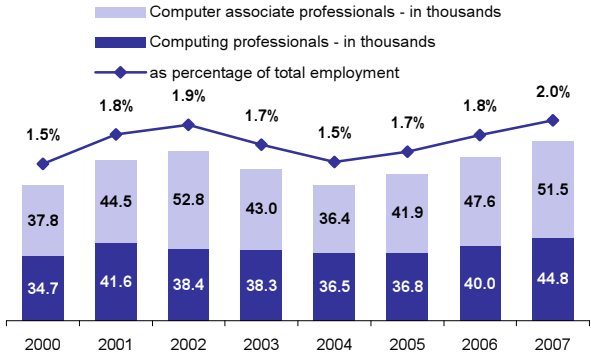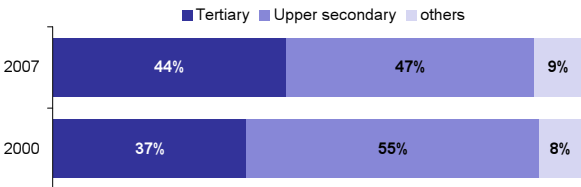**Figure A2 Qualification distribution of ICT professionals**

Source: CZSO, Labour Force Survey

Figure A3 Age distribution of ICT professionals, 2006

Legend:
- 15-24 years
- 25-34 years
- 35-44 years
- 45-54 years
- 55-64 years
- 65+ years

Countries (top to bottom):
Turkey, Estonia, Malta, Cyprus, Poland, Ireland, Slovakia, Lithuania, Spain, Bulgaria, Latvia, Hungary, Portugal, Czech Republic, Romania, Austria, Greece, Slovenia, Iceland, Finland, France, EU27, Belgium, Italy, United Kingdom, Norway, Netherlands, Switzerland, Sweden, Denmark, Germany, Luxembourg

Source: Eurostat, European Labour Force Survey

Table A2 ICT professionals part 2.

