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Development of methodologies of ICT statistics for Russia: Implementation of international standards

Project EC/RUS/05/002

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Final Report

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Final Report

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SYNOPSIS

Information Statistics Society is rather new, intensively developing direction of socio-economic statistics. It is aimed to study all aspects of manufacture and dissemination activities of information and communication technologies and its usage in economic, social and public life.

Information Statistics Society as the independent part of socio-economic statistics in Russia has started at the second part of 90ies by specialists of Institute for Statistical Studies and Economics of Knowledge of State University - Higher School of Economics under support of Federal Service of State Statistics (Rosstat).

As a result, the internationally comparable statistics has been created in Russia. This system allows evaluating the scale of the activities of ICT sector enterprises, the level, directions of using ICT in economic, social and public life.

However, the intensive changes in ICT sector require constant upgrading and improvement of methodology of ICT observations in accordance with international recommendations and standards.

The objective of the study is to analyse international standards in the ICT statistics and to develop recommendations for their adjustment to the Russian practice.

The subject of the study is the sphere of information and communication technologies.

Within the implementation of the project the development of statistical survey methodology and tools according to the following trends were foreseen:

- evaluation of ICT sector indicators,
- analysis of the training of ICT sector specialists,
- study of e-skills by population.

Key factor of ICT sector statistical survey is in the identification of universe of ICT enterprises, and also the ICT goods and services.

In the Russian Federation the identification of the structure of ICT sector enterprises is carried out in accordance with All-Russian Classifier of Foreign Economic Activity (RCFEA) harmonized with international equivalents. International Standard Industrial Classification of All

Economic Activities – ISIC Rev. 3.1 and General Industrial Classification of Economic Activities within the European Communities – NACE Rev. 1.1.

Data sources for the ICT sector are the statistical register of enterprises of Federal Service of State Statistics, enterprises' statistics, foreign trade statistics, etc. The analysis of international experience have shown that the same approach of ICT sector of data organization is widely used by national statistical services of the European Union, OECD and other countries. More detailed description of activities of sector enterprises can be presented upon the results of specific survey.

Within the project framework the programme for such survey has been developed. Validation of statistical tools has allowed to get internationally comparable data about the volume of sold goods and rendered services, number of employees, to evaluate the perspectives of business development, R&D cost level in ICT sector and others.

The following should be noted as the main recommendations for the ICT sector development: to coordinate ICT sector statistics, to work out the update of current statistical observations in order to get data about ICT sector, structure of ICT sector within goods and services classification.

In order to provide statistical analysis of training ICT specialists the following has been done within the project framework:

- the analysis of data base about the training of ICT specialists by higher educational institutions (HEI) has been provided;

- the joint list of degree programs of higher professional education for ICT specialists has been prepared based on the Russian Classification of Education Specialities (RCES);
- the system of statistical indicators characterizing provision of staff, information, etc. resources for the training of ICT specialists has been worked out;
- the programme of statistical survey has been suggested;
- the selective survey of HEI providing training of ICT specialists has been carried out.

This survey is in the chain of statistical studies of training ICT specialists by HEI and secondary professional institutions in Russia. Issues in business sector, management bodies, and social life connected with personnel having knowledge and skills in ICT sector require creating reliable data base that can be characterized by:

- supply and demand at the market of ICT specialists and users;
- quality, factors of training of ICT specialists by institutions of secondary and higher professional education, and its correspondence with requirements of employers.

The methodology for the above-mentioned statistical studies should be:

- definitions, including ICT specialists, ICT users;
- to approve classification - list of ICT specialities, list of ICT degree programs for secondary and higher professional education;
- to develop the system of indicators;
- to develop system of statistical and sociological observations.

Observations of using e-skills by population in Russia have been carried out in accordance with international standards with using the program of statistical observations by Eurostat in 2005, 2006 and 2007. During the analysis the experience of same observations in European Union

countries has been considered, the European tools for evaluation of e-skills by Russian citizens have been adopted, the pilot study has been carried out.

The results of survey have shown the applicability of Eurostat tools for study the informatisation processes among Russians. It also has allowed to match dynamics and scope of this process with the processes that taken place in the European Union countries. The received data have shown that the informatisation process in Russia is in the beginning; however it is developing quite fast. And main obstacles for the Russian population can be overcome. These are not so much that the lack of skills or monetary means, it is lack of users' "critical mass", "fashion" of Internet. However, the biased opinion about the computers and Internet that have been taken place in 1998 nowadays has already gone.

More or less every variant of answer for any of asked questions has found its own respondents (only one exception – no one has mentioned the answer "securities, financial services, insurance" in the question about the goods and services bought via Internet for private use during last year (and, in the Europe this variant has been mentioned only by 3% of respondents). Therefore, to carry out such kind of surveys of population is possible and is necessary, though every time it is needed to modify tools in accordance with European practice.

International experience of statistical examination of the ICT sector, training of ICT specialists, and the use of ICT in households, as well as opportunities for its application to the Russian situation, have been analysed within the studies. As a result, a conclusion was made on principal applicability of internationally comparable Russia's statistics for ICT in the mentioned aspects. This conclusion is substantiated by the development and testing of the survey systems that characterize the level of development of the ICT sector in the Russian Federation, training of ICT specialists and use of ICT in households, the results of which are presented in the report.

The study forms methodological, information and analytical basis for the compilation of internationally comparable data on the Russian ICT sector.

The documents of international organizations, foreign and national experience in the ICT statistics, as well as the specialized publications, have been analyzed in the course of the work.

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Introduction

There exist two types of statistics of the Information Society: one of them covers the supply of ICT, whereas the second one deals with the usage of ICT. The first type of statistics, which covers the ICT sector, its input (mainly employment) and output (goods and products), is based on statistics having a broader scope than just measuring the Information Society, i.e., structural business statistics and production or external trade statistics. The other type, the statistics covering the ICT usage normally deals with surveying the exact and specific target of ICT usage (by enterprises or individuals/households).

As the current project "Development of Methodologies of ICT Statistics for Russia: Implementation of International Standards" encompasses both types of statistics, different requirements are applied and different types of actions should be undertaken depending on the type of statistics. Statistics covering the supply aspects cannot be developed from scratch within the timeframe of this project, but shall rely on the existing official infrastructure in the form of official business statistics produced by the Federal State Statistics Service (Rosstat).

The objective of the second stage is to develop methodological approaches to the survey of ICT sphere that would take into account both the international standards and Russian practice.

To achieve the objective, the following tasks have been solved:

- international standards, foreign and national experience in ICT statistics have been examined;
- the international programme and survey tools have been adjusted to the ICT sphere in Russia;
- the tools developed for the survey of the Russian ICT sector have undergone pilot testing;
- the results have been analysed, primarily from the methodological viewpoint, and the conclusions on the possibility of further employment of the proposed solutions have been drawn.

The work on organisation of surveys and surveying of ICT enterprises, higher education institutions and population included the following stages:

1. Survey planning:
   - Formulation of main survey objectives and expected results;
   - Elaboration of the system of indicators on the basis of international standards in accordance with the survey objectives;
   - Development of the survey strategy (sampling, data collection procedure, etc.);
   - Development of the questionnaire and guidelines for its filling in;
   - Training of field workers.
2. Survey implementation, processing of the survey results:
   - Field work;
   - Processing of collected information;
   - Compiling the database and output tables;
   - Description of the problems encountered during the stage of testing the tools and approaches to their solution.

Thus, on the the basis of examination of international and national experience, the methodology of statistical survey of the ICT sector, the use of ICT in higher education institutions and households has been developed within the project. The survey frame and tools have been tested. The bank of the results of three surveys has been compiled.

Preamble

The transition to the Information Society is underway in Russia. The telecommunication infrastructure has been created, the markets of ICT-related goods and services are being developed, legal frameworks for accelerated development of the sector of information and communication technologies and their wide utilisation being elaborated. ICT penetrates into all economy sectors, social sphere, and private life.

The ongoing transition of the country to the Information Society necessitates development of the system of statistical assessment of ICT manufacturing and usage.

Over the recent years fundamental steps have been made to shape the ICT statistics, main principles and methodological approaches to its formation have been determined.

The Higher School of Economics together with the Federal State Statistics Service have started systematic work on the development of the statistics of the Information Society as a new branch of the social and economic statistics based on international statistical standards and recommendations, to the extent this is possible within the existing Russian practice of statistical recording.

Nevertheless, practice proved that available statistical data do not provide a comprehensive description of the level of development and dissemination of ICT in Russia.

Nowadays Russia experiences a famine for statistical information providing sound description of the ICT sector and use of ICT in the economy, social sphere, and households, which makes implementation of this project very topical.

Methodological recommendations developed and tested within the second stage of the project are of practical significance and lay the basis for further scientific, methodological and institutional development of the statistics of the Information Society.

A publication is being prepared on the basis of this report and it will be made available to interested parties.

1. STATISTICAL ANALYSIS OF THE RUSSIAN FEDERATION ICT SECTOR – SURVEY CONCEPTS, METHODOLOGY, AND RESULTS

1.1. International standards and analysis of the Russian experience in measuring the scales and structure of the ICT sector (Background)

The understanding of the ICT sector, its production and employment structures constitutes a crucial element in the Information Society Statistics. Normally, the bulk of information is derived from existing statistical sources, such as structural business statistics or employment statistics. But since no internationally comparable production statistics is available in Russia, HSE has decided to launch a special survey on the ICT sector.

Characterisation of the ICT sector, the volume and structure of its output, employment, and investments in the sector are the major indicators of the statistics of the Information Society.

The analysis of the international experience in statistical studies of the ICT sector completed within the project made it possible to draw a conclusion on principal applicability of its approaches to the development of Russia's statistics for the ICT sector.

Statistical study of the ICT sector starts with definition of the aggregate of enterprises comprising the sector. The inventory of ICT enterprises is formed in accordance with existing classifications. The register of types of economic activities related to the ICT sector accepted by the OECD Committee for Information, Computer and Communications Policy (ICCP) is currently considered as a recognized international standard. This register is based on the International Standard Industrial Classification of All Economic Activities – ISIC (rev. 3.1).

The Russian analogue of ISIC is the Russian Classification of Economic Activities (RCEA). RCEA has been harmonized with NACE Rev.1 by keeping NACE codes and nomenclature of the appropriate four-digit entries in RCEA. The peculiar features reflecting the needs of the Russian economy in specification of the types of activity are taken into account in the RCEA groups with five- and six-digit codes. RCEA was enforced on January 1, 2003. During 2003 and 2004 the All-Union Nomenclature of Sectors of the National Economy was substituted for RCEA. During the transition years the statistical information for the types of economic activity was developed for a limited scope of organizations and indicators.

Table 1.1 presents the comparison of the list of types of economic activities in the ICT sector specified by the international standard (ISIC) and RCEA.

Table 1.1. **Definition of ICT sectors**

ISIC Rev 3.1	RCEA
Section D: Manufacturing	
3000 Manufacture of office, accounting and computing machinery	30 Manufacture of office equipment and computers
3130 Manufacture of insulated wire and cable	31.3 Manufacture of insulated wires and cables
32. Manufacture of radio, television and communication equipment and apparatus	32. Manufacture of radio, television and communication equipment and apparatus
3210 Manufacture of electronic valves and tubes and other electronic components	32.1 Manufacture of electronic valves and tubes and other electronic components
3220 Manufacture of television and radio transmitters and apparatus for line telephony and line telegraphy	32.2 Manufacture of television and radio transmitters, apparatus for line telephony and line telegraphy
3230 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus, and	32.3 Manufacture of television and radio receivers, sound or video recording or reproducing apparatus

ISIC Rev 3.1	RCEA
associated goods	
3312 Manufacture of instruments and appliances for measuring, checking, testing, navigating and other purposes, except industrial process control equipment	33.2 Manufacture of checking and measuring instruments and appliances 33.3 Assembly of devices of technological processes' control and regulation
3313 Manufacture of industrial process control equipment	
Section G: Trade	
5151 Wholesale of computers, computer peripheral equipment and software	51.43.2 Wholesale of radio and television apparatus, information media (with and without records) 51.64.1 Wholesale of office machinery 51.64.2 Wholesale of computers and peripheral equipments 51.65.2 Wholesale of operational materials and accessories for machinery and equipment 51.65.5 Wholesale of industrial electric and electronic equipment, including telecommunications equipment
5152 Wholesale of electronic and telecommunications parts and equipment	
Section I: Communication	
6420 Telecommunications	64.2 Telecommunications
Section K: Business activities	
7123 Renting of office machinery and equipment (including computers)	71.33 Renting of office machinery and equipment, including computer techniques
72 Computer related activities	72 Computer related activities
7210 Hardware consultancy	72.1 Hardware consultancy
7221 Software publishing	72.2 Software consultancy and supply
7229 Other software consultancy and supply	
7230 Data processing	72.3 Data processing
7240 Database activities and online distribution of electronic content	72.4 Database activities and online distribution of electronic content
7250 Maintenance and repair of office, accounting and computing machinery	72.5 Maintenance and repair of office, accounting and computing machinery
7290 Other computer-related activities	72.6 Other computer-related activity

The RCEA classification of the types of economic activities presented in Table 1 formed the basis for the statistical study of the ICT sector. This group is thoroughly described in Annex 1.

In international practice, the values of main indicators of the development of the ICT sector are determined on the basis of the data collected by national statistical services for all types of economic activities. The introduction of RCEA made possible such a definition in Russia as well.

Number of enterprises in the ICT sector

Information on the number of organizations in the ICT sector can be obtained from the data of the Statistical Register of Economic Agents maintained by the Federal State Statistics Service (Statistical Register of the Federal State Statistics Service). The Statistical Register of the Federal State Statistics Service is the database containing information about organizations established within the territory of the Russian Federation and their local units, as well as about self-employed entrepreneurs and other statistical units that are the object of federal statistical monitoring.

The Statistical Register is the main organization for federal statistical observations, including economic censuses within the territory of the Russian Federation.

The Statistical Register contains the data on state registration of legal entities and self-employed entrepreneurs, data on branches, representation offices, and other subdivision of legal entities – their local units, and information about organizations (nonlegal entities) established and acting with the territory of the Russian Federation under the existing laws. These data are submitted in due course of law by the registering bodies and other federal authorities and organizations acting with the territory of the Russian Federation under the existing laws and are compiled on the basis of information contained in statistical databases. The Statistical Register contains identification codes in accordance with the Russian national classifications of technical, economic and social information:

- Russian Classification of Businesses and Organisations (RCBO);
- Russian Classification of Administrative-Territorial Division Entities (RCATDE);
- Russian Classification of Governmental Authorities and Regulatory Bodies (RCGARB);
- Russian Classification of Forms of Ownership (RCFO);
- Russian Classification of Organizational Legal Forms (RCOLF);
- Russian Classification of Economic Activities (RCEA).

To supplement and update the Statistical Register, the Federal State Statistics Service obtains necessary information from administrative sources – public information resources and systems, including registers of taxation authorities, asset and liability management bodies, licensing bodies, etc.

Main operating rates of ICT enterprises according to the data of establishment-type statistics

Today the range of indicators developed to the 5th digit of RCEA and ensuring the formation of statistics of the ICT sector is rather limited. Table 1.2 presents the sources of main performance indicators of ICT enterprises.

Table 1.2. **Information sources for the ICT sector**

Item	Form index	Form title	Scope of surveyed enterprises	RCEA development depth for the ICT sector
Sales of enterprises	P-1	Information on production and-shippment of goods and rendering of services	Large and medium-size enterprises	For all types of economic activities included in the ICT sector
Investments of enterprises	P-2	Information about investments	Large and medium-size enterprises	For all types of economic activities included in the ICT sector
Number of employees	P-4	Information about the number of employees, salary and labour movement	Large and medium-size enterprises	For all types of economic activities included in the ICT sector
Number of employees, sales for small enterprises	PM	Information about balance sheet ratio of small enterprises	Small enterprises	Only RCEA codes 30 and 72 can be singled out from the nomenclature of the ICT sector developed for economic activities.
Fixed assets	11	Information about availability and transactions with fixed assets and other non-financial assets	Large and medium-size enterprises	Only RCEA codes 30, 64.2 and 72 can be singled out from the nomenclature of the ICT sector developed for economic activities.

One of major problems of accumulation of data on the ICT sector is almost total absence of information about small enterprises[1]. According to the estimate, more than 50% of ICT sector enterprises are "small business" enterprises. Their performance can be estimated using only two indicators: sales and number of employees in the ICT sector. These indicators are estimated by sub-aggregation of RCEA composite positions with respect to the structure of the appropriate indicator for the range of large and medium-size enterprises.

The second major problem is lack of data on the structure of ICT goods market. The current Russian Classification of Products (RCP) does not enable separation of the whole aggregate of ICT-related products.

Export/import of ICT-related goods and services

Development of data for export and import of goods is based on the Foreign Economic Activity Commodity Classification developed on the basis of the Harmonized Commodity Description and Coding System (HS) and the Combined Tariff-Statistical Nomenclature of the European Economic Community. This enables usage of the standard definition of ICT-related goods, which ensures principal feasibility of obtaining statistical data comparable with the indicators of other countries. However, the aggregation for ICT goods is currently not performed. Available studies consider only the main groups of ICT-related goods.

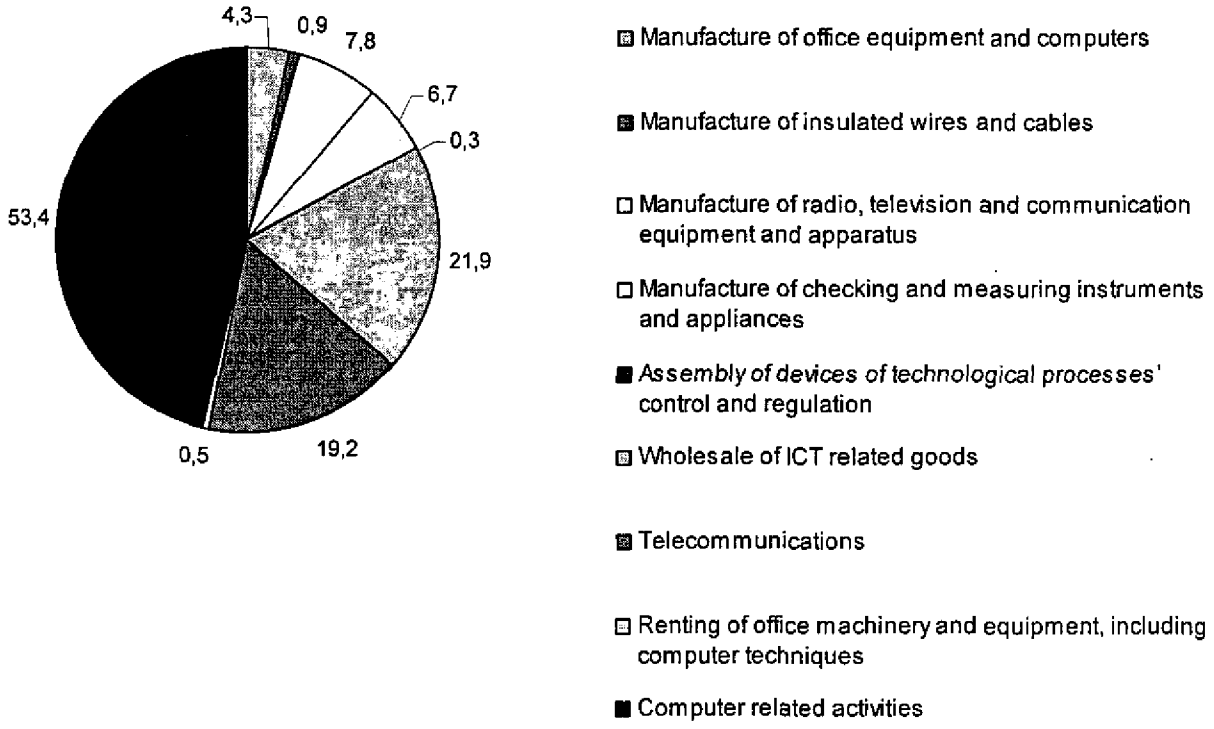
The export/import statistics for ICT-related services is based on the estimates of the Balance of Payments of the Russian Federation.

1.2. Characterisation of the ICT sector based on the Russian statistics for enterprises

According to the data of the Statistical Register of the Federal State Statistics Service, in 2005 as much as 115 thousand enterprises in Russia were involved in the ICT sector (2.4% of total number of enterprises). Almost a half of them (47%) render ICT-services, 17% produce ICT-equipment and 17% deliver telecommunication services, 19% operates in wholesale trade of ICT-related commodities.

[1] According to Article 3 of the Federal Law No. 88-FZ "On Federal Support to Small Enterprises in the Russian Federation" of *June 14, 1995* 'small business' enterprises are the commercial organisations, for which the stake of ownership of the Russian Federation and subjects of the Russian Federation, municipal property and property of public and religious organisations property of charity and other organizations in the statutory capital does not exceed 25%, the share that belong to one or several legal entities that are small enterprises does not exceed 25% and for which the average labour force does not exceed the following limiting values (small enterprises): in industry, construction and transport - 100 people, in agriculture and science &technology - 60 people, in retail trade and consumer services - 30 people, in wholesale commerce and other sector and in running other types of activity - 50 people.

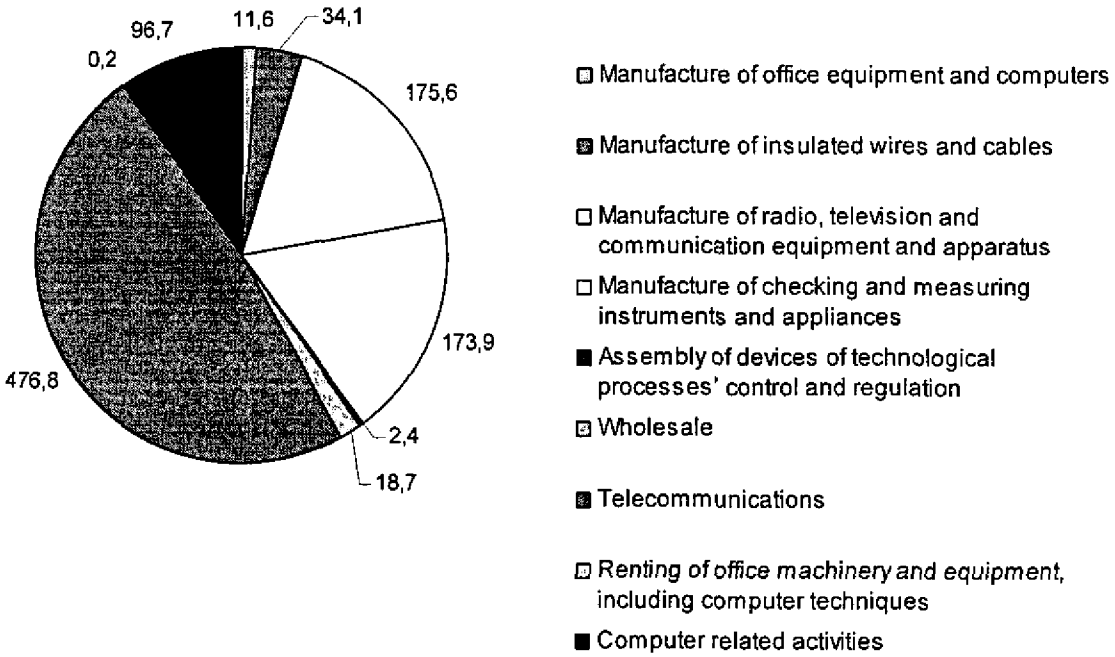
Figure 1.1. **ICT sector enterprises by economic activity (thousand): 2005**



Large and medium-size ICT enterprises is 990 thousand people or 2.6% of total number of employees of these types of enterprises. The total number of employees of the ICT sector is distributed as follows: 40% are employed by industrial enterprises, 2% - by wholesale enterprises, 48% - by telecommunication enterprises, the remaining 10% work for enterprises rendering ICT-services.

According to the estimate, the number of employed by small enterprises of the ICT sector is about 320 thousand people. Based on this estimate, the total number of employees of the Russian ICT sector can be estimated as 1.3 million of people, which is equal to 3.2% of employees of enterprises.

Figure 1.2. **Employment in large and medium-size enterprises of the sector of information and communication technologies by economic activity (thousand): 2005**



One of the main indicators characterising the operating rate of enterprises is their turnover. The indicator "turnover of enterprises" includes the cost of shipped goods manufactured intramurally, works performed and services rendered, as well as turnover proceedings for external procurement goods (exclusive of value added tax, excise taxes and other analogous compulsory payments).

In 2005, the turnover of ICT enterprises was equal to 1282.1 billion roubles or 3.5% of the appropriate indicator for Russia on the whole. The distribution of the turnover among the types of economic activities is presented in Table 1.3.

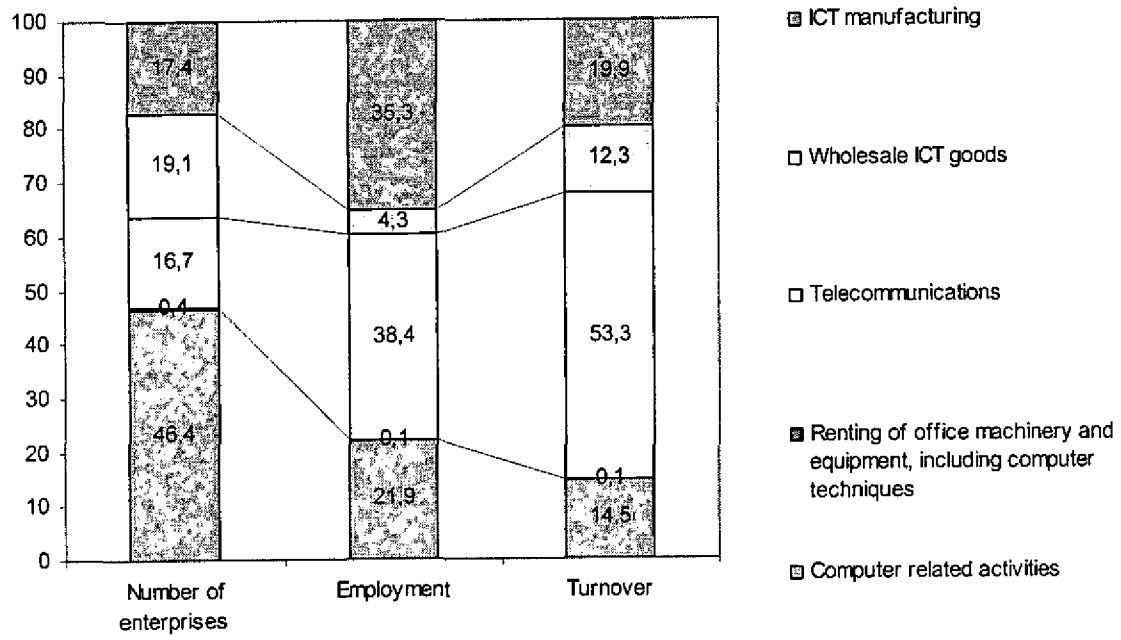
Table 1.3. **Sales of ICT enterprises: 2005**

	Turnover of ICT enterprises		
	billion roubles	2005 as a per cent of the 2004	As a per cent of the total turnover
ICT sector - total	1282.1	130	100
Manufacture of office equipment and computers	13.9	102	1.1
Manufacture of insulated wires and cables	52.6	115	4.1
Manufacture of radio, television and communication equipment and apparatus	100.7	113	7.9
Manufacture of checking and measuring instruments and appliances	86.1	104	6.7
Assembly of devices of technological processes' control and regulation	1.4	117	0.1
Wholesale of ICT related goods	157.5	144	12.2
Telecommunications	683.1	130	53.3
Renting of office machinery and equipment, including computer techniques	0.8	134	0.1
Computer related activities	186.0	162	14.5

The above table shows that the most rapidly developing enterprises are those rendering ICT services, including primarily those using computing facilities and information technologies. In 2005, the increment of turnover of enterprises engaged in development of software, data processing, development and use of databases and information resources, and consulting in ICT sphere, year over year, exceeded not only the appropriate indicator for the ICT sector on the whole (62% against 30%), but also the level of increment of turnover of enterprises in all types of economic activity (37%).

Analysis of the structure of the above indicators (Figure 1.3) makes it possible to conclude that the greatest contribution to the performance of the Russian ICT sector is made by telecommunication enterprises (38% of the ICT sector employees and 53% of ICT sector turnover).

Figure 1.3. **Major indicators of the ICT sector by economic activity (%): 2005**



Exports of main groups of commodities related to ICT (computing machinery and blocks of computers, equipment for telephony and telegraphy, video equipment, television receivers) equalled to 116 million US$, or 0.06% of export of goods, in 2004. Import of these goods exceeded export by a factor of 22 and amounted to 2520 million US$, or 3.3% of the total import of goods.

Table. 1.4. **Exports and imports of ICT commodities (million US$)**

	2000	2001	2002	2003	2004
Exports					
Computing machinery	58.9	39.6	70.4	46.6	68.6
Equipment for telephony and telegraphy	26.9	18.5	19.5	31.5	40.1
Video equipment	0.3	0.3	0.8	0.3	1.5
Television receivers	3.6	13.0	1.7	4.6	5.7
Imports					
Computing machinery	206.6	417.0	538.8	610.5	976
Equipment for telephony and telegraphy	398.1	631.8	699.0	691.4	1100
Video equipment	10.4	22.4	38.5	44.1	160
Television receivers	72.0	204.5	213.3	165.0	284

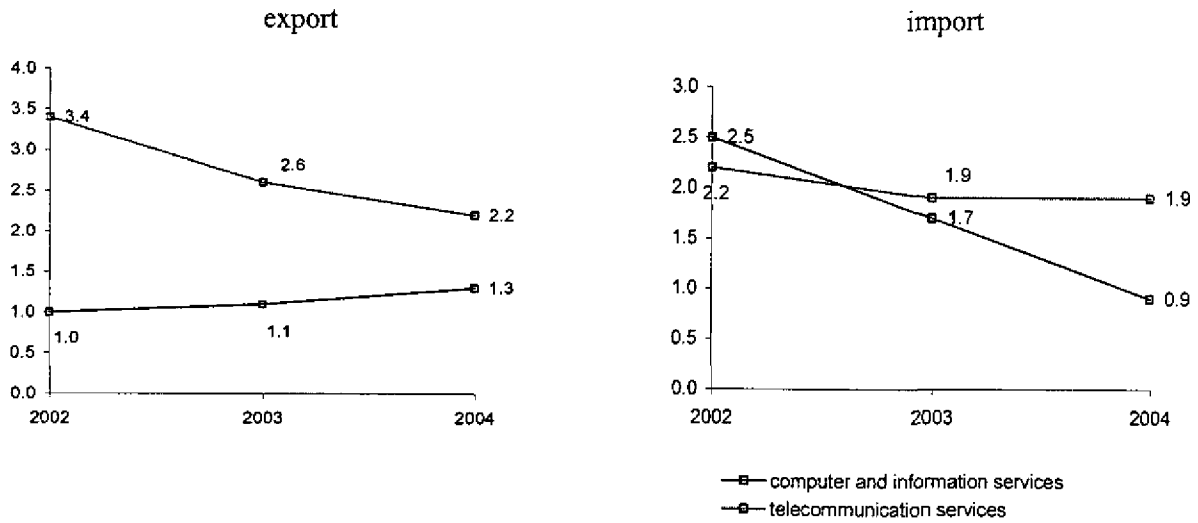
Table. 1.5. **Export and import of computer and information services (million US$)**

	2000	2001	2002	2003	2004
Export					
Total	**59**	**128**	**137**	**175**	**256**
Including the countries					
CIS	30	11	14	17	21
non-CIS countries	29	117	123	158	235
Import					
Total	**474**	**557**	**592**	**458**	**320**
Including the countries					
CIS	10	5	10	10	6
non-CIS countries	464	552	582	448	314

Table 1.6. **Export and import of telecommunication services (million US$)**

	2002	2003	2004
Export			
Total	**461**	**414**	**439**
Including the countries			
CIS	142	111	115
non-CIS countries	319	303	324
Import			
Total	**513**	**525**	**653**
Including the countries			
CIS	134	172	210
non-CIS countries	379	353	443

Figure 1.4. **ICT services export and import ratio vs. total volume of export and import of services**



1.3. Description of the programme and tools used to survey the ICT sector

The above analysis of the Russian experience in statistical measurements of the scales and structure of the ICT sector evidences that the existing federal statistics procedures do not enable comprehensive assessment of the current state and evolution of the ICT sector. The range of available statistical data is extremely limited. Therefore, there is a need for special surveying of the enterprises of the ICT sector.

For the survey, the Higher School of Economics has developed a questionnaire, which enables measuring a large variety of aspects of the ICT sector. The first core question asking for a breakdown of the sales was adopted from a Eurostat survey dedicated to the computer services sector (i.e. NACE 72) and aggregated with manufacturing ICT goods.

The second part of the questionnaire includes some questions related to ICT usage taken from the Eurostat model questionnaire for ICT usage by enterprises.

The third part of the questionnaire consists of questions related to ICT expenditures and investments. This type of information is not collected internationally due to the difficulties in separating current expenditures from ICT investments and investments in intangible assets.

The fourth part is related to employment data, including the breakdown by occupations, as no other source provides such detailed employment information.

The work on organisation of surveys and surveying of ICT enterprises, higher education institutions and population included the following stages:

1. Survey planning:
   - Formulation of main survey objectives and expected results;
   - Elaboration of the system of indicators on the basis of international standards in accordance with the survey objectives;
   - Development of the survey strategy (sampling, data collection procedure, etc.);
   - Development of the form of observations and guidelines for completing the forms;
   - Training of field workers.

2. Survey work, processing of the survey results:
   - Field work (interviewing respondents);
   - Processing of collected information (control and editing of forms);
   - Compiling the database and output tables;
   - Description of the problems encountered during the stage of testing the tools and approaches to their solution.

Objective of the survey

The objective of the survey is the development of methodological approaches to statistical investigation of ICT sector that would provide the data on:

- Production of goods and rendering services by ICT- sector enterprises;
- The structure of goods and services of ICT sector;
- Assessment of enterprises and prospects for their development;
- Number of employees in the sector, in particular, ICT-professionals;
- Investments and expenditures of ICT-sector enterprises;
- Research and development in the ICT sector;
- Use of ICT by ICT-sector enterprises: expenditures for ICT, equipment status by ICT means, availability of special software.

The survey was aimed at proving the consistency of methodological approaches to the development of the indicators of operating rates of ICT-sector enterprises, feasibility of obtaining the requested information by enterprises, and revealing problematic indicators, for which the primary information necessary for calculation is unavailable.

The system of indicators

To achieve the survey objectives, the system of indicators to be obtained as a result of the survey was developed. The structured list of the system of indicators is presented in Table 1.7.

The following sectors of the development of indicators were intended to result from the survey:

- types of economic activity;
- forms of ownership;
- federal district;
- number of employees.

Not only the information needs were taken into account when constructing the system of indicators for the survey, but also the real conditions of running the surveys. Overloading of the questionnaire could result in lower quality of information.

In addition to the indicators related to the type of activity of ICT-sector enterprises, the system includes a group of indicators of ICT usage. In our opinion, they enable the assessment of the intensity of the use of ICT in the sector and promote the development of methodological approaches to statistical observation of the use of ICT at enterprises.

Table 1.7. **The system of indicators of operating rates of ICT enterprises**

Indicator	Unit of measure
1	2
Infrastructure of the ICT sector	
The number of enterprises of the ICT sector	units
Production of goods and services	
Total sales of goods and services produced intramurally	thousand roubles
Sales of ICT-related goods and services produced intramurally	thousand roubles
Sales of ICT-related goods produced intramurally of which ICT goods: Computers Audio and video equipment Computer software Other ICT goods	thousand roubles
Sales of ICT-related services produced intramurally of which ICT services: Consulting in purchase, mounting and maintenance of computer hardware Consulting in computer software Consulting in information services and data processing, data preparation and input Services in development of automated information systems, systems for scientific research, CAD/CAM and data bases Repair and maintenance of computer hardware, peripherals, and office equipment Services in software development Electronic information and inquiry services Telematics and data transmission IT training services Other IT related services	thousand roubles
Sale of ICT-related goods produced elsewhere of which ICT goods: Computer hardware Computer software	thousand roubles
Distribution of enterprises by expected changes in volume of production of intramurally produced ICT-related goods and services in the year next to the reported year: Computer hardware Computer software Services	thousand roubles
Investments and expenditures of enterprises	
Capital investment	thousand roubles
Intangible investment	thousand roubles
Total expenditure on production and trade in goods and services	thousand roubles
of which labour cost	thousand roubles
Employment	
Full-time personnel at the end of the reference year Of them: Computer system developers and analysts	people

Indicator	Unit of measure
Programmers Electronic engineers, communication and apparatus building engineers Computer technicians and operators Technicians in electronics and telecommunications	
R&D	
Number of R&D-performing enterprises	units
R&D expenditure	thousand roubles
ICT usage	
Number of enterprises using information and communication technologies: Personal computers Computers of other types Local area networks E-mail Internet Other global information networks Dedicated communication lines Web site on the Internet	units
Distribution of enterprises by share of personnel using: Personal computers Internet	 units units
Number of personal computers – total, of which: personal computers connected to local area networks personal computers having access to global information systems of which to the Internet personal computers purchased in the reported year	units
Number of enterprises using specialised software – total and of which: Scientific research CAD CAM or management of technical facilities or technological processes Resolving organisational, managerial and economic issues E-payment Access to databases of your enterprise via global information systems, including the internet Desktop publishing systems Electronic legal-reference information systems Education Other	units
Distribution of enterprises by share of sales carries out via the Internet in total volume of sales: < 10%; 10-29%; 30-49%; 50-69%; 70-100%.	units
Distribution of enterprises by share of purchases carries out via the Internet in total volume of purchases: < 10%; 10-29%; 30-49%; 50-69%; 70-100%.	units

Survey strategies

Enterprises to be surveyed were selected on the basis of the data of the Statistical Register of Economic Agents of the Federal State Statistics Service. The list of enterprises that satisfied the following criteria was downloaded from the Register:

- ICT sector RCEA code;
- Identification as an object of statistical data collection (participation in at least one of statistical surveys);
- The enterprises ranked as 'small business' enterprises[2] were excluded from the survey (they are identified in the Statistical Register). Russian legislation envisages simplified system of statement of operating results and statistical reporting for this type of enterprises.

Upon selection the list comprised somewhat above 2 thousand enterprises. All the enterprises were covered by the survey.

The above system of indicators underlay the questionnaire of enterprises of the ICT-sector. The questionnaire is presented in Annex 2.

The following explanations were provided to the questionnaires to explain the filling in the indicators (Annex 3).

Survey work, processing of survey results

The survey was carried out by the expert group that has representatives in all regions of the Russian Federation.

At the stage of distribution of questionnaires 518 enterprises refused to participate in the survey mainly because of excessive work load. Thus, the number of survey participants reduced to 1751 enterprise. All the enterprises completed questionnaires.

Table 1.8. **Characteristics of enterprises selected for the survey**

	Enterprises that refused to participate		Enterprises that completed the questionnaire		Employeecategories					Number of employees in surveyed enterprises	
	total	As a per cent of selected enterprises	total	As a per cent of selected enterprises	1-9	10-49	50-249	250+	total	people	As a per cent of the total
30 Manufacture of office equipment and computers	0		15	100.0		1	5	9	15	14036	2.6
31.3 Manufacture of insulated wires and cables	15	24.6	46	75.4	7	3	15	21	46	26458	4.9

[2] According to Article 3 of the Federal Law No. 88-FZ "On Federal Support to Small Enterprises in the Russian Federation" of June 14, 1995 'small business' enterprises are the commercial organisations, for which the stake of ownership of the Russian Federation and subjects of the Russian Federation, municipal property and property of public and religious organisations property of charity and other organizations in the statutory capital does not exceed 25%, the share that belong to one or several legal entities that are small enterprises does not exceed 25% and for which the average labour force does not exceed the following limiting values (small enterprises): in industry, construction and transport - 100 people, in agriculture and science &technology - 60 people, in retail trade and consumer services - 30 people, in wholesale commerce and other sector and in running other types of activity - 50 people.