thousand persons

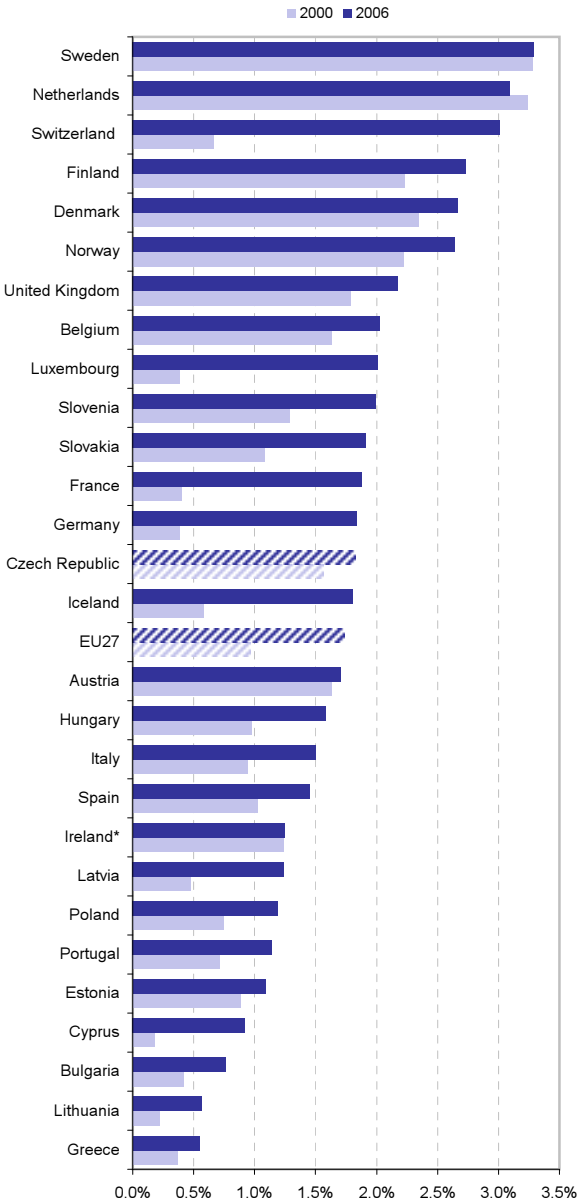|	2004	2005	2006	2007
Total	**72.8**	**78.7**	**87.6**	**96.3**
by Industry (CZ-NACE)				
A+B Agriculture, forestry and fishing	0.1	0.2	0.3	0.5
C Mining and quarrying	0.4	0.4	0.1	0.3
D Manufacturing	18.2	20.7	23.6	25.7
E Electricity, gas and water supply	1.1	1.8	2.5	1.5
F Constructions	1.6	0.8	1.2	1.2
G+H Trade, hotels, restaurants	3.7	3.1	5.6	7.0
I Transport and communications	4.4	5.0	4.5	5.4
J Financial intermediations	2.8	4.2	3.4	3.6
K Business activities	31.6	32.1	36.7	42.2
L Community service activities	5.8	7.2	6.2	5.8
M Education	1.8	1.5	2.1	2.4
N Health and social Services	0.7	1.1	0.8	0.4
O-Q Other Services	1.0	0.7	0.4	0.5
by regions				
Praha	19.0	20.6	23.6	26.4
Středočeský	8.5	9.5	10.6	10.3
Jihočeský	3.1	3.1	4.1	4.6
Plzeňský	3.9	3.4	3.5	3.8
Karlovarský	0.9	0.8	1.0	1.5
Ústecký	4.4	4.4	3.4	4.8
Liberecký	2.3	2.5	2.6	4.1
Královéhradecký	4.0	3.7	4.2	3.4
Pardubický	4.5	3.3	3.5	3.1
Vysočina	2.4	2.8	3.3	4.9
Jihomoravský	8.0	11.3	11.5	11.3
Olomoucký	2.9	2.7	4.1	5.5
Zlínský	3.1	3.7	3.0	3.9
Moravskoslezský	6.0	6.7	9.2	8.9

Figure A4 ICT professionals by regions
(as a percentage of total employment in a given region)
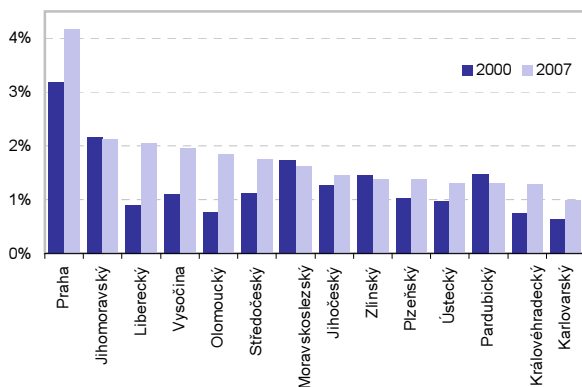
Source: CZSO, Labour Force Survey

**Figure A5 ICT professionals
(as a percentage of total employment)**

Legend: ☐ 2000 ☐ 2006

Sweden
Netherlands
Switzerland
Finland
Denmark
Norway
United Kingdom
Belgium
Luxembourg
Slovenia
Slovakia
France
Germany
Czech Republic
Iceland
EU27
Austria
Hungary
Italy
Spain
Ireland*
Latvia
Poland
Portugal
Estonia
Cyprus
Bulgaria
Lithuania
Greece