	Enterprises that refused to participate		Enterprises that completed the questionnaire		Employeecategories					Number of employees in surveyed enterprises	
	total	As a per cent of selected enterprises	total	As a per cent of selected enterprises	1-9	10-49	50-249	250+	total	people	As a per cent of the total
32 Manufacture of television and radio, television and communication equipment and apparatus	278	89.4	33	10.6	1	3	12	17	33	15698	2.9
33.2 Manufacture of checking and measuring instruments and appliances	214	91.1	21	8.9		2	7	12	21	8943	1.6
33.3 Assembly of devices of technological processes' control and regulation	1	10.0	9	90.0	1	1	6	1	9	1277	0.2
51.43.2 Wholesale of radio and television apparatus, information media (with and without records)	0		8	100.0	2	2	4	0	8	509	0.1
51.64.1 Wholesale of office machinery	0		8	100.0	2	1	4	1	8	1051	0.2
51.64.2 Wholesale of computers and peripheral equipments	4	11.8	30	88.2	3	4	18	5	30	5169	0.9
51.65.2 Wholesale of operational materials and accessories for machinery and equipment	2	5.0	38	95.0	14	16	8	0	38	1449	0.3
51.65.5 Wholesale of industrial electric and electronic equipment, including telecommunications equipment	4	10.5	34	89.5	10	13	10	1	34	2191	0.4
64.2 Telecommunications	0		958	100.0	72	270	374	242	958	427330	78.4
71.33 Renting of office machinery and equipment, including computer techniques	0		10		7	2	1	0	10	205	0.0
72 Computer related activities	0		541	100.0	108	221	174	38	541	40881	7.5
Total	**518**	**22.8**	**1751**	**77.2**	**227**	**539**	**638**	**347**	**1751**	**545197**	**100.0**

The survey covered all subjects of the Russian Federation. The distribution of surveyed ICT-sector enterprises over the subjects of the Russian Federation is presented in Table 1.9.

Table 1.9. **Distribution of the surveyed ICT-sector enterprises over the subjects of the Russian Federation**

	Number of surveyed enterprises
Russian Federation	**1751**
Central Federal District	
Belgorod region	24
Bryansk region	19
Vladimir region	24
Voronezh region	30
Ivanovo region	11
Kaluga region	13
Kostroma region	12
Kursk region	22
Lipetsk region	13
Moscow region	53
Orel region	10
Ryazan region	16
Smolensk region	12
Tambov region	10
Tver region	23
Tula region	38
Yaroslavl region	32
Moscow	128
North West Federal District	
Republic of Karelia	16
Republic of Komi	14
Arkhangelsk region	23
Vologda region	15
Kaliningrad region	19
Leningrad region	14
Murmansk region	32
Novgorod region	15
Pskov region	25
Saint-Petersburg	81
South Federal District	
Republic of Adygea	3
Republic of Dagestan	7
Republic of Kabardino-Balkaria	8
Republic of Kalmykia	20
Republic of Karachaevo-Cherkessia	6
Republic of Northen Osetia – Alania	6
Krasnodar Territory	26
Stavropol Territory	13
Astrakhan region	11
Volgograd region	26
Rostov region	59
Privolzhsky (Volga) Federal District	
Republic of Bashkortostan	26

	Number of surveyed enterprises
Republic of Marii El	7
Republic of Mordovia	6
Republic of Tatarstan	47
Republic of Udmurtia	16
Republic of Chuvashia	19
Perm territory	26
Kirov region	21
Nizhny Novgorod region	29
Orenburg region	14
Penza region	13
Samara region	19
Saratov region	44
Ulyanovsk region	15
Ural Federal District	
Kurgan region	8
Sverdlovsk region	54
Tumen region	91
Chelyabinsk region	22
Siberian Federal District	
Republic of Altay	7
Republic of Buryatia	10
Republic of Tyva	2
Republic of Khakassia	5
Altay Territory	17
Krasnoyarsk Territory	31
Irkutsk region	18
Kemerovo region	36
Novosibirsk region	42
Omsk region	25
Tomsk region	19
Chita region	13
Far East Federal District	
Republic of Sakha (Yakutia)	11
Primorsky Territory	40
Khabarovsk Territory	20
Amur region	7
Kamchatka region	6
Magadan region	10
Sakhalin region	20
Jewish autonomous area	5
Chukotka autonomous area	1

1.4. Results of pilot survey of the proposed approach to the survey of ICT enterprises

It should be noted that on the whole the process of filling-in the questionnaire did not induce many problems.

At the same time, the pilot study of the questionnaire for ICT-enterprises made it possible to reveal the blind side of the methodological support of the survey with respect to several issues.

This concerns the data on indicators of sales of ICT-goods produced intramurally, works performed and services rendered; sales of ICT-products manufactured by other producers, and ICT expenditures.

Main difficulties with completing the indicators on sales of ICT goods were related to the absence of strict definition, an inventory of this type of goods. Definition of the goods a result of activity of ICT-enterprises according to RCEA appeared to be unclear; moreover, some enterprises do not have this classification and do not have an opportunity to download it from the Internet.

A solution to the problem of formation of statistical data on production and sales of ICT products at the internal market should be found with the introduction of the Russian Classification of Products According to Economic Activity Type (RCPEAT) in 2007-2008. The classification will be harmonised with RCEA and Statistical Classification of Products According to Economic Activity Type in the European Economic Community (CPEATEEC). Thus, the opportunity of forming the group of ICT-products analogous to that developed by the OECD Committee for Information, Computer and Communication Policy will arise.

Enterprises practically had no difficulties with completing the sections in the volume of rendered ICT services.

In estimating expected changes in the volume of shipped ICT related hardware, 28% of enterprises found difficult completing the indictor "shipped ICT goods produced intramurally during the reporting year" (52 из 187). As to the estimate of expected changes with respect of software, 12% of enterprises had difficulties in responding (10 of 84 enterprises that provided data on the sales of software during the current year), ICT services – 0.3% (4 of 1278 enterprises rendering ICT services). This situation is more likely to evidence the level of confidence of the enterprises in the prospects of their business, than difficulties in understanding the methodology of providing data for this indicator.

No questions arose with respect to the indicators related to costs, investments, and ICT expenditures. Some enterprises that refused to provide data reasoned that the procedure of forming the data was labour-consuming. Comparison of the rate of filling the indicator for ICT expenditures and the number of enterprise whose answer was "1" in the field "use of personal computers" proved that of 127 enterprises that failed to answer the question about ICT expenditures 88 enterprises reported the use of personal computers. Thus, it can be concluded that these 88 enterprises, though they have ICT expenditures, failed to complete this indicator.

Distribution of enterprises of ICT sector that did not provide data for certain indicators of the questionnaire is presented in Annex 4.

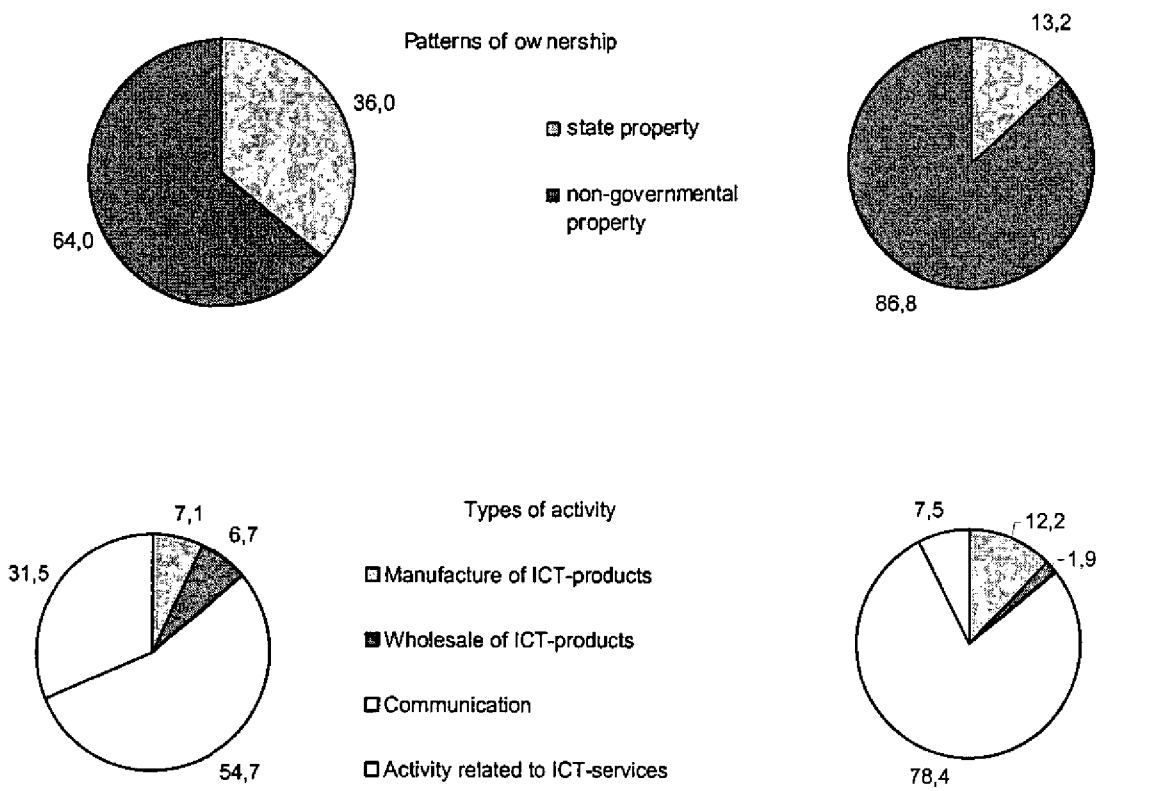
1.5. Analysis of survey results for ICT sector

The survey of ICT sector enterprises made it possible to obtain comprehensive information about the structure of manufacture of products and rendering of services by the enterprises, about investments and R&D in the sector, about the number of employees and use of information and communication technologies. Major results of the survey are summarised below (detailed results are presented in Annex 5).

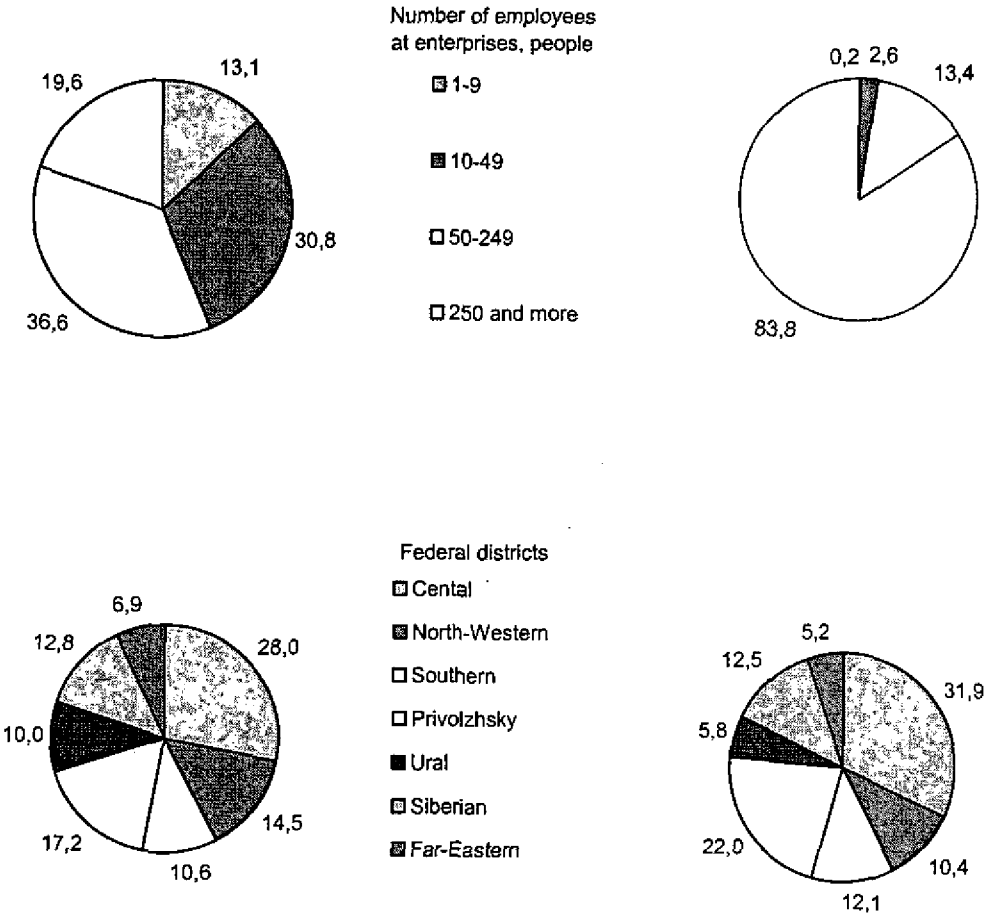
General description of the survey

The survey covers 1751 enterprise that employ 545 thousand people. Figure 1.5 shows the distribution of these enterprises according to the patterns of ownership, types of economic activity, number of employees and regions of Russia.

Figure 1.5. **Distribution of surveyed ICT enterprises** [3]
(as a per cent to the appropriate indicator for surveyed enterprises)



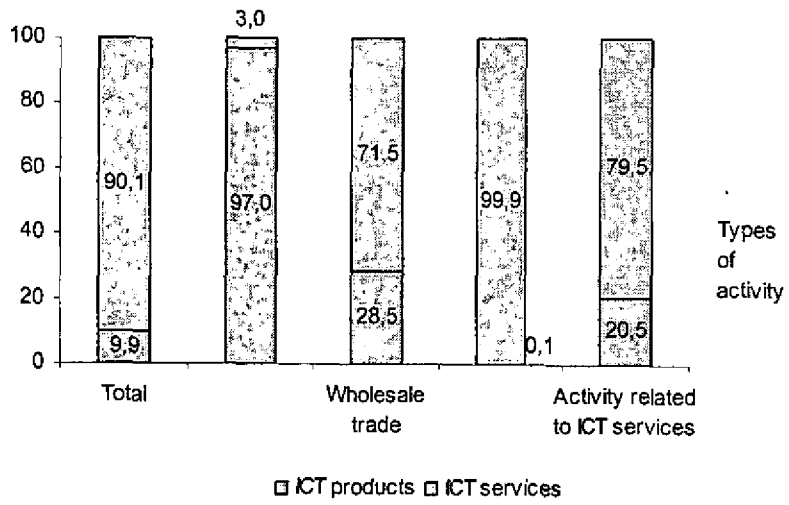
[3] Hereinafter when considering survey results for the types of economic activity we used the major types of activity: manufacture of ICT products (RCTEA codes 30, 31.3, 32, 33.2, 33.3), wholesale trade of ICT products (RCTEA codes 51.43.2, 51.64.1, 51.64.2, 51.65.2, 51.65.5), telecommunication (64.2), activities related to rendering of ICT services (RCTEA codes 71.33, 72).



Manufacture and sales of products

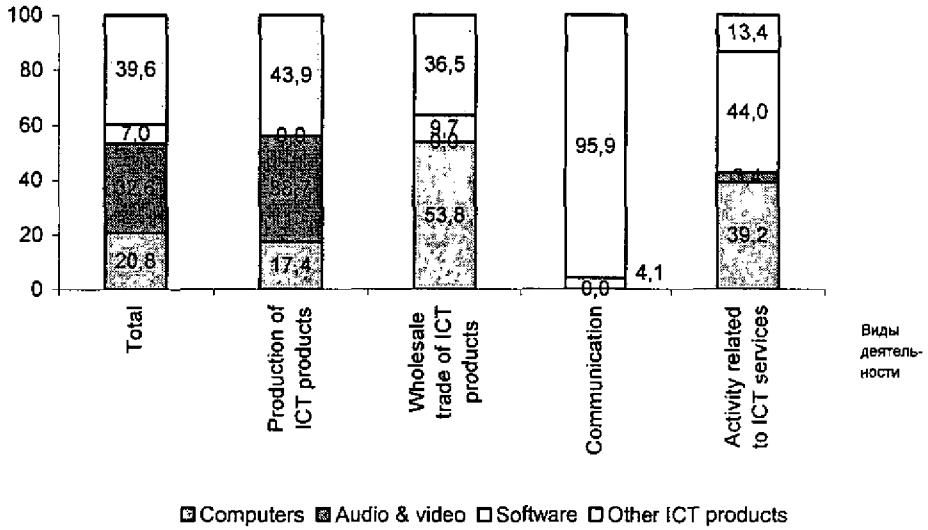
In 2005, surveyed ICT sector enterprises shipped products (services) manufactured in-house (exclusive of VAT, excises and other analogous payment) for the amount of 424 billion roubles. About two thirds (64%) of this amount comprise goods and services related to ICT, among them 10% of goods and 90%of services. The ratio of ICT goods and services for different types of activities is presented in Figure1.6.

Figure 1.6. **Shipped ICT products (services) manufactured in-house**
(as a per cent to the total volume of shipped products (services) manufactured in-house for the enterprises of the appropriate type of activity)



Among ICT products computers and audio and video equipment prevails, it accounts for 53% of shipped ICT products of in-house manufacture. Realisation of proprietary software amounts to 7% of the specified value.

Figure 1.7. **Distribution of shipped ICT goods manufactured in-house**
(as a per cent to the total volume of shipped goods manufactured in-house for the enterprises of the appropriate type of activity)

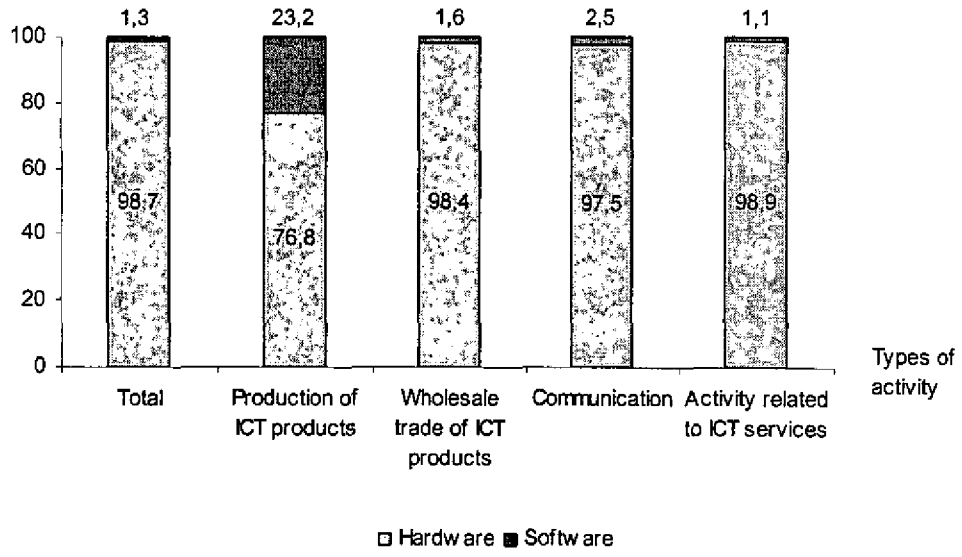


The value of ICT services rendered by surveyed enterprises amounted to 243 billion roubles. Main provider of ICT services is telecommunication enterprises – they provide 93% of the total volume, the remaining 7% are provided by the other enterprises rendering ICT services (RCTEA codes 71.33, 72).

In 2005, the volume of ICT products (including software) produced elsewhere and sold by ICT sector enterprises amounted to 19 billion roubles. The greatest contribution to this volume (77%) was made by the enterprises whose activities are related to the use of computer technique and information technologies. Wholesale enterprises contributed up to 19% to the sales of ICT products.

Sales of ICT products manufactured elsewhere are distributed as 99% for hardware and 1% for software.

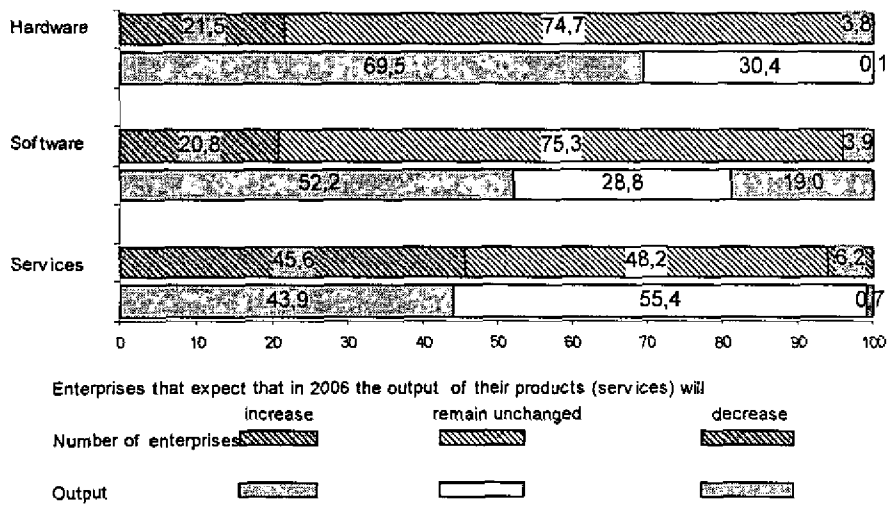
Figure 1.8. **Distribution of the sales volume of ICT products manufactured elsewhere**
(as a per cent to the sales volume of ICT products (including software) manufactured elsewhere for the enterprises of the appropriate type of activity)



Changes in the volume of shipped products (services) manufactured in-house expected by the surveyed enterprises in 2006.

Overwhelming majority of enterprises provided positive estimates of the prospects for their business. Only 4% of enterprises (the enterprises that hesitated about their prospects and did not provide any answer were excluded from the calculations) expect reduction of hardware production in 2006 as compared to 2005; it is noteworthy that these enterprises produces only 0.1% of the total volume of produced hardware. For the shipment of proprietary software these indicators were 4 and 19%, accordingly, for ICT services – 6 and 0.7%.

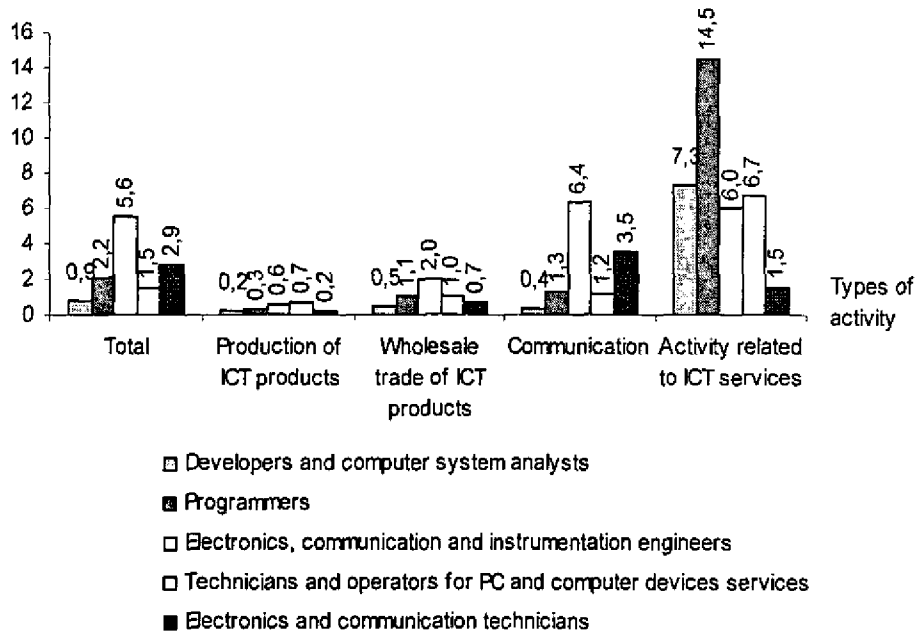
Figure 1.9. **Distribution of enterprises by the expected volume of shipment of products (services) of in-house manufacture in 2006 as compared to 2005**
(as a per cent to the appropriate indicator for the aggregate of enterprises that provided estimates of the prospects of their business)



Professional structure of employees

ICT specialists (including developers and computer system analysts, programmers, electronic engineers, telecommunication and instrumentation engineers, technicians and operators maintaining computers and computer technique, electronics technicians and telecommunication technicians) amount to 13% of the total number of employees in the ICT sector.

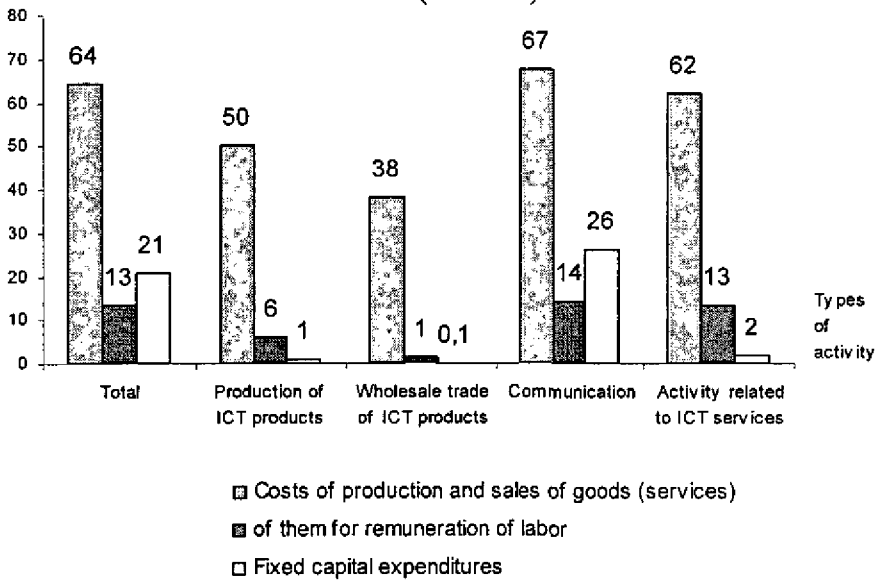
Figure 1.10. **ICT specialists employed by ICT sector enterprises**
(as a per cent to the total number of employees of the enterprises of the appropriate types of activity)



Investments and current expenditures of ICT enterprises

Current expenditures for manufacture and sales of products by the surveyed enterprises amount to 285 billion roubles, permanent investments – 91 billion roubles, intangible assets – 0.3 billion roubles.

Figure 1.11. **Expenditures and investment per 100 rubles of sales**
(in roubles)



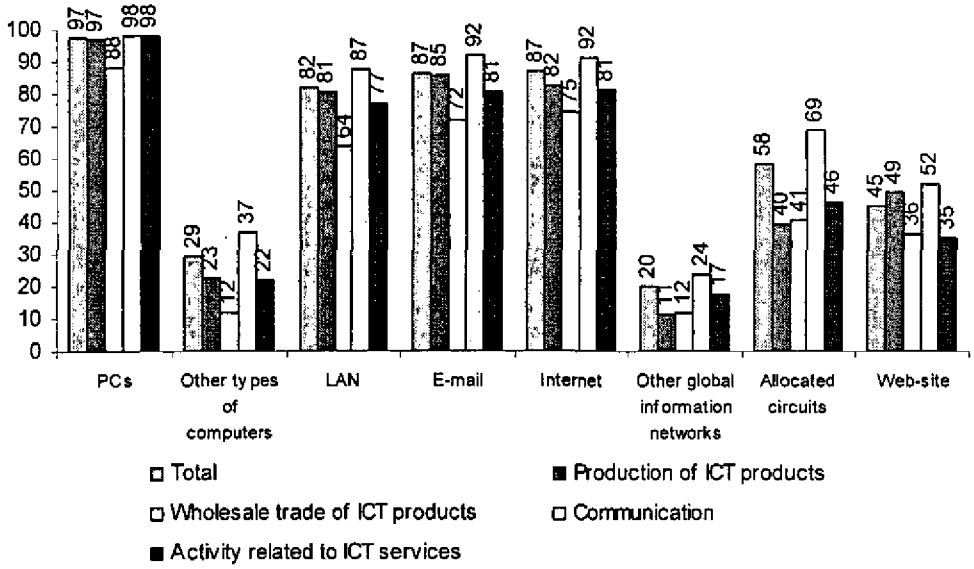
Expenditures for information technologies did not exceed 5% of current expenditures and investments of the enterprises.

Only 0.4% of the total amount of expenditures of surveyed enterprises is spent for research and development. The most active in research are the enterprises conducting business related to the use of computer technique and information technologies. They account for 92% of R&D expenditures. The remaining 7% of the expenditures were incurred by telecommunication enterprises and 1% - by enterprises producing ICT equipment.

Use of information and communication technologies

ICT sector enterprises are not active enough in the use of ICT. Almost 3% of enterprises do not have PC, 13% do not have Internet access.

Figure 1.12. **ICT use by ICT sector enterprises**
(as a per cent to the total number of surveyed enterprises)



The share of employees using PC at least once a week is estimated as 46%, those using Internet – 24%.

The scope of involvement of the enterprises in e-commerce is quite low – only 24% of enterprises arranged sales over Internet in 2005, the share of Internet sales is estimated by the enterprises as 7% of the total volume of sales.

2. STATISTICAL ANALYSIS OF TRAINING OF ICT SPECIALISTS IN RUSSIA

2.1. Development of methodology for statistical assessment of training of ICT-professionals in Russia

One of the necessary conditions of economic growth and ICT-sector development is the training of specialists in information and communication technologies. The lagging behind in this field, the lack of computer specialists and the inconsistency of their skills with the current requirements can result in insufficiently fast development and distribution of ICT and braking of the processes of formation of the Information Society on the whole. In this respect, there is an urgent need in high-quality statistics for the analysis and information support of planning of the development of the professional education in the field of ICT.

Professional education is rather thoroughly studied in the statistics of education. Higher education institutions complete the forms of federal statistical observation, which contain the data on logistics, number of students, enrolment and graduation, number of teachers, etc. Along with this, these observations do not take into account the aspects related to informatisation of the education process, content and dynamics of education programs, including specific features of staff training in the sphere of ICT.

Thus far many methodological problems of statistical investigation of the training of ICT professionals have not been solved:

- there is no standard classification of specialties, which ensure training of professionals in formation technologies of all levels;

- there are no registers of education universities involved in additional training, advanced training and continuing education in ICT;

- there is no system of statistical indicators characterising the scale, quality, demand, level of specialisation, etc. for the training of ICT-professionals.

These factors prevent obtaining of reliable statistical data on the number and quality of trained professionals, their compliance with the market requirements and economic development trends.

2.2. Methodological foundations for the assessment of training of ICT professionals by higher education universities in Russia and the estimate of their number based on the data of existing forms of federal statistical observation

One of the necessary conditions of statistical analysis of training of ICT-professionals is the availability of a unified list of fields and specialties of professional education related to ICT. Such a commonly accepted, approved list is currently unavailable in Russia. To estimate the number of specialists that are ready to satisfy the demands of the economy in ICT staff, different groupings of fields and specialties of higher professional education are used. These groupings differ primarily in the criteria of ranking the fields and specialties to the sphere of ICT. The extreme positions in these groupings are occupied by the lists with a narrow scope of ICT-professionals and a wide scope of fields and specialities, whose education standards include the skills of working with ICT.

The list of ICT-related courses and specialties in vocational education has been developed within this project (Annex 6). It has been developed on the basis of the current Russian Classification of Education Specialities (RCRS) and includes the fields and specilaties of the wide range of in-

formation technologies. The selection principle is training of ICT-professionals, who have a considerable bulk of knowledge in programming and informatics, telecommunications, and are able to work at different stages of the life cycle of developing and implementing the information system both in enterprises developing information technologies, and those introducing and implementing ICT technologies. Depending on the research objective, this list can be used as a basis for forming smaller subgroups of ICT specialties, for example, specialists in telecommunications, professionals in designing information systems, etc.

The list has become not only the basis for statistical tools for the survey of training of ICT professionals, but also made it possible to use the existing forms of the federal statistical observation No3-nk "Information on Federal and Municipal Higher Education Institutions" and No 3-nk (nou) "Information about Training of Degree Professionals in.Non-State Education Institutions" to estimate the number of ICT-professionals trained by higher education institutions of the Russian Federation. The results of the estimate are presented below.

As of the beginning of the 2004/2005 school year, 526 thousand students, which is 7% of their total number, were undergoing training in ICT-related specialities in Russian higher education institutions. The enrolment of students in these specialties amounted to 130 thousand (8% of the total number of enrolled students), graduation – 83 thousand people (7% of the number of graduates). The ratio of enrolment/graduation evidences the increase in the popularity of ICT-related specialties.

Overwhelming majority of ICT staff is trained by state higher education institutions – they train 94% of ICT specialty students (on the whole, for all specialties, the state higher education institutions train 85% of students).

Basic indicators characterising training of ICT-professionals by higher education institutions are presented in Table 2.1.

Table 2.1. **Training of students in ICT-related specialties**

Title	Total number, people			As a per cent to the total number of students in ICT-related specialties			Enrolment as a percentage to graduation
	enrolled	students	graduation	enrol-led	students	graduates	
Total	1640480	7064577	1151645				142
Of which related to ICT	130091	525993	82599	100	100	100	157
Of them:							
Physics and mathematics							
Mathematics. Applied mathematics	418	1230	246	0.3	0.2	0.3	170
Mathematics. Computer sciences	266	783	84	0.2	0.1	0.1	317
Information technologies	258	570	15	0.2	0.1	-	-
Applied mathematics and informatics	1647	6517	1458	1.3	1.2	1.8	112
Applied mathematics and informatics	8571	35380	5407	6.6	6.8	6.5	159
Applied informatics (by branches)	1813	6603	350	1.4	1.3	0.4	518
Information systems' mathematic support and administration	885	5069	1420	0.7	1.0	1.7	62
Applied mathematics and physics	196	875	191	0.2	0.2	0.2	103
Radiophysics	920	4347	740	0.7	0.8	0.9	124

Title	Total number, people			As a per cent to the total number of students in ICT-related specialties			Enrolment as a percentage to graduation
	enrolled	students	graduation	enrol-led	students	graduates	
Radiophysics and electronics	133	619	33	0.1	0.1	0.0	403
Fundamental radiophysics and physical electronics	190	815	110	0.1	0.2	0.1	173
Education and pedagogics							
Informatics	4428	17956	2053	3.4	3.4	2.5	216
Public health							
Medical cybernetics	159	529	15	0.1	0.1	0.0	1060
Economics and control							
Business-informatics	307	673	0	0.2	0.1	-	
Applied informatics	89	311	63	0.1	0.1	0.1	140
Applied informatics by field	21864	83875	9290	16.8	16.1	11.2	235
Information safety							
Information safety	911	3741	249	0.7	0.7	0.3	366
Cryptography	1303	4756	368	1.0	0.9	0.4	354
Computer safety	1141	3725	298	0.9	0.7	0.4	383
Organization and technology of information safety	1004	4003	349	0.8	0.8	0.4	288
Complex protection of information objects of informatisation	472	1669	132	0.4	0.3	0.2	358
Complex information safety of automated systems	25	95	6285	0.02	0.02	7.6	
Power engineering, power engineering machinery construction and electrical engineering							
Electronics and automatics of physical equipment	454	2377	278	0.3	0.5	0.3	163
Metallurgy, machinery construction and metal working							
Technology, equipment and automation of machinery construction	1665	6579	1691	1.3	1.3	2.0	98
Aeronautical engineering and missile-space technology							
Systems of aircraft control	239	1378	232	0.2	0.3	0.3	103
Transport facilities							
Railway automation, remote control and communication	2400	10978	1821	1.8	2.1	2.2	132
Electronic technology, radio technology and communication							
Electronics and microelectronics	1033	4340	948	0.8	0.8	1.1	109
Physical electronics	150	775	139	0.1	0.1	0.2	108
Quantum and optical electronics	0	103	0	-	0.02	-	
Microelectronics and solid electronics	898	4241	814	0.7	0.8	1.0	110
Electronics devices and instruments	608	3491	526	0.5	0.7	0.6	116
Industrial electronics	2096	9044	1352	1.6	1.7	1.6	155
Electronic machinery construction	226	1247	261	0.2	0.2	0.3	87
Micro-system equipment	106	343	12	0.1	0.1	0.0	883

Title	Total number, people			As a per cent to the total number of students in ICT-related specialties			Enrolment as a percentage to graduation
	enrolled	students	graduation	enrol-led	students	graduates	
Design and technology of electronic devices	388	1671	435	0.3	0.3	0.5	89
Design and technology radio electronic devices	1979	10922	2048	1.5	2.1	2.5	97
Design and technology of computing devices	886	3973	586	0.7	0.8	0.7	151
Radio engineering	691	2658	659	0.5	0.5	0.8	105
Radio physics and electronics	288	1205	242	0.2	0.2	0.3	119
Radio engineering	3042	14968	2371	2.3	2.9	2.9	128
Common radio electronic apparatus	750	3613	588	0.6	0.7	0.7	128
Radio electronic systems	829	4112	741	0.6	0.8	0.9	112
Facilities for radio electronic protection	128	557	39	0.1	0.1	0.05	328
Audio visual equipment	485	2062	257	0.4	0.4	0.3	189
Telecommunications	492	2645	525	0.4	0.5	0.6	94
Physics and optical communication facilities	379	1945	332	0.3	0.4	0.4	114
Facilities for mobile objects communication	858	3586	416	0.7	0.7	0.5	206
Protected communication systems	399	1093	93	0.3	0.2	0.1	429
Multi-channel telecommunication systems	2261	9534	1582	1.7	1.8	1.9	143
Radio communication, radio broadcasting and television	946	4301	648	0.7	0.8	0.8	146
Communication networks and communication systems	2547	11116	2010	2.0	2.1	2.4	127
Automation and control							
System analysis and control	416	1505	271	0.3	0.3	0.3	154
Automation and control	1884	7483	1659	1.4	1.4	2.0	114
Control and informatics in technical systems	3933	20860	2965	3.0	4.0	3.6	133
Ship control systems	39	184	13	0.03	0.04	0.02	300
Autonomous information and control systems	227	1037	224	0.2	0.2	0.3	101
Computer-aided technologies and production	8315	38601	6452	6.4	7.4	7.8	129
Automation of technological processes and production (by branches)	684	2703	251	0.5	0.5	0.3	273
Mechanotronics and robotics	702	4156	752	0.5	0.8	0.9	93
Informatics and computer engineering							
Informatics and computer engineering	6042	23447	3691	4.6	4.5	4.5	164
Computing machinery, complexes, systems and networks	7234	31542	4955	5.6	6.0	6.0	146
Computer-aided systems of information processing and control	6264	28366	4439	4.8	5.4	5.4	141
Computer-aided design systems	1625	7795	1230	1.2	1.5	1.5	132

Title	Total number, people			As a per cent to the total number of students in ICT-related specialties			Enrolment as a percentage to graduation
	enrolled	students	graduation	enrol-led	students	graduates	
Software of computer engineering and computer-aided systems	6732	5919	119	5.2	1.2	0.1	5657
Information systems	147	286	15	0.1	0.1	0.02	980
Information systems and technologies	9840	35856	4020	7.6	6.9	4.9	245
Information technologies in education	295	798	0	0.2	0.2	-	
Applied mathematics	1489	6457	741	1.1	1.2	0.9	201

2.3. Tools of statistical survey of professional training in the field of ICT by the higher education institutions of the Russian Federation

As the educational systems differ enormously from country to country, no international harmonised definition of ICT education has been elaborated, as it was done for ICT activities or ICT commodities.

The survey of higher vocational education related to ICT is intended to give information about the informal skills and competences of the citizens. This survey will address the deal with formal ICT education by collecting information about the number of graduates broken down by field of ICT specialty.

HSE has elaborated a list of ICT-related education based on the Rosstat surveys of educational statistics. A list of higher vocational education related to ICT is developed on the basis of the Russian Classification of professions by education (RCPE). This classification comprises the higher and secondary vocational education (accordingly levels 5A and 5B of ISCED).

The organisation and completing the statistical survey of the professional training of ICT-professionals by higher education institutions of the Russian Federation included the following stages:

1. Survey planning:

- Formulation of main survey objectives and expected results;
- Elaboration of the system of indicators in accordance with the survey objectives;
- Development of the survey strategy (sampling, data collection procedure, etc.);
- Development of the questionnaire and guidelines for completing the forms;
- Training of field workers.