0.0% 0.5% 1.0% 1.5% 2.0% 2.5% 3.0% 3.5%

only for Computing professionals

Source: Eurostat, European Labour Force Survey

Table A3 Computing professionals

thousand persons

	2004	2005	2006	2007
Total	**36.5**	**36.8**	**40.0**	**44.8**
by gender				
Male	32.3	33.1	37.0	40.8
Female	4.3	3.7	3.0	3.9
by age groups				
15-34 years	17.8	18.5	22.4	22.1
35-54 years	16.6	16.3	14.8	19.7
55+ years	2.2	2.0	2.8	2.9
by qualification				
Tertiary	22.9	24.6	26.0	29.2
of which in Computing	4.0	5.6	5.2	6.3
Upper secondary	12.8	11.5	13.0	15.1
of which in Computing	1.8	0.7	1.4	1.1
Other	0.8	0.8	1.0	0.4
of which in Computing	.	.	.	.
by Industry (CZ-NACE)				
Agriculture	0.3	0.4	0.3	0.5
Industry	7.5	7.8	10.6	10.6
Services	28.7	28.6	29.1	33.6
by regions (NUTS 2)				
Praha	12.8	12.0	12.2	12.7
Střední Čechy	3.1	2.6	3.3	3.8
Jihozápad	2.8	2.8	3.5	4.0
Severozápad	2.4	2.1	1.8	2.0
Severovýchod	4.6	3.6	4.1	5.1
Jihovýchod	5.6	6.8	7.6	8.5
Střední Morava	2.4	3.0	3.0	4.4
Moravskoslezsko	2.8	4.0	4.6	4.1

Figure A6 Computing professionals

Female - in thousands
Male - in thousands
as percentage of total employment

Year	2000	2001	2002	2003	2004	2005	2006	2007
Percentage	0.7%	0.9%	0.8%	0.8%	0.8%	0.8%	0.8%	0.9%
Female	5.7	7.5	6.1	4.9	4.3	3.7	3.0	3.9
Male	29.0	34.1	32.3	33.4	32.3	33.1	37.0	40.8
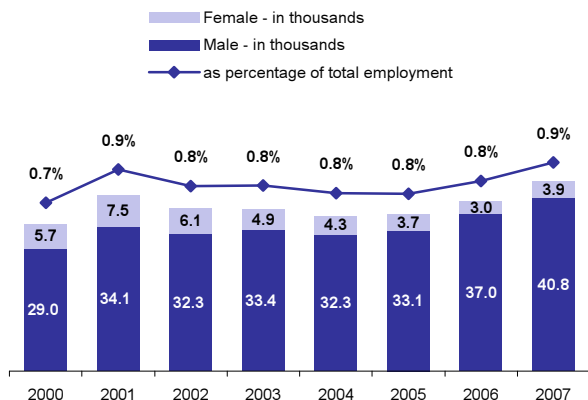
Source: CZSO, Labour Force Survey

Figure A7 Computing professionals
(as a percentage of total employment)
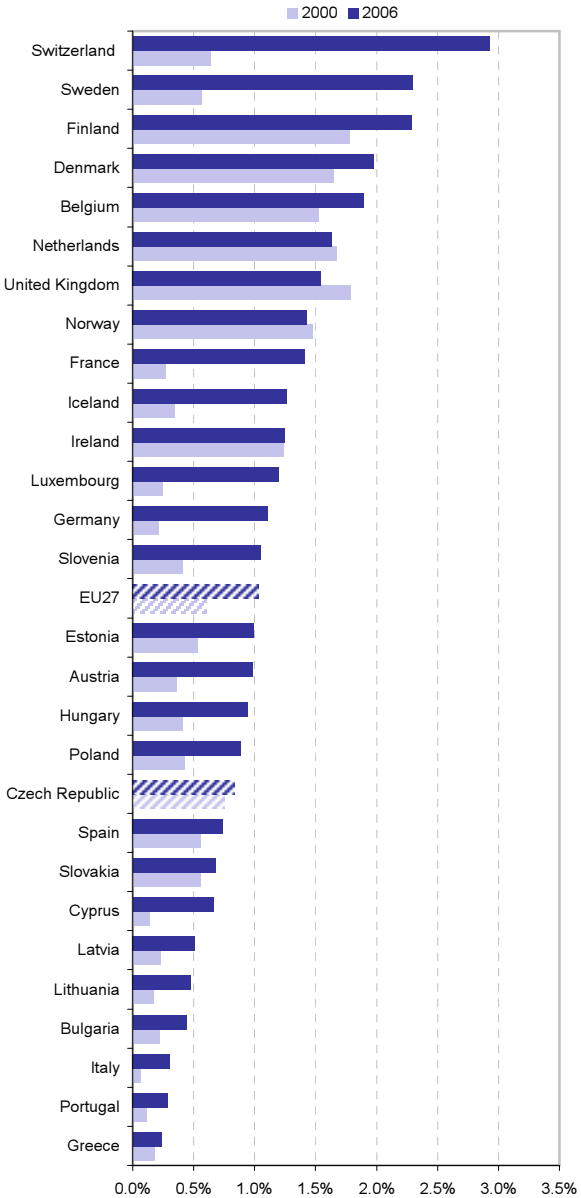
Source: Eurostat, European Labour Force Survey