2. Survey work, processing of the survey results:

- Interviewing respondents;
- Control and editing of questionnaires;
- Compiling the database and output tables.

Survey objectives

The objective of the survey is obtaining qualitative statistical information characterising different aspects of the conditions and the process of training of professionals in ICT sphere by the higher education institutions of the Russian Federation:

- number of students, enrolment and graduation, combining work and study;

- logistics of higher education institutions;

- provision of staff, information, etc. resources for the education;

- qualification and age characteristics of teachers;

- use of information technologies;

- upgrading of education programs;

- implementation of additional training programmes;

- the role of the higher education institution in job placement of graduates.

The survey was planned to ensure comparison of the obtained survey results for different higher education institutions specialized in training of ICT-professionals and those for which the share of ICT-students does not exceed 50%. The survey was intended to cover all federal districts of the Russian Federation.

System of indicators

To achieve the objective of the survey, the system of indicators on training of professionals in the ICT-sphere by the higher educational institutions has been developed. The structured list of indicators of the system is presented in Table 2.2.

The survey was intended to achieve the following results in the course of data processing:

- ICT specialties;

- attendance (full-time, part-time/distance (evening courses), distance learning, external education);

- share of students of ICT-related specialties.

Table 2.2. **The system of indicators of training of ICT-professionals by higher education institutions**

Title	Unit of measure
1	2
Number of students, enrolment, and graduates	
Enrolment	people
Number of students	
Actual graduates	
Enrolment as a per cent of actual graduates	per cent
Distribution of higher education institutions (as a per cent of total surveyed population) by as-	per cent

Title	Unit of measure
sessment of competition for one free of charge department	
Distribution of higher education institutions (as a per cent of total surveyed population) by assessment of competition for one paid department	
Distribution of higher education institutions (as a per cent of total surveyed population) by assessment of specializations of preparation of experts - the university graduates:	per cent
basically broad spesialists	
basically narrow spesialists	
both	
Share of full-time students who combine studies and work (as a per cent of total number of full-time students):	per cent
Senior students	
Junior students	
Structure of university	
Facilities available at HE institutions which have:	per cent
student dormitory	
library	
e-library	
data-processing centre	
printshop	
Resource adequacy assessment	
Assessment of resources' provision (as a per cent of quantity required):	per cent
Personal computers & other information-processing equipment	
Software & database	
Access to the Internet	
Administrative & managerial staff	
Qualified teachers	
Appropriation for bonus for teachers	
Appropriation for advancing teachers' professional excellence	
Modern curricula	
Teaching & learning sets	
Teaching rooms	
Teaching equipment	
Scientific equipment and apparatuses	
Scientific journals & books	
Distribution of higher education institutions (as a per cent of total surveyed population) by assessment of quality of available resources:	per cent
Personal computers & other information-processing equipment	
Software & database	
Access to the Internet	
Administrative & managerial staff	
Qualified teachers	
Modern curricula	
Teaching & learning sets	
Teaching rooms	
Teaching equipment	
Scientific equipment and apparatuses	
Scientific journals & books	
Teaching staff	
Teaching staff	people
Including multiple job holders	people
Administrative & managerial staff	people
Research assistances	people
Of the total teaching staff:	
teachers hired during the recent five-year period	people

Title	Unit of measure
Of them	
under 30 years old	people
graduates from the university	people
teachers who had research and teaching publications during the recent two-year period:	
research publications	people
teaching publications	человек
of which textbooks recommended by the Ministry of Education and Science printed in 1000 or more copies	people
Use of information and communication technologies	
Number of personal computers & other information-processing equipment	pieces
Number of personal computers & other information-processing equipment, which purchased in the reported year	pieces
Number of personal computers & other information-processing equipment connected to local are networks	pieces
Number of personal computers & other information-processing equipment having access to glob information systems	pieces
of which to the Internet	pieces
Number of personal computers & other information-processing equipment per 100 students	pieces
Share of higher education institutions having access to the Internet, as a percent of total	Per cent
Availability of a Website on the Internet	number
Number of HE institutions using specialised software for:	number
Scientific research	
Legal-reference	
Education	
HE institutions having e-mail	number
HE institutions having dedicated communication lines	number
Number of HE institutions provides programmes of distant education	number
Number of HE institutions which plan to realize programmes of distant education	number
Changing their curricula	
Number of HE institutions which planning to change curricula:	number
within the next year or two	
within the next three to five years	
Number of HE institutions which not planning to change curricula within the next five years	number
Implementation of programmes of additional vocational training	
Number of HE institutions provides programmes of additional vocational education	number
Of which with awarding certificate of correspondence to corporate standards	
Number of HE institutions which plan to realize programmes of of additional vocational education	number
Of which with awarding certificate of correspondence to corporate standards	
Job placement of graduates	
Number of HE institutions using the following forms of cooperation with possible employers and job placement:	number
Involving business into educational programmes financing	
Business investment in equipment, building, and maintenance	
Teaching provided by experts from business	
Involving experts from business into curricula development	
Involving students into practical business activities	
Involving teachers into practical placement	
Financial incentives from business to best students	
Training teachers and students with business training facilities	
Number of HE institutions realizing the following activities aimed at graduates' job placement:	number
Guaranteed assignment	
Career placement actions	
Job fairs	
Cooperation with labour exchanges	
Contracting graduates for business employment	

Title	Unit of measure
Number of HE institutions not realizing the following activities aimed at graduates' job placement	
Distribution of graduates who found job on their own or due to the educational institution (as a per cent of total number of graduates):	per cent
Graduates whose education was paid by employers	
Graduates who found job in advance on their own	
Graduates who found job in advance due to the educational institution	
Graduates who found job on leaving on their own	
Graduates who found job on leaving due to the educational institution	
Share of jobless graduates (as a per cent of total number of graduates)	per cent

Survey strategies

The first issue in planning the survey was the identification of the sources of data for the list of general population of surveyed universities. Upon examination of the existing statistical surveys of higher education institutions, it has been decided to take the list of higher education institutions used by the Federal State Statistics Service as a basis of the survey (according to forms No3-nk "Information on Federal and Municipal Higher Education Institutions" and No 3-nk (nou) "Information about Training of Degree Professionals in Non-State Education Institutions").

The higher education institutions whose names suggested that they train ICT professionals were selected from the list. This aggregate was split into federal districts. For each district, 100 higher education institutions, the survey objects, were selected by random sampling. In this case, the representativeness of the federal district in the survey was determined proportionally to the total number of higher education institutions within the territory.

The second question of survey planning was data collection tool: an inquiry or a questionnaire. The second way was selected.

Questionnaires can be sent to respondent to completing as self-assessment or field workers can interview respondents to obtain answers to questions and complete the questionnaire. In our case, it was decided that field workers should bring questionnaires to chief executives of higher education institutions, perform briefing on completing the questionnaire and leave the questionnaire for completing. As soon as the questionnaire is completed, it is handled to the field worker who carries out logical and quality check.

The above system of indicators of training of ICT-professionals by higher education institutions and the decision on the use of the questionnaire have become the basis for the development of the observation form. The questionnaire is presented in Annex 7.

The following guidelines explaining completion of the indicators were developed for field workers (Annex 8).

Survey work and processing of survey results

As the survey of ICT-enterprises, the survey of higher education institutions training ICT professionals was performed by the expert group that has representatives in all Russian regions and was trained at HSE.

It was assumed that answers will be provided by the chief executives of higher education institutions. A letter inviting higher education institutions to take part in the survey was sent to selected higher education institutions. The letter contained the questionnaire and the explanations for

completing the questionnaire for field workers. 60 higher education institutions agreed to take part in the survey. Their distribution over the subjects of the Russian Federation is presented in Annex 9.

When the survey was over and the completed forms were checked, a database of the survey results was compiled. The output tables with the results of the survey are presented in Annex 10.

2.4. Results of pilot study based on a statistical questiounaire "Training of ICT professionals by higher education institutions"

Analysis of all stages of preparation and running the survey yielded the following conclusions and proposals.

1. The questionnaire used was of combined character – it contained both statistical and sociological indicators. At the same time – the procedure and time frames of the survey (interviewing respondents by field workers) were more suitable for a sociological survey. This resulted in a number of difficulties related to filling in statistical indicators, which require more time for completing (for example, the number of personal computers, and number of teachers). Though the preliminary sending out of the questionnaire to the chief executives of higher education institutions was an advantage.

Therefore, when running such surveys in the future it is advisable to send statistical questionnaires to respondents for filling in and allocate at least three weeks for this task.

2. The survey proved that a more detailed development is needed for the methodology of filling in of the questionnaire. Thus, for example, many questions were invoked by the indicator of availability of personal computers and monitors (shall information monitors, or computers used for administration purpose be taken into account, etc.).

3. Analysis of completed questionnaires raised doubts about the expediency of inclusion of the following indicators in the future surveys:

   a. Share of teachers who authored manuals and tutorials classified by the Russian Ministry for Education and Science with circulation of above 1000 copies (the higher education institutions referred to the absence of such information, the indicator was not completed by one third of universities);
   b. Specialists trained by the university – mainly "wide" or "narrow" specialists, or both (the difficulty was related to the fact that the question was addressed to the higher education institution on the whole, while it should have been considered at the level of different directions of training);
   c. Evaluation of the job placement of graduates (the answers were of rather subjective character).

4. The period of the survey – August (summer vacations and work with enrollees) is not the most suitable time. The optimal time would be October-November.

The Table 2.3. presents data on the rate of completing the questionnaire indicators. It includes the questions that should have been completed by all higher education institutions (60) and that did not have a "0"-option.

Table 2.3. **Response rate for particular questions**

Title	Indicator's line number	Indicator's column number	Number of higher education institutions that have not filled in the indicator
Number of students	201	9	0
Number of graduates	201	7	10
Enrolment	201	5	3
Competition for free of charge department and competition for paid department:			
Free of charge department	218	3	1
Paid department	219	3	0
Assessment of resources' provision (as a per cent of quantity requared):			3
Personal computers & other inforvation-	301	3	4
Software & database	302	3	4
Access to the Internet	303	3	4
Administrative & managerial staff	304	3	4
Qualified teachers	305	3	4
Appropriation for bonus for teachers	306	3	5
Appropriation for advancing teachers' professional excellence	307	3	5
Modern curricula	308	3	5
Teaching & learning sets	309	3	4
Teaching rooms	310	3	4
Teaching equipment	311	3	4
Scientific equipment and apparatuses	312	3	3
Scientific journals & books	313	3	4
Quality of available resoursces:			1
Personal computers & other inforvation-	301	4	2
Software & database	302	4	2
Access to the Internet	303	4	2
Administrative & managerial staff	304	4	2
Qualified teachers	305	4	1
Modern curricula	308	4	2
Teaching & learning sets	309	4	2
Teaching rooms	310	4	2
Teaching equipment	311	4	2
Scientific equipment and apparatuses	312	4	2
Scientific journals & books	313	4	2
Number of teaching staff:			
Teaching staff	314		0
Including multiple job holders	315		7
Administrative & managerial staff	316		9
Research assistances	317		15
Other	318		14
Age of teachers	319-323		0
Number of personal computers	401	3	0
Access to the Internet	411-414		0
Who graduates the university — broad spesialists or narrow specialists	615-617		1
Estimate the share of students who combine studies and work:			
Senior students	619	3	0
Junior students	620	3	0
Estimate of assignment of graduates	621-626		8

Despite the problems stated above, the survey provided rather comprehensive information on the conditions of training of ICT specialists (logistics situation in the higher education institutions, including the availability and quality of the university resources, qualification and age distribution of teachers, the extent of use of information and communication technologies), updating of education programmes, etc. The survey results make it possible to estimate the demand for ICT-professionals, the interest of employers in their training, the assistance of higher education institutions to graduates in job search.

2.5. Analysis of results obtained in surveying vocational training of ICT professionals by higher education institutions

The survey of higher education institutions involved in training of ICT specialists made it possible to obtain many-faceted information on the conditions and quality of training, to estimate the demand for graduates at the labour market and the assistance of education institution to graduates in employment. Main results of the survey are summarized below (detailed results are presented in Annex 10.).

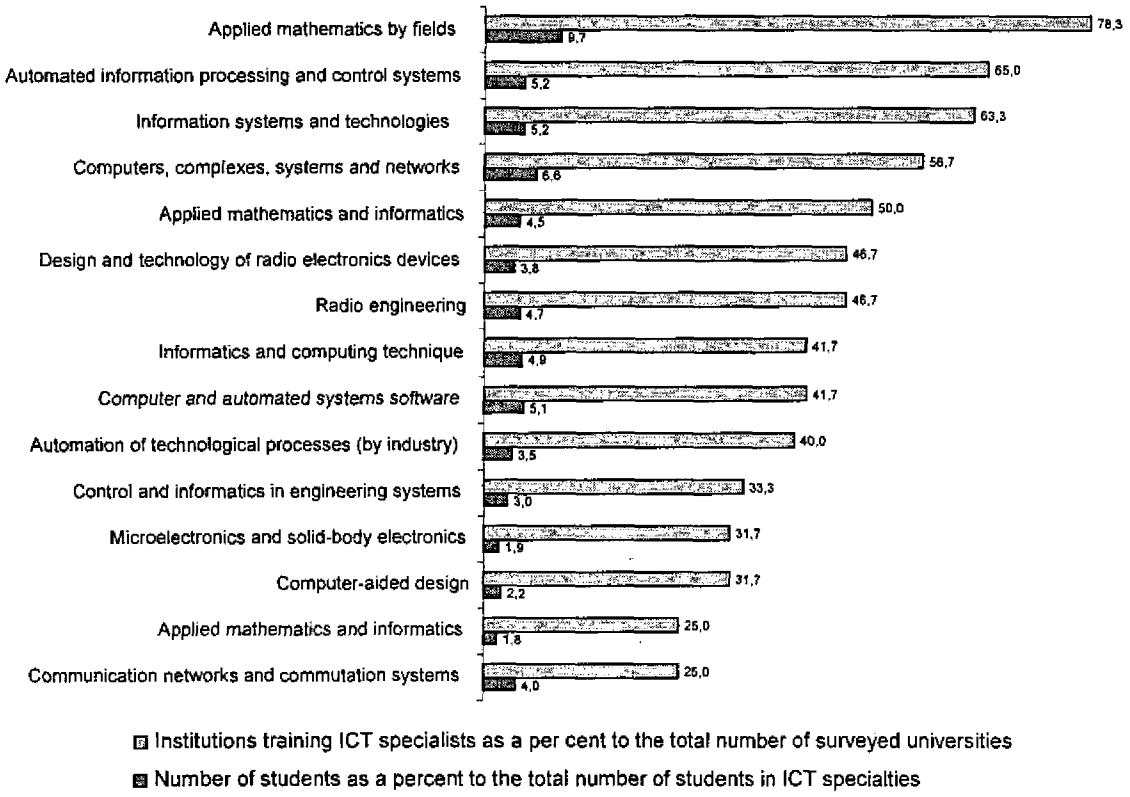
General description of the survey

As much as 534 thousand students (of the total number of 7065 thousand in Russia), of which 117 thousand are trained to become ICT specialists, study in 60 higher school institutions (of the total number of 2689 higher education institutions and their branches in Russia) that were engaged in the survey.

The surveyed universities cover one fifth (22%) of the total number of students being trained in the field of information and communication technologies in Russian higher education institutions. Furthermore, in such specialties, as applied information science ship control systems, software for computing equipment and automated systems, and microscopic systems, the coverage reaches from 90 to 100%, i.e., the survey encompassed almost all higher education institutions running training in these specialties. The survey covered over a half of the number of students in such specialties, as radio communication, broadcasting, basic radio physics and physical electronics, business informatics, radio engineering, quantum and optical electronics, electronics and microelectronics, microelectronics and solid-body electronics, electronic equipment and devices. Higher education institutions training students in the following ICT specialties were not included in the survey: applied mathematics and physics, informatics, medical cybernetics, antisnooper equipment, aircraft control systems, automation, railway teleautomatics and communication, and radioelectronic combat devices.

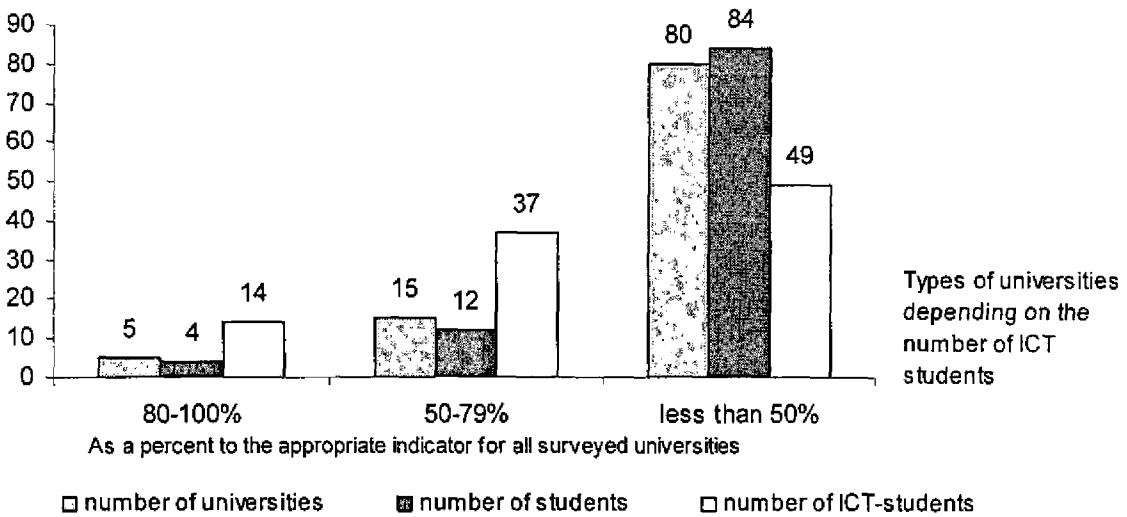
The most widely spread ICT specialty in surveyed higher education institutions is applied informatics. As much as 78% of universities train students in this specialty. Figure 2.1 presents the list of most popular ICT specialties.

Figure 2.1. **The most popular ICT specialties in surveyed universities**



As to the level of specialisation of universities in training of ICT specialists, it is not very typical – only in 5% of universities the share of ICT students is at the level of 80–100% of their total number in the universities, in 15% of universities – the share is about 50-79%. The share of the students of these universities in the surveyed sample of ICT students is 51%. The distribution of surveyed universities by the share of ICT students is presented in Figure2.2..

Figure 2.2. **Distributions of universities and number of students in the universities by the specialisation in training of ICT specialists** *(%)*

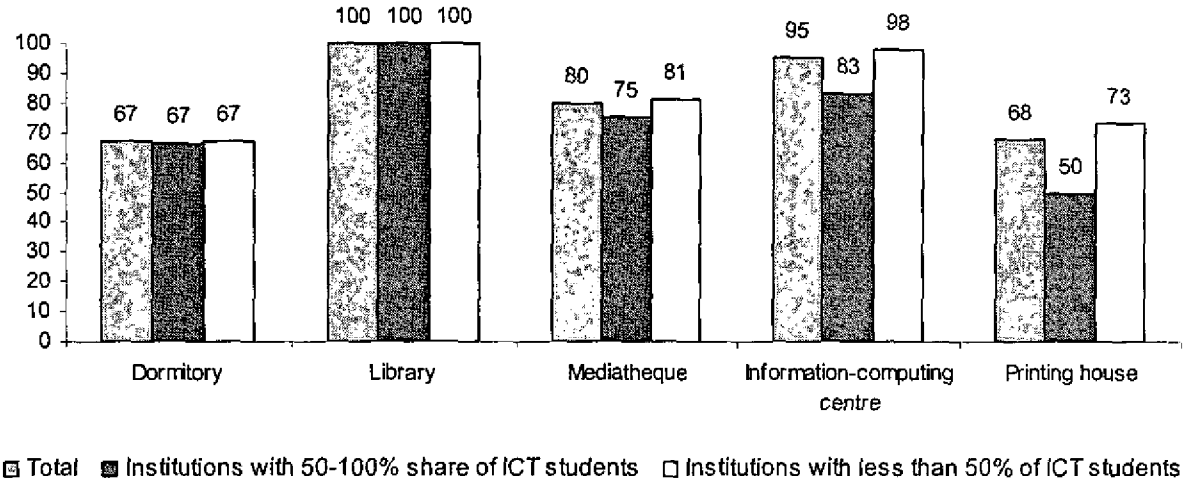


Material and technical basis of higher education institutions

Two thirds of surveyed universities have dormitory, 68 % - printing house, 95% - computing centre. All surveyed universities have library, among them 80% have mediatheque.

The survey proved that the level of equipment of the universities by mediatheques, computing centres, and printing houses is higher in the universities that are specialised in training of ICT specialists (see Figure2.3.).

Figure 2.3. **Material and technical basis of surveyed higher education institutions** (number of universities that have at their disposal the appropriate element of material and technical basis, % to the total number of surveyed universities)



Availability of human, information and other resources for the training process

The estimate of the heads of surveyed universities for the provision of human and information resources was low.

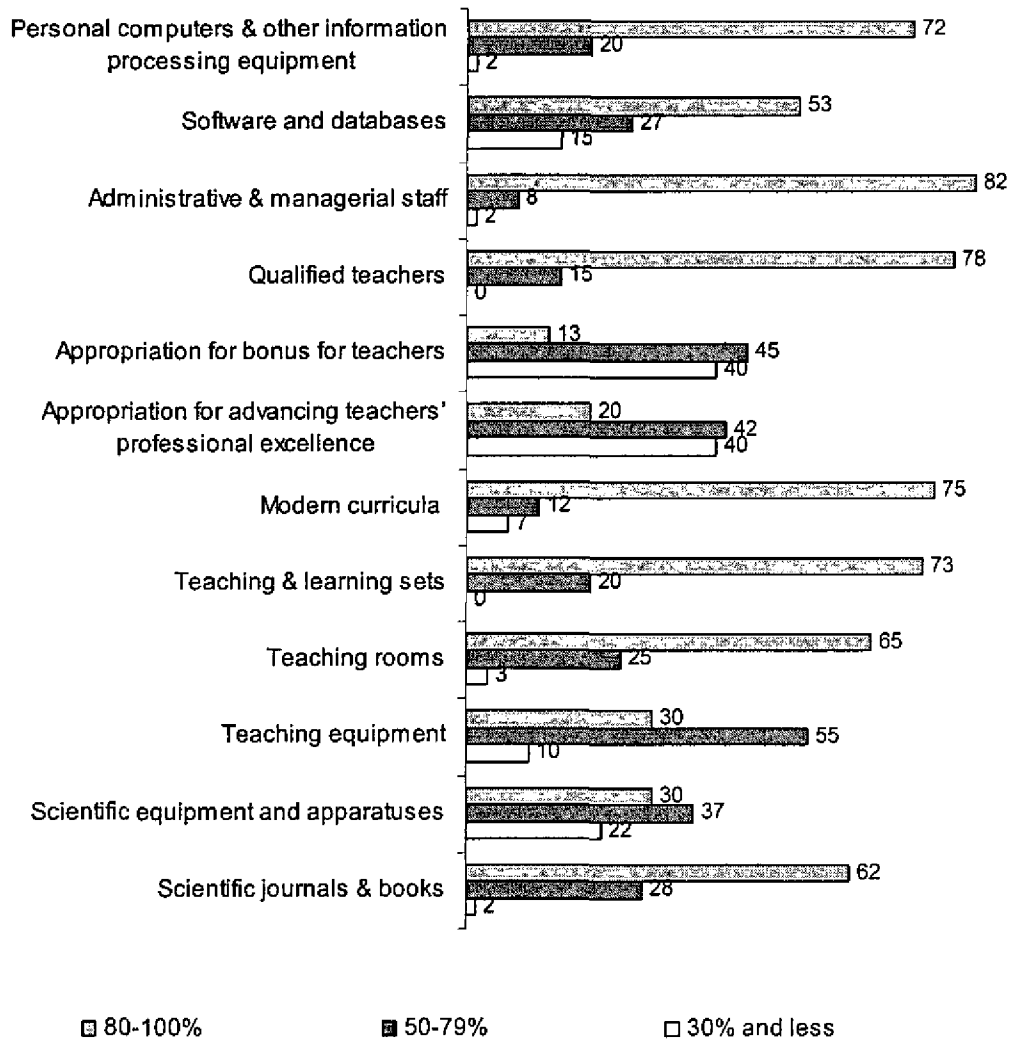
Provision of computers and other computing technique, as well as software, to support training process was on the average estimated in surveyed universities as 67-78% of required level, Internet access – as 82%.

Availability of means for encouraging teachers and opportunities for advanced training career is at the lowest level (44-48%) in the universities. Furthermore, the level of availability of high qualification teachers was estimated as 83% of required level.

The heads of the surveyed universities are quite optimistic about the level of availability of training equipment and devices, and scientific literature - 90-92% of required level.

Figure 2.4. **Distribution of universities according to the estimates of availability of resources**

(% to the total number of surveyed universities)



Qualification and age characteristics of teachers

The largest age group is 40 – 59 years; 49 % of teachers belong to this group. The extreme age groups – below 30 and 60 years and older – count 14-15% of teachers each.

The rate of replacement of teachers during the last five years was 15% (as a per cent to the total number of teachers for the end of the period). Of them teachers below 30 years comprise only 3%. As a rule, these are graduates of the same higher education institutions.

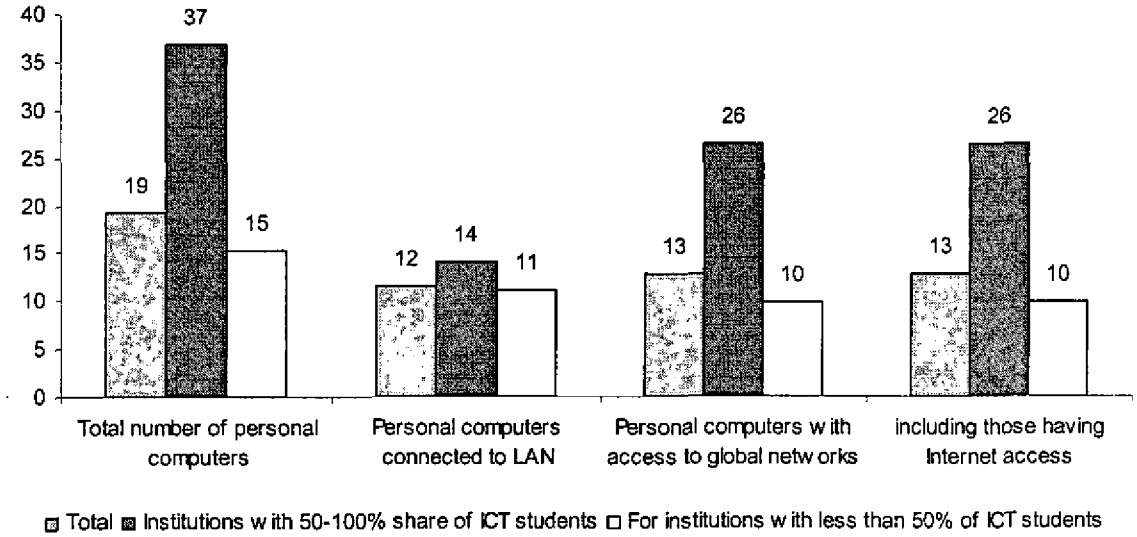
Teachers are rather active in preparing scientific and scientific-methodological publications – during the last two years 73% of teachers were involved in this activity. Of them more than 6% authored manuals and tutorials under the auspices of the Russian Federation for Education and Science that were printed in more than 1000 copies.

Use of information technologies

Significance of ICT technologies implemented in the course of training process is undoubted.

All surveyed universities are equipped with PCs and have Internet access. At the same time ICT accessibility for students is still low – there are 19 computers for 100 students, of them 12 are connected in local networks and 12 have access to global networks. For the universities specialised in training of ICT specialists the level of availability of personal computers, including those with Internet access, is twice as high as in other higher education institutions.

Figure 2.5. **Provision of personal computers to students**
(number of personal computers per one hundred students, units)



Upgrading of computer park during the last year amounted to 17 % (new as a per cent to available computers for the end of the period), in particular, in the universities with the share of ICT students of 50-100% – 26%, in other higher education institutions - 13%.

Higher education institutes are rather active in using special software. All universities with the share of ICT students between 50 and 100% mentioned availability of special software for research purposes, training aids, information systems, etc. As to the other universities, the use is at the level of 92-98% of the total number of appropriate universities.

Some 95% of surveyed universities have e-mal address.

Slightly less than 78% of universities use dedicated circuits for Internet access.

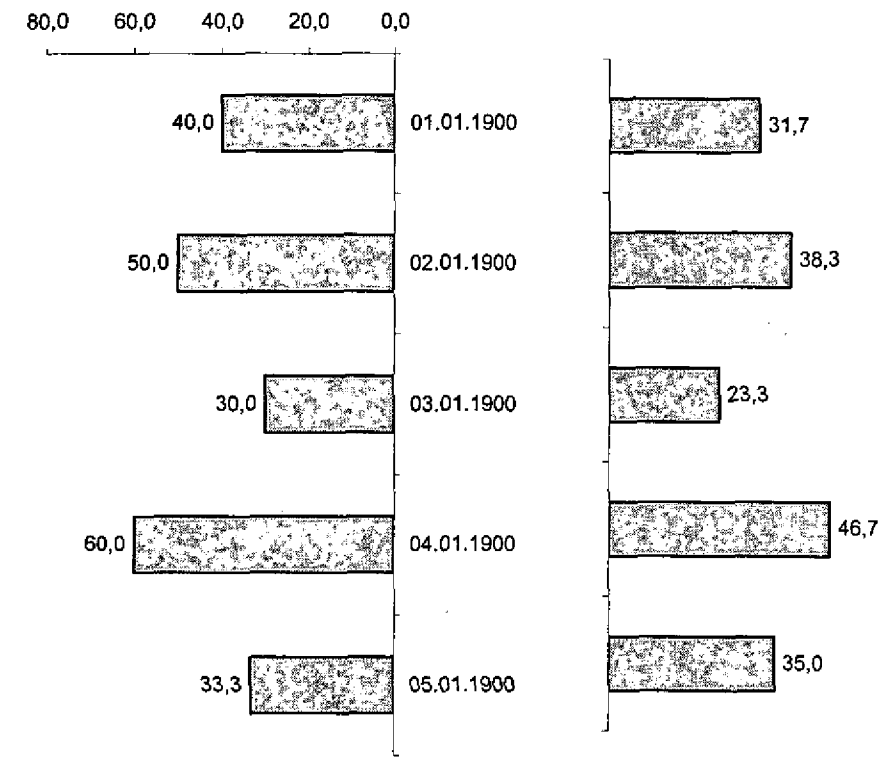
Availability of website was reported by 93% universities.

Updating of education programmes and implementation of additional vocational training

About 80% of surveyed higher education institutions plan to change the structure of education programmes. Figure .. presents the distribution of universities by the character of changes.

Figure 2.6. **Distribution of higher education universities by the Change of structure of education programmes**

(as a per cent to the total number of universities)



Programmes of additional vocational training are carried out by 83% of surveyed universities, 12% of universities plan to introduce them.

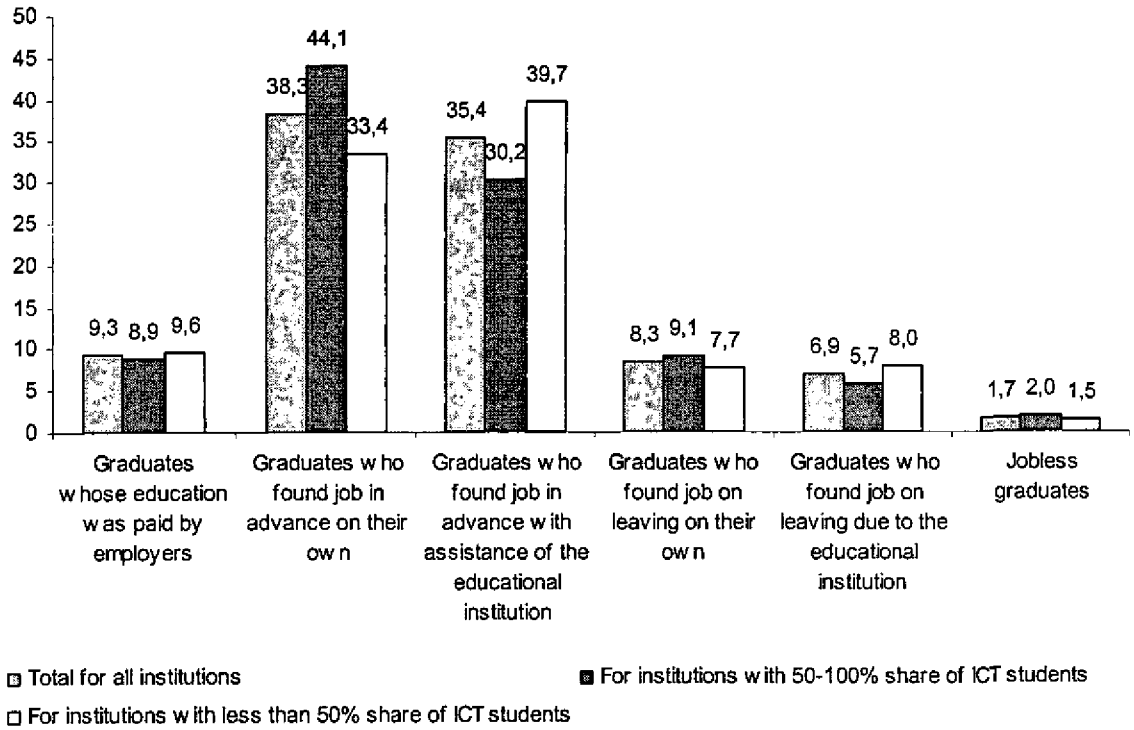
Assistance to graduates in job placing

Guaranteed employment of graduates is arranged by 7 of 60 surveyed universities (12%). These universities train about 17% of students. Some 47% of universities conclude agreements with enterprises in order to employ their graduates (the share of students of these universities amounts to 83%). As to the measures undertaken by the universities to assist in employment of graduates: 48% universities arrange Career Days, 65% - Vacancy Fair, 52% cooperate with employment agency.

Main forms of cooperation between higher education institutions and potential employers are as follows: organisation of practical training for students at enterprises (reported by 93% of universities), lectures and lessons delivered by representatives of enterprises (78%), attraction of financial means to purchase equipment, repair and construct buildings (47%), probation of teachers at enterprises (47%), awards for students papers, employer's incentives for best students (45%). Attraction of financial means dedicated for funding of education programmes and use of institutional training base by students and teachers were reported by 35% of universities each.

Within the framework of the survey the heads of universities estimated the employment of graduates. The estimate proved that the majority of graduates (47%) find job on their own, slightly more than 40% - with the assistance of the higher education institution. According to the estimate some 2% of graduates fail to find job immediately after graduation.

Figure 2.7. **Employment of graduates of higher education universities**
(as a per cent to the total number of employees)



3. METHODOLOGICAL DESCRIPTION OF THE SURVEY OF ICT USE BY THE POPULATION OF THE RUSSIAN FEDERATION

3.1. Analysis of the programme and tools for the assessment of population ICT-skills implemented in EU countries and in Russia

Eurostat experience in surveying ICT usage by households

The survey on ICT usages by households and individuals is one of the core statistics on the Information Society that monitors the diffusion of ICT amongst the citizens and different patterns of using the possibilities offered by the technology. During the past years, the survey questionnaire has been developed to a comprehensive survey tool including several aspects of the Information Society such as access to devices and Internet, frequency and purposes of Internet use, e-commerce and e-skills. The indicators to be established based on this survey are crucial in understanding the development and integration of a country into the global Information Society. Consequently, the indicators based on this survey form an important part of the e-Europe indicators.

The procedure of assessment of ICT skills of the population, which is a constituent part of Information Society surveys, has been thoroughly developed in EU countries. The main objective of users of this information – governmental and intergovernmental institutions – is to stimulate the process of informatisation and to tune its progress in order to accelerate economic growth. The population survey methodology is characterised by explicit technocratic approach. Weakening of social and psychological tensions is the secondary task that contributes to the achievement of the main objective.

The factors fostering and decelerating the informatisation via the Internet shall also be studied. Their influence can be observed in differences between the countries and (which, in our opinion, is even more important) between different layers of the population of these countries with respect to the following parameters:

- the level of proficiency in new technologies to enable higher quality access to the Internet;

- the coverage of opportunities provided by the Internet,

- the scales of replacement of traditional means of communication, work, entertainment, information retrieval, shopping, etc. – by new forms – via the Internet.

Therefore, **the first underlying methodological principle** for such surveys is **the consistency of the technique used** in order to provide comparability of results. Any changes are to be discussed by the agencies of all countries involved in information gathering and a collective decision is taken; the plans for the perspective are approved, for example, currently - till 2010. The consistency in the technique of studying EU countries is quite feasible because cultural and technological differences between the countries are subtle and the majority of the population of these countries is already covered by the informatisation process.

The most complicated aspect of studying the Information Society is rapid change of technologies, at the same time, without registering them it is impossible to reveal informatisation parameters. To overcome the difficulty, **the second and third methodological principles – module structure of questionnaires** and **monitoring character of the surveys (annual surveys)** have been introduced. To implement the objectives the questionnaire for the population is split into modules – groups of questions whose subjects are the operational solution of the manifestation of the informatisation parameters. When the technologies (understood in a wide sense – techni-

cal, social, economic and political) are changed, both the questions and answers can be changed, and even, much less often, the whole modules can be removed or added. For example, in the new large "e-Government" module was tested in 2006, however, in 2007 these subjects were again reduced to three version of the wide-scale question on the direction of use of the Internet. Another novelty, which, in our opinion, was applied more successfully, was introduction in 2006 of the mobile phone in the scope of surveyed information means, which was reflected in the title of the module B. Still the main object of regard of researchers is the use of the Internet as a new cultural reality (though virtual), whereas the use of the mobile phone was introduced only to study one of the means of Internet access that is becoming more and more popular.

Among other factors affecting the process of informatisation, important parameters are social-demographic, geographical features of specific countries and different layers of the population. All these difficulties are registered in the final module of the questionnaire for the population.

As a result, today the main indicator for the survey of the Information Society in EU countries – the Eurostat questionnaire for the population - consists of the six modules:

Module A: Access to Information and Communication Technologies

Module B: Use of mobile phone and computers, location and frequency of use

Module C: Use of the Internet

Module D: Internet commerce details: activities and barriers

Module E: e-Skills

Module F: Socio-demographic background variables

Experience of surveying informatisation of households in Russia

In Russia, the share of population involved in the process of informatisation via the Internet, is not as great, but it increases rapidly. Thus, according to the survey results obtained by the authors of this report, in 1998 , the share of Russian citizens who ever used the Internet did not exceed 7%[4] (active users, i.e., those who browsed the Internet at least once a month, amounted to about 1%); five years later, in 2003, it increased almost tow-fold – 13%[5] (9% of active users); three more years later, in 2006, according to the results of the survey, this indicator increased by factor of three and was equal to 21% (active users – 13%).

Eight years ago such representative population surveys made no sense because of the very small share of this new layer – Internet users (the data on the increase were comparable with the sampling error for such surveys), however, motivation aspects could already be studied then to understand the tendencies of public opinion – whether it has been formed with respect to the Internet and computers, which attitute – positive or negative – prevails. According to the results of

[4] According to the survey of VCIOM (today Levada Center) carried out under the request of the Ministry of Science and Technology in June 1998, as much as 1000 people aged from 13 to 65 have been interviewed.