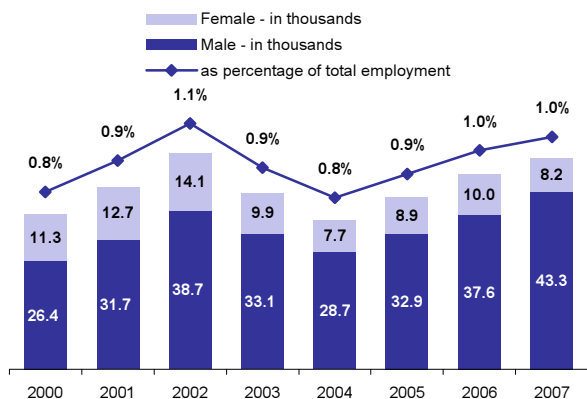### Table A4 Computer associate professionals

thousand persons

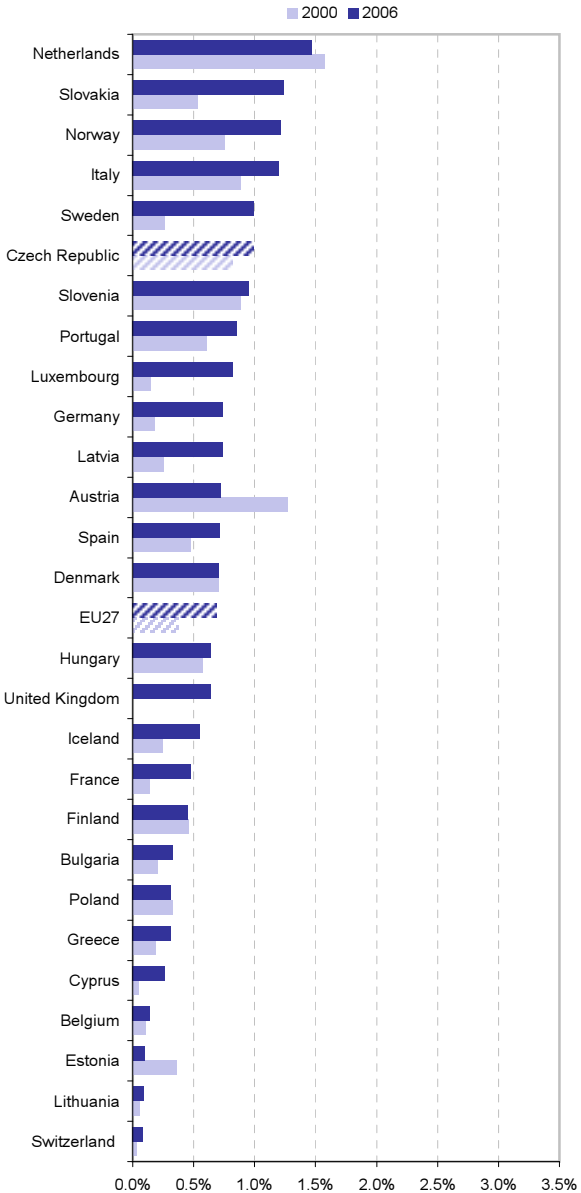|	2004	2005	2006	2007
Total	**36.4**	**41.9**	**47.6**	**51.5**
by gender				
Male	28.7	32.9	37.6	43.3
Female	7.7	8.9	10.0	8.2
by age groups				
15-34 years	22.6	23.1	26.8	29.6
35-54 years	11.6	15.6	17.0	19.0
55+ years	2.2	3.2	3.7	3.0
by qualification				
Tertiary	8.7	11.0	12.8	13.1
of which in Computing	1.1	1.4	1.8	1.0
Upper secondary	22.6	25.9	29.2	30.2
of which in Computing	1.6	1.5	1.3	2.0
Other	5.0	5.1	5.6	8.2
of which in Computing	.	.	.	.
by Industry (CZ-NACE)				
Agriculture	0.1	0.2	0.1	0.3
Industry	13.3	15.4	16.7	17.7
Services	22.9	26.3	30.8	33.6
by regions (NUTS 2)				
Praha	6.2	8.7	11.4	13.6
Střední Čechy	5.4	7.0	7.3	6.5
Jihozápad	4.1	3.8	4.2	4.3
Severozápad	3.0	3.1	2.6	4.2
Severovýchod	6.2	5.9	6.1	5.6
Jihovýchod	4.8	7.3	7.2	7.6
Střední Morava	3.6	3.5	4.2	4.9
Moravskoslezsko	3.2	2.7	4.5	4.8