[5] Gokhberg L., Shuvalova O. Russian Public Opinion of the Knowledge Economy: Science, Innovation, Information Technology and Education as Drivers of Economic Growth and Quality of Life. The British Council, 2004.
The survey carried out in May 2003 covered 2107 representative sample of social and demographic and territorial groups with respect to gender, age (aged 16 and above), education level, macroregions of Russia and types of localities. Fieldworks were performed by VCIOM-A (today Levada Center).

the survey of 1998, at that time there was a considerable bias against computers, and the opinions were strongly polarized, since the interest to the Internet was almost nonexistent. Thus, only 5% of families had computers at home and few (2% of respondents) planned to buy computer in the nearest future. Only 38% of respondents agreed with the statement "*I am delighted by computers*", while 34% disagreed with the statement, while the statement "*I am very much interested in the Internet*" was not supported by 64% and was supported by only 13% of respondents.

A revulsion of the public opinion occurred only after 2000. By 2003, the Internet-audience has become wide enough to ensure representative sociological surveys. This new trend becomes prestigious for many sociological companies (almost as prestigious as political ratings); the survey results are published at the websites of these enterprises. Thus, according to the data of ROMIR Monitoring, in early 2003 the share of Internet users was 10%, while by summer 2006 this share increased to 22%[6]. According to the data of Public Opinion Foundation, by autumn 2002 the share of Internet users was about 8% of adult population of Russia, by spring 2006 this indicator reached 21%[7].

When comparing these data, great difference is observed only at the initial stage of the surveys, by 2006 the values of the indicators level out. The procedures used by the three recognized companies for representative All-Russia surveys have significant differences. The common feature is only the selection principle. All three companies use stratified random multistage sampling. It is important to adhere to these principles, since there are great differences between different layers of the population residing in different regions and different type of localities.

The difference consists primarily in the sample size. The smallest sample is used by the ROMIR Monitoring – 1600 respondents. Levada-Center surveys 2100 people plus additional sampling of 300 people in Moscow. The most impressive sample is used by the Public Opinion Foundation, which compiles data for six representative surveys of adults in the Russian Federation (each survey covers 3000 people); as a result, the sample is 18000 people (which makes the study much more expensive). In standard surveys, normally the number of subjects of the Federation is reported (ROMIR Monitoring – 45, Public Opinion Foundation - 63, Levada-Center – 38), the companies also regulate some other sample parameters (for example, ROMIR Monitoring and Public Opinion Foundation specify the number of localities – 107 and 203, respectively; Levada-Center specifies the types of localities – 35 region centres, 38 urban settlements and 30 rural zones; finally Public Opinion Foundation and Levada-Center specify the lowest level - electoral precincts – 314 and 200). The age of surveyed respondents varies: ROMIR Monitoring and Public Opinion Foundation interview people aged 18 and over, while Levada-Center – aged 16 and over. It should be noted that ROMIR Monitoring specialises in surveys of Internet audience. At the same time Levada-Center guarantees representativeness of data (due to the use of weighting procedure) with respect to gender, age, education level, region, type of locality and political affiliation (based on the last elections).

The methods of gathering information also differ: ROMIR Monitoring and Public Opinion Foundation carry out structured interviews, while Levada-Center use the method of completing self-assessment questionnaires by respondents. The method of interview is of more insisting character than self-assessment questionnaire – the respondent shall provide content-rich answer, even if he/she is not always sure of the answer. The point is that he/she does not see options for answers and even if the list is available, then there are no options "don't know" and "cannot

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[6] Representative national sample is N=1600. Source: the website of ROMIR Monitoring http://www.rmh.ru/news/res_results/294.html

[7] Unified data for size representative surveys of adult population of Russia, N=18000. Source http://bd.fom.ru/report/map/projects/internet/internet15/int0602#Abs1.

tell", whereas in completing self-assessment questionnaires, the person always has the options at his disposal.

The three centres carry out population surveys about the Internet, but reaching the representativeness of Internet users is still too expensive for Russia, therefore, the sociological centres reduce the number of questions in the questionnaire or run special surveys with purposive samples.

ROMIR Monitoring, though its sample representing the Russian Federation is small, provides precise information on the structure of users, while more specific problems are solved by the Centre in special surveys – weekly all-Russia polls of Russian Internet-users "Online-Omnibus" (sample – 1500 respondents aged 14 and above); quarterly project "Internet Monitoring". Thus, for example, in the 2nd quarter of 2006 2641 respondent aged 12 years and over was surveyed. The places and ways of Internet access, costs of Internet access from home, and preferable ways of Internet-access from home were examined. Moreover, the results of the single survey of customers of online shops[8] are of interest.

The Public Opinion Foundation separates Internet users from the compiled sample of respondents (within six surveys) – thus, a huge array is obtained, for example, in spring 2006 – 3780 respondents. However, the scope of questions is quite narrow – number of users, frequency and place of access, as well as the number of potential users[9].

3.2. Development of organisation-methodological basis for the survey of ICT-skills of the population of the Russian Federation

The problem description

Examination of ICT skills of the population should identify the level of information culture in Russia compared to other countries and the coverage of population by the objects of information infrastructure. This problem is urgent for several reasons. From the viewpoint of economic growth, the ability of employees to use up to date information technologies improves their own opportunities and on the whole the opportunity of their country in international economic competition. From social viewpoint, informatisation is an important way of integration of the Russian population in the European community by means of virtual access, which is very topical for the Russians upon 70 years of political vacuum, material constraints and due to enormous distances, moreover, the independent network satisfies information needs, which is extremely important due to the tendency of political limitations of mass media. Despite the low level of informatisation, possibilities for overcoming information underdevelopment of Russia are rather high, primarily due to rather high standards of basic schooling and governmental efforts in the sphere of informatisation of secondary and higher education. This process should be monitored in parallel with informatisation of developed countries.

However, today no complete statistical information is available on the skills of use of ICT by the population of the Russian Federation that would be comparable with the public statistics and collected on a regular basis.

Therefore, the **objective** of this work was to develop the methodological basis for the survey of the skills of ICT-use by the population of the Russian Federation on the basis of international standards. To achieve the objective, the following **tasks** were formulated:

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[8] The total number of 2426 customers and visitors of online shops aged 14 years and over was surveyed (http://www.rmh.ru/news/res_results/189.html).

[9] http://bd.fom.ru/report/map/projects/internet/internet15/int0602#Abs1

– to study the experience of surveys to assess the skills of the ICT-skills of the population applied in EU-countries – the programme, tools, the systems of indicators, etc.,

– to adjust European tools to the estimate of population ICT-skills as applied to the Russian Federation;

– to test the tools;

– to analyse the results primarily in the methodological aspect and to draw conclusions on the feasibility of further use of the developed tools.

Development of the system of indicators

The system of indicators was formed in accordance with the survey objective. A broad definition of e-skills in EEC countries includes:

- practitioner skills required for developing, operating and maintaining ICT systems;
- end-users required for the effective applications of tools in support of work;
- e-Business skills, includes the capabilities needed to exploit opportunities provided by ICT to ensure more efficient and effective performance of different types of enterprises, to explore possibilities for new ways of conducting business and organisational processes, and to establish new businesses[10].

This definition is quite applicable to the Russian situation. Therefore, Eurostat questionnaires of 2005, 2006, and 2007 were taken as the basis for the tools under development. Further analysis of the tools (comparison with European questionnaires) is based on the numbering of the Eurostat questionnaire of 2007 (since from year to year the numbering of the modules and numbering of questions within the modules varied. The number of question in the Russian questionnaire follows in brackets).

Module A: Access to Information and Communication Technologies

The technique of module A uses wider lists of technologies typical of questionnaires of 2005 and 2006, and even wider. This is due to the lack of data on the availability of computers and other devices underlying the process of informatisation. This means that the "home infrastructure" is studied, as well as barriers to informatisation, including the lack of Internet access within the region.

A1. (Q 1) Availability of access to ICT in households (availability of devices). The following devices were taken into account:

1 Phone
2 Mobile phone
3 Fax
4 Television (except digital)
5 Digital TV
6 Games console
7 Satellite dish
8 Cable TV
9 Videocamera (other than digital)

[10] "eSkills for Europe: Towards 2010 and Beyond", Synthesis Report of the European e-Skills Forum, September 2004, See: http://europa.eu.int/comm/enterprise/ict/policy/doc/e-skills-forum-2004-09-fsr.pdf

10 Digital videocamera
11 Camera (other than digital)
12 Digital camera
13 Desktop computer
14 Portable computer (laptop)
15 Handheld computer (palmtop)

The list is even wider than in the Eurostat questionnaires 2005 and 2006. Developers of the Eurostat questionnaire 2007 removed all items except for computers. For Russia, the complete list was used, because the data on the dynamics of these indicators since 2003 are needed.

A2. (Q2) Possibility of Internet connection (availability). Basic question for Eurostat questionnaires.

1 Yes
2 No

A5. (Q 3) Barriers to Internet connection (occurrence of barriers). Formulation of the questioned and the list of barriers are borrowed from Eurostat questionnaire 2005). In later European questionnaires the formulation of the question has been narrowed – the reasons for broadband connection are studied. The population of Russia is not ready to answering this question. Moreover, the questionnaire was supplemented by:

1 There is no access to the Internet in our region, house
2 Don't want Internet
3 Don't need Internet
4 Equipment costs too high
5 Access costs too high
6 Lack of skills
7 Privacy or security concerns
8 Have access to the Internet elsewhere

Module B: Use of mobile phone and computers, location and frequency of use

The B block completely complies with the Eurostat procedure. The use of main information means of Internet access by individuals is examined – the use of personal computer (the frequency and place of access) and mobile phone.

B1-B2. (Q 5-6). The frequency of use of personal computer (user activity)

1 Every day or almost every day
2 At least once a week (but not every day)
3 At least once a month (but not every week)
4 Less than once a month

B3. (Q7). Places of use of personal computer (frequency)

1 At home
2 At place of work (other than home)
3 At place of education
4 At other person's home
5 Other (e.g. library, hotel, airport, Internet café, etc.)

B4. (Q4) Use of mobile phone (share of users)

1 Yes
2 No

Module C: Use of the Internet

The C block is completely identical to the Eurostat procedure. It examines the use of the Internet by individuals – frequency, access places and purposes of use.

C1-C2. (Q8-9). Frequency of Internet access (activity of users)

1 Every day or almost every day
2 At least once a week (but not every day)
3 At least once a month (but not every week)
4 Less than once a month

C3. (Q10). Places of Internet access (frequency)

1 At home
2 At place of work (other than home)
3 At place of education
4 At other person's home
5 Public library (e.g. library, hotel, airport, Internet café, etc.)
6 Post office
7 Public office, town hall, government agency
8 Community or voluntary organization
9 Internet club, Internet café, etc.
10 Hotspot (at the airports, stations, in hotels, restaurants, at exhibitions, etc.)

C4. (Q11) Mobile Internet (rating of mobile access means)

1 Mobile phone via WAP or GPRS
2 Mobile phone via UMTS (3G)
3 Handheld computer (palmtop)
4 Portable computer (laptop)

C5. (Q13). Purposes of Internet access (frequency). The list is identical to the European questionnaire. Only one option was added to the list of questions on Government – consultations on-line.

Communication

1 Sending / receiving e-mails
2 Telephoning over the Internet / videoconferencing
3 Other (use of chat sites, etc.)

Information search and on-line services related to ...

4 Goods or services
5 Tourism
6 Listening to radios / watching television

7 Playing or downloading games, images, music, films
8 Downloading software
9 Reading news, newspapers, magazines
10 Keeping of the personal information on the specialized sites
11 Looking for a job or sending a job application
12 Other information search

Selling of goods or services, banking

13 Selling goods or services (e.g. via auctions)
14 Banking

Interaction with government and municipalities (administration at national, regional and city level)

15 Obtaining information about the schedule of such organizations
16 Downloading official forms, samples of documents
17 Sending in filled forms
18 Consultations on-line

Education and training

19 Looking for information about education, training or course offers, etc.
20 Consulting the Internet with the purpose of learning
21 Post educational courses for raising the skills level
22 Post educational courses not for work
23 Formalised educational activities (school, university etc.)

Health, Medical services

24 Seeking health-related information (e.g. nutrition, injury, disease, etc.)
25 Seeking -related information about health services (clinics, hospitals, etc.)
26 Making online an appointment with a doctor about a consultation
27 Medical advice online from a practitioner

C6-7 (20). Use of the Internet for education purposes (frequency of use)

1 No, I didn't take part in a course
2 Yes, I took part in a course, but I have not use Internet to education

Yes, I used Internet to ...

3 Look for the availability of a book or article for my course
4 Read learning content, which was provided on-line
5 Do research as part of a training course
6 Exchange messages with teachers
7 Exchange messages relating to the course content with other learners
8 Other

(C6 from Eurostat questionnaire of 2006) (Q12). Use of a personal e-mail address

1 Yes

2 No

Module D: Internet commerce details: activities and barriers

For module D, two main questions completely agreed with the Eurostat procedure were asked. Here the use of the Internet in purchasing goods and services by individuals is studied: the activity of users and frequency of use of different sectors of consumer market was studied. Question D3 was added to the questionnaire – on the group of goods, which in the West are mainly bought over the Internet. Currently the data on this issue are not representative. Much more illustrative for Russia is the question on the reasons of failure of the population to be involved in the e-commerce, which was asked in Eurostat questionnaires of 2005 and 2006, but in 2007 it was excluded as non-topical.

D1. (Q14) Frequency of using the Internet to buy or order goods or services for private use (user activity)

1 Never bought or ordered
2 More than 1 year ago
3 Between 3 months and a year ago
4 Within the last 3 months

D2. (Q15). Types of goods and services ordered over the Internet for private use in the last 12 months (popularity of different types of goods and services)

1 Foods
2 Films, music
3 Books / Magazines / Newspapers / E-Learning materials
4 Clothes, sports goods
5 Computer software and upgrades (incl. computer and video games)
6 Computer hardware
7 Home appliances (e.g. mobile phones, cameras, radios, TVs, stereos, DVD players, video recorders)
8 Other household goods
9 Share purchases / Financial Services / Insurance
10 Travel and holiday accommodation
11 Tickets for events
12 Lotteries or betting

(Q 16). Reasons for the failure to participate in buying/ordering goods or services in the last 12 months. This indicator was removed from the European questionnaire of 2007, but in 2005 and 2006 it was used. In out study it was retained because it is helpful for characterising not only the Russian Internet-market, but also for international comparisons. The Russian questionnaire was supplemented by the problems reflecting the problems of the Russian Internet-market: It is not always possible to find what is necessary (poor assortment); No the information concerning guarantee service.

1 Have no need
2 Prefer to shop in person, like to see product, loyalty to shops, force of habit
3 Lack of skills
4 Not always it is possible to find that is necessary (poor assortment)
5 No information concerning guarantee service
6 Too difficult procedure of the buying, requirement to registration
7 Too long procedure of the buying

8 Too long delivery period, inconvenient time of day
9 Too high costs
10 Uncomfortable payment system, don't have a payment card allowing to pay over the Internet
11 Doubts about safety of payment procedure
12 Doubts about quality of goods or services
13 Trust concerns about receiving or returning goods, complaint/redress concerns
14 Others

Module E: e-Skills

The module is intended to study the skills in the narrow sense – which share of users has acquired some skills of using personal computer and the Internet rated according to the degree of complexity, as well as intentions to acquire the skills (including those implemented and the forms of implementation) barriers to the execution of the intentions. The module is completely identical to that of the Eurostat questionnaire of 2007, except for the projective question E6 on the intentions to transfer to another job – if the respondent has sufficient ICT-skills.

E1 (Q21). Have you undertaken special training courses (of at least 3 hours) on any aspect of computer use (occurrence of special training)

1 Never taken over
2 More than 3 years ago
3 Between 1 and 3 years ago
4 Between 3 months and a year ago
5 Within the last 3 months

E2 (Q22). Barriers to having taken a course on computer use

1 No need to take one because my computer skills are sufficient
2 No need to take one because I rarely use computers
3 Lack of time
4 Too high educational costs
5 No suitable offer available
6 Too difficult
7 None of the above

E3 (Q23). The level of computer skills (according to the degree of complexity) (level of computer skills)

1 Copying or moving a file or folder
2 Using copy and paste tools to duplicate or move information
3 Using basic arithmetic formulas in a spreadsheet
4 Compressing files
5 Installing new standard programs (games, translator, etc.)
6 Connecting and mountining new devices, e.g. a printer or a modem
7 Writing a computer program using a specialised programming language
8 Detect and solve computer problems (e.g. computer runs slowly)
9 None of the above

E4 (Q17). Level of Internet skills (according to the degree of complexity)

1 Using a search engine to retrieve information
2 Sending e-mail with attached files
3 Posting messages to chat rooms, newsgroups or any online discussion forum
4 Using the Internet to make telephone calls
5 Using peer-to-peer file sharing for exchanging movies, music etc.
6 Creating a web page
7 Searching, downloading and installing of programs
8 Diagnostics and removal of viruses from a computer
9 None of the above

E5 (Q18). Forms of training of Internet-skills (occurrence)

1 Formalised educational institution – school (primary or lower secondary education)
2 – college (upper secondary education)
3 – university (tertiary education)
4 Training courses taken by own initiative, not the employer
5 Training courses taken by the employer initiative
6 Self-study in the sense of learning-by-doing
7 Self-study using books, CD-ROMs, on-line courses in the Internet, etc.
8 Informal assistance from colleagues, relatives, friends
9 Some other way

Module F: Socio-demographic background variables

The principal positions of this module are age, gender, education, social status, number of children, and revenue per family member. Employment situation and occupation are presented in aggregated form, for 9 groups. The type of locality is presented by a rating that is more meaningful for Russia than population density – the types of settlements classified according to the number of inhabitants.

F1 (Q24). Age

F2 (Q25). Sex

1 man
2 woman

F3 (Q26). Educational level

1 No formal education completed, primary or lower secondary education (corresponding to ISCED 0, 1 or 2);
2 Upper secondary education (corresponding to ISCED 3 or 4);
3 Tertiary education (corresponding to ISCED 5 or 6)

F4-5 (Q27). Employment situation

1 management
2 specialists
3 white collars
4 qualified worker
5 non-qualified worker
6 student
7 pensioner

8 housewife
9 Unemployed

F7 (Q28). Type of locality

1 Moscow and St.-Petersburg
2 Big towns with population over 300 000 habitants
3 Small towns with population less 300 000 habitants
4 Villages

F8. Number of members in the household

F9. Number of children under 16

F10. Income

Sample

We use the following stratification of all primary sampling units in the sample design:

At the first stage, the territory of Russia is divided into 10 large economy-geographical regions (North + North West, Central, Central-Chernozemny, North Caucasus, Volgo-Vyatsky, Povolzhye, Uralsky, Western Siberia, Eastern Siberia and Far East). They are singled out by the official statistics according to ethnic, economic, demographic, geographic characteristics, agriculture, level of infrastructure, and standard of living. All the 10 regions are included in the sample.

In each region strata the following characteristics of settlements are taking into consideration:

- administrative status

- population size

- relation to autonomous republics inside Russian Federation.

As a result 66 strata are formed.

Total sample N=2107 is divided into 66 strata proportionally to the size of this strata within the population in general.

Moscow and St.-Petersburg are represented in the sample as self-representative objects. The sample in Moscow was increased by 300 respondents (up to 429 respondents).

In each other stratum one or more PSUs are selected with the probability proportional to the size (about 20-25 interviews per PSU) of PSU. The number of interviews in a stratum is divided into equal parts among the selected PSUs. Totally 103 PSUs are selected.

At the second stage, in each selected PSU (urban settlement/rural district) 2-4 sampling points are randomly selected (exceptions are Moscow where 11 sampling points are selected, and St. Petersburg - 6 sampling points). Number of sampling points is defined based on the condition that 10-12 respondents should be interviewed in one sampling point. Polling districts are used as sampling points in urban settlements, and villages - in rural areas.

The selection of sampling points is made by means of random selecting from the list of all sampling points of the selected urban settlements/rural districts.

Totally 200 sampling points are selected.

At the third stage, the selection of households is carrying out by random route method.

At the fourth stage, within a household is selected a respondent which birthday is the nearest.

In order to interview a selected respondent, an interviewer visits each address up to 4 times in different days of week and different time of day.

If respondent refuses to take part in the survey or is not reached during four visits, interviewer is given another household address to interview in.

Data collection technique. Training of field workers.