Figure A8 Computer associate professionals

Source: CZSO, Labour Force Survey

**Figure A9 Computer associate professionals
(as a percentage of total employment)**

■ 2000 ■ 2006

Netherlands
Slovakia
Norway
Italy
Sweden
Czech Republic
Slovenia
Portugal
Luxembourg
Germany
Latvia
Austria
Spain
Denmark
EU27
Hungary
United Kingdom
Iceland
France
Finland
Bulgaria
Poland
Greece
Cyprus
Belgium
Estonia
Lithuania
Switzerland

0.0% 0.5% 1.0% 1.5% 2.0% 2.5% 3.0% 3.5%

Source: Eurostat, European Labour Force Survey

Table A5 ICT professionals by occupation (ISCO 88)

thousand persons

	2004	2005	2006	2007
Total	**72.8**	**78.7**	**87.6**	**96.3**
by occupation				
Computing professionals	36.5	36.8	40.0	44.8
Com. systems designer and analysts	5.3	4.4	4.5	6.8
Computer programmers	23.7	25.2	28.0	28.0
Com. prof. not elsewhere classified	7.2	6.7	7.4	9.5
Computer associate professionals	36.4	41.9	47.6	51.5
Computer assistants	8.8	10.3	12.4	12.8
Computer equipment operators	17.6	19.6	22.0	23.5
Industrial robot controllers	3.0	4.7	5.9	7.0
Other computer associate prof.	6.7	6.2	5.7	7.2

Table A6 Computer programmers

thousand persons

	2004	2005	2006	2007
Total	23.7	25.2	28.0	28.0
by gender				
Male	21.0	23.3	26.4	26.1
Female	2.7	1.8	1.6	2.0
by age groups				
15-34 years	12.1	14.5	17.4	14.9
35-54 years	10.1	9.6	9.5	10.6
55+ years	1.4	1.1	1.1	2.5
by qualification				
Tertiary	14.2	15.8	16.5	15.9
Upper secondary	9.1	8.9	10.6	11.8
Other	0.4	0.4	0.9	0.3

Figure A10 Computer programmers

Legend: Computer programmers - in thousands; as percentage of all ICT professionals

Year	2000	2001	2002	2003	2004	2005	2006	2007
In thousands	23.2	28.8	22.5	22.4	23.7	25.2	28.0	28.0
As percentage	32.0%	33.5%	24.7%	27.5%	32.5%	32.0%	32.0%	29.1%

Source: CZSO, Labour Force Survey