HSE employed a group of high-skilled experts, arranged training, including briefings:

a) for the questionnaire – reading of all questions, comments to them, transition from filter questions, discussion of possible versions;

b) for the sampling procedure – on the randomness of the routing sampling and selection of respondent within a household – based on the birthdates, achievability standards, replacement procedure and check standards;

c) on data input.

Experts trained at HSE employ and train field workers on the site, provide briefing and check the process of survey and data input. On the site of the survey the data are introduced as a part of the array and in electronic form are sent to one of the experts responsible for compilation of the data set. HSE receive the complete data array.

3.3. Results of pilot studies of the proposed approach to the population survey

Field work

The field work was completed between July 15 and 31, 2006.

The survey was completed in 110 urban and rural settlements placed in 8 republics, 6 territories, 24 regions and in the Jewish Autonomous Region.

Table 3.1. **Survey republics, territories, regions and largest cities**

No	Название региона	Planned number of questionnaires	Actual number of questionnaires
1	Moscow	429	429
2	Saint-Petersburg	66	66
3	Leningrad region	16	16
4	Arkhangelsk region	87	87
5	Republic of Karelia	31	31
6	Vladimir region	123	123
7	Kaluga region	22	22
8	Moscow region	118	118
9	Kostroma region	43	43
10	Nizhny Novgorod region	65	65
11	Kirov region	12	12
12	Republic of Chuvashia	43	43
13	Voronezh region	55	55
14	Lipetsk region	55	55
15	Volgograd region	20	20
16	Samara region	59	59
17	Saratov region	61	61
18	Ulyanovsk region	39	39
19	Republic of Tatarstan	58	58
20	Krasnodar Territory	42	42
21	Republic of Adygea	35	35
22	Stavropol Territory	62	62
23	Republic of Karachaevo-Cherkessia	40	40
24	Rostov region	58	58
25	Orenburg region	61	61
26	Perm territory	83	83
28	Sverdlovsk region	39	39
29	Chelyabinsk region	35	35
30	Republic of Bashkortostan	45	45
31	Kurgan region	28	28
32	Altay Territory	28	28
33	Republic of Altay	27	27
34	Kemerovo region	54	54
35	Novosibirsk region	103	103
36	Krasnoyarsk Territory	83	83
37	Republic of Khakassia	32	32
38	Irkutsk region	16	16
39	Primorsky Territory	71	71
40	Khabarovsk Territory	29	29
41	Jewish autonomous area	14	14
42	Kaliningrad region	20	20
	Total:	**2407**	**2407**

The survey was carried out in the mode of completing of self-assessment questionnaires.

Table 3.2. **Inaccessibility reasons**

code		
0	Security lock, locked, number of entrances	110
	A. Inaccessibility in basic apartments	
1	Uninhabited house, apartment	99
2	Nobody home (upon 3 visits)	350
3	Refusal to open the door	452
4	Selected respondent was not at home (3 visits)	90
5	Inability to respond	65
6	Refusal	272
7	Rejected interviews	26
	Total number of ineffective visits	**1354**
	B. Inaccessibility in replacement apartments	
1	Uninhabited house, apartment	164
2	Nobody home (upon 3 visits)	1151
3	Refusal to open the door	1935
4	Selected respondent was not at home (3 visits)	427
5	Inability to respond	120
6	Refusal	1231
7	Rejected interviews	97
	Total	**4961**
	Sorted out under check	7
	Number of questionnaires included in the data array	2407
	Total number of visits	**6315**

The inaccessibility was calculated separately for basic and replacement flats. In counting the inaccessibility uninhabited houses/flats and locked entrances were not taken into account (codes "0" and "1").

1. Accessibility of basic apartments (to the total number of visits) was 63.9%. Accessibility of replacement apartments (to the total number of visits) was 32.6%.

2. Total inaccessibility for basic apartments (to the total number of visits) was 36.1%. The total inaccessibility for the replacement apartments was 67.4%.

3. The share of refusals for basic apartments (to the number efficient interviews) was 23.1%. The share of refusals of replacement apartments (to the number of efficient interviews) was 56.8%.

4. Control. The works of field workers was checked mainly by telephone, revisits and partially by phone. On the whole, 499 addresses were checked, among them: *466 – by phone, 8 – by revisits, and 25 – by mail.*

Sampling

Stratification criteria: administrative status, population size, relation to autonomous republics inside Russian Federation

Coverage:

- population 16 years old and over
- 12 subjects of the Russian Federation were excluded, it makes 5.48% of the population of Russia

Breakdown into regional groups:

- Chechnya, Ingushetia, Dagestan, North Osetiya were excluded for the reason of the emergent conditions existing at the North Caucasus. Far
- North regions of the Russian Federation: Nenetsky AO, Khanty-Mansijski AO, Yamalo-Nenetsky AO, Taimyrski AO, Chukotsky AO, Evenkijski AO, Kamchatka, Sakhalin were excluded for the reason of extremely high cost and unreliable transport communications.

Breakdown into occupational/educational groups:

- individuals, doing their military service by draft or by contract (about 1% of total adult population);
- individuals under imprisonment before trial and convicted (about 0.8% of total population);
- homeless people (from 1% to 1.5% of total adult population by various estimates).

Weighting was carried out for four macroregions and separately for Moscow (the list of the distribution over the subjects of the Russian Federation is enclosed) on the basis of the information of the Russian State Statistics Committee 2000 concerning the size of settlements and the distribution of population aged 16 years and over according to regions and settlements of different size.

Table 3.3. **Weighting table**

Macroregions for strata (strata population number, in thousand people)	Gender		Age				Education			
	male	female	16-24	24-39	40-54	Over 55	Higher	secondary	Below secondary	Share
North Europe > 500	44.06	55.94	15.08	26.79	28.40	29.73	28.22	52.24	19.54	4.56
North Europe 100-500	45.29	54.71	16.53	27.52	28.62	27.33	16.99	58.78	24.23	6.43
North Europe < 100	45.31	54.69	16.20	26.14	28.89	28.77	11.02	58.02	30.96	8.66
North Europe rural	45.80	54.20	15.38	24.58	25.15	34.89	6.90	45.36	47.74	5.26
South Europe > 500	45.31	54.69	16.62	27.87	28.42	27.09	23.80	55.61	20.59	6.81
South Europe 100- 500	45.46	54.54	17.32	28.66	27.50	26.52	16.80	59.22	23.98	5.13
South Europe < 100	45.45	54.55	17.28	26.76	27.22	28.74	11.00	58.17	30.83	6.47
South Europe rural	45.98	54.02	16.79	26.21	23.41	33.59	7.00	46.55	46.45	9.87
West Europe > 500	45.03	54.97	17.79	28.28	27.93	26.00	23.68	56.02	20.30	4.93
West Europe 100-500	45.89	54.11	18.00	28.30	28.64	25.06	17.04	59.61	23.35	3.90
West Europe < 100	45.77	54.23	17.66	25.97	28.73	27.64	10.95	58.30	30.75	5.59
West Europe rural	46.40	53.60	17.29	25.57	24.61	32.53	6.96	46.58	46.46	5.16
Asia >500	45.19	54.81	18.67	28.81	28.01	24.51	23.73	56.59	19.68	4.83
Asia 100-500	47.09	52.91	19.42	30.27	29.31	21.00	16.97	61.39	21.64	4.25

Macroregions for strata (strata population number, in thousand people)	Gender		Age				Education			
	male	female	16-24	24-39	40-54	Over 55	Higher	secondary	Below secondary	Share
Asia < 100	48.36	51.64	19.19	29.05	30.74	21.02	11.23	61.51	27.26	6.42
Asia rural	48.65	51.35	19.78	26.61	27.57	26.04	7.25	49.51	43.24	5.60
Moscow	43.57	56.43	14.69	25.47	28.67	31.17	33.30	46.88	19.82	6.13

Table 3.4. **Distribution of RF subject**

MACROREGION	RF subject		
North	**South**	**East**	**Asia**
Arkhangelsk Region + Nenetsk A.D. Vologda Region Murmansk Region Republic of Karelia Republic of Komi Novgorod Region Pskov Region Bryansk Region Vladimir Region Ivanovo Region Tver Region Kaluga Region Kostroma Region Moscow Moscow Region Orel Region Ryazan Region Smolensk Region Tula Region Yaroslavl Region Kaliningrad Region St.Petersburg	Belgorod Region Voronezh Region Kusrk Region Lipetsk Region Tambov Region Astrakhsn Region Volgograd Region Samara Region Penza Region Saratov Region Ul'yanovsk Region Republic of Kalmykiya Republic of Tatarstan Krasnodar Territory Adygeya Stavropol Territory Karachayevo-Cherkessiya Rostov Region Republic of Dagestan Kabardino-Balkariya North Osetiya Republic of Ingushetiya Chechnya Republic	Nizhny Novgorod Region Kirov Region Mari El Republic Republic of Mordovuya Republic of Chuvashiya Kurgan Region Orenburg Region Perm Region + Komi-Permyatsk A.D. Sverdlovsk Region Chelyabisk Region Republic of Bashkortostan Republic of Udmurtiya	Altai Territory Republic of Altai Kemerovo Region Novosibirsk Region Omsk Region Tomsk Region Tyumen Region Khanty-Mansi A.D. Yamalo-Nenetsk A.D. Krasnoyarsk Territory Republic of Khakassiya Taymyr A.D. Evenkiisky A.D. Irkutsk Region + Ust-Orda A.D. Chita Region+ Aginsk A.D. Republic of Buryatiya Republic of Tyva Primorky Territory Khabarovsk Teritory Jewish A.D. Amur Region Kamchatka Region+ Koryaksky A.D. Magadan Region Chukotka Sakhalin Region Sakha Republic (Yakutiya)

Source: Russian Statistics State Committee 2000 information concerning the size of settlements and the distribution of population aged 16 years and above according to regions and settlements of different size.

Table 3.5. **Age and gender**

	Age groups of the total population*(thousands peoples)					
	16-24	25-39	40-54	55-74	75+	total
Male	11224	15286	15841	9998	1912	54261
Female	10910	15503	17871	15281	5614	65179
Total	22134	30789	33712	25279	7525	119439

* *Source:* http://www.gks.ru/WebContent/pyramid/index.html

Table 3.6. **Total**

Male	20.7	28.2	29.2	18.4	3.5	100%
Female	16.7	23.8	27.4	23.4	8.6	100%
Total	18.5	25.8	28.2	21.2	6.3	100%
Sample (N=2107)						
Male	20.8	26.1	26.7	22.1	4.2	100%
Female	14.1	27.9	28.4	23.8	5.7	100%
Total	17.2	27.1	27.6	23	5.1	100%
Un-weighted (N=2107)						
Male	21.1	25.4	25.3	23.8	4.4	100%
Female	13.6	24.6	26.2	28.1	7.6	100%
Total	16.3	24.9	25.8	26.5	6.4	100%

Table 3.7. **Education and gender**

	primary or lower secondary	secondary	Tertiary	Total
Sample (N=2107)				
Male	26.1	40,3	33.6	100%
Female	20.1	32.1	47.8	100%
Total	22.9	35.9	41.2	100%
Un-weighted (N=2107)				
Male	17.0	40.7	42.4	100%
Female	16.1	28.2	55.7	100%
Total	16.4	32.7	50.9	100%

Table 3.8. **Region and gender**

	North+North West	Central	Central-Chernozemny	Volgo-Vyatsky	Povolzhye	North Caucasus	Uralsky	Western Siberia	Eastern Siberia	Far East	total
Sample (N=2107)											
Male	10.3	20.1	5.5	6.4	12	10.7	13.1	9.7	5.2	7	100%
Female	11	20.5	5	6.4	13.1	10.4	13.2	7.6	6.9	6	100%
Total	10.7	20.3	5.2	6.4	12.5	10.5	13.2	8.6	6.1	6.4	100%
Un-weighted (N=2107)											
Male	8.4	30.2	4.7	5.1	9.2	9.1	13.3	9.1	5.5	5.4	100%
Female	9.5	30.7	4.5	4.9	10.2	10.3	11.4	8.6	5.4	4.4	100%
Total	9.1	30.5	4.6	5.0	9.8	9.8	12.1	8.8	5.4	4.7	100%

Table 3.9. **Employment situation**

	Management	specialists	white collars	qualified worker	non-qualified worker	student	pensioner	housewife	Unemployed	total
Sample (N=2107)										
Male	3.8	7	5.5	29.5	7.1	7.2	25.2	0.5	9.1	100%
Female	3.2	14.4	12.7	12.3	4.6	5.8	29.5	9.7	4.4	100%
Total	3.6	11.5	9.8	21.1	6	6.7	28.7	5.7	6.8	100%
Un-weighted (N=2107)										

Male	5.2	11.8	7.6	26.9	6.2	7.3	23.5	0.5	6.5	100%
Female	3.7	16.6	11.4	8.8	4.4	4.9	33.4	10.1	4.0	100%
Total	4.4	15.4	10.4	15.9	5.2	6.0	30.8	6.8	5.1	100%

Table 3.10. **Type of inhabited locality**

	Moscow and St.-Petersburg	Big towns	Middle towns	Small towns	villages	total
Sample (N=2107)						
Male	10,2	16,4	19,7	27,3	26,3	100%
Female	11,1	16,8	19,7	26,9	25,5	100%
Total	10,7	16,6	19,7	27,1	25,9	100%
Un-weighted (N=2107)						
Male	19.6	16.5	18.1	22.7	23.1	100%
Female	21.1	16.4	18.4	21.5	22.6	100%
Total	20.6	16.4	18.3	21.9	22.8	100%

Data input and processing

Partial non response for social groups (un-weighted). Missings – absent. Seven questionnaires were rejected at the stage of field study.

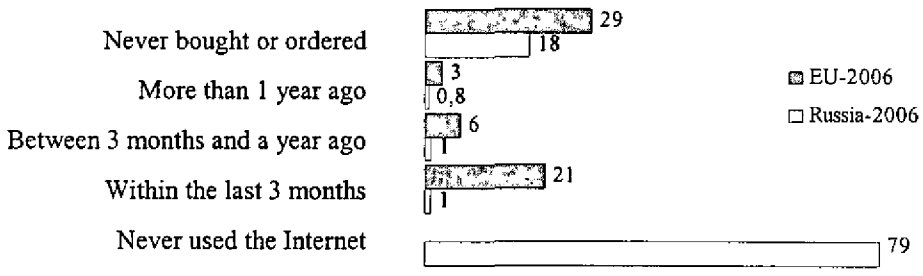
Internet commerce details: activities and barriers

For module D «Internet commerce details: activities and barriers», three main questions compatible with the Eurostat questionnaire are asked: the use of the Internet in purchasing goods and services by individuals is studied: the activity of users and frequency of use in different sectors of consumer market was studied, and the question on the reasons of failure of the population to be involved in e-commerce, which was asked in Eurostat questionnaires for 2005 and 2006, but in 2007 it was excluded as non-topical. Question D3 – on the group of goods, which in Europe are mainly bought over the Internet – is added to the questionnaire (currently the data on this issue are not representative in Russia).

From the entire sample frame only 2% (52 persons!) have ever purchased anything over the Internet in the last 12 months (Fig. 6).

Figure 6. **Using the Internet to buy or order goods or services for private use (user activity)** (per cent of respondents)

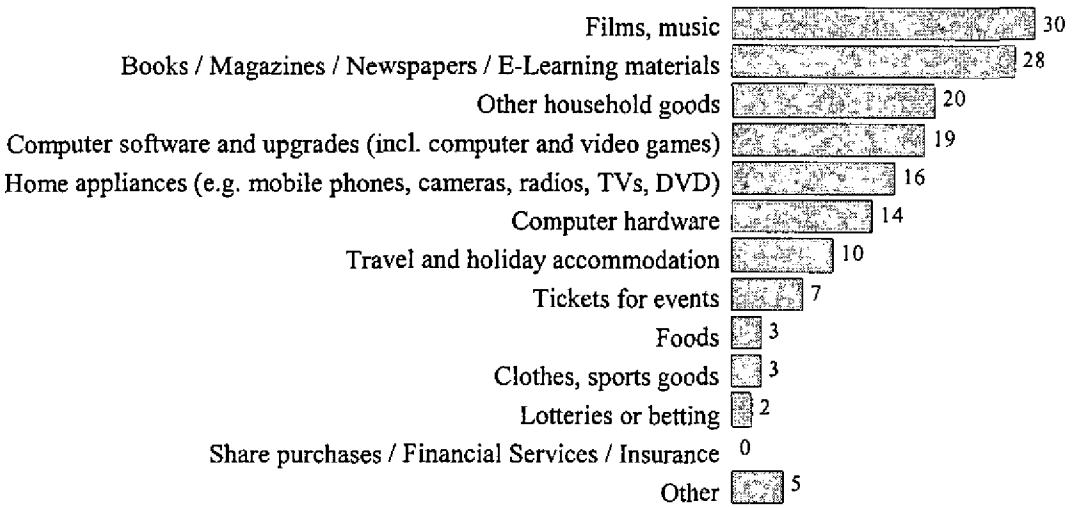
When did you most recently buy or order goods or services for private use over the Internet?



The most popular commodities are records of films and music, as well as printed books, magazines, newspapers, e-learning materials – almost a half of respondents who have purchased anything over the Internet during the last year (instead of percent of respondents Fig. 7 presents absolute number of e-buyers, because they were very few – 52 persons).

Figure 7. **Types of goods ordered over the Internet for private use in the last 12 months** (persons)

When did you most recently buy or order goods or services for private use over the Internet?



The second most popular type is other household goods and computer software (20 and 19 persons), then in the order of descending popularity follow home appliances – e.g. mobile phones, cameras, radios, TVs, DVD (16) and computer hardware (14), still less respondents purchased services for travel and holiday accommodation (10) or tickets for events (7). Very few respondents purchased foods and clothes (3 persons of the sample), took part at lotteries or betting (2). Nobody reported paying share purchases, financial services, or insurance.

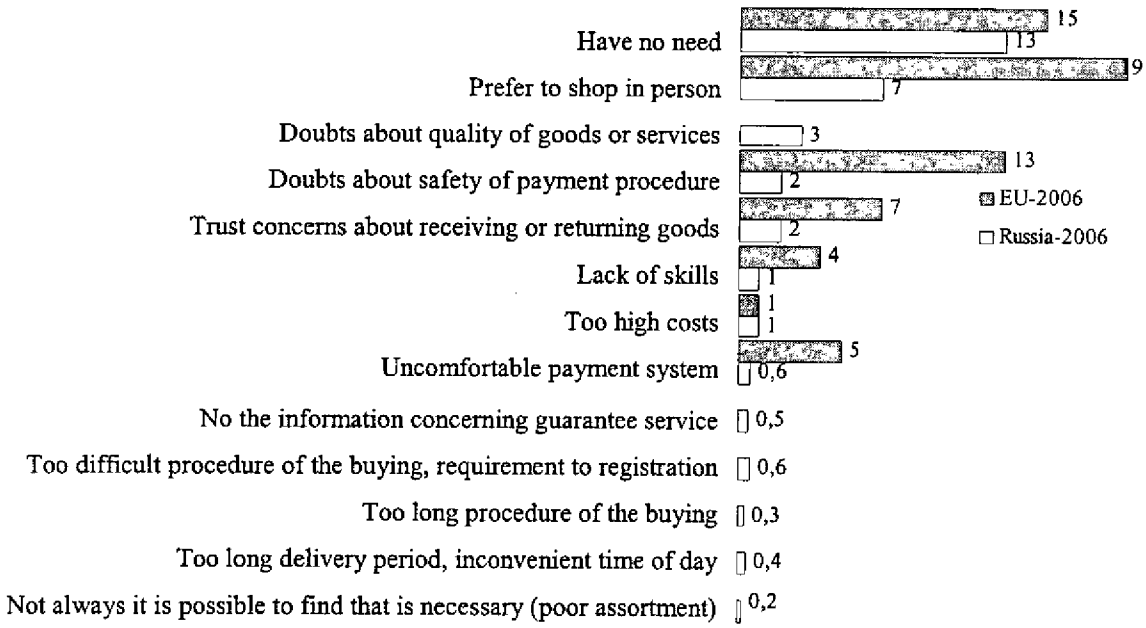
Main obstacle to the development of electronic commerce is the lack of need in this kind of shopping – 13% of respondents replied "*no need*" and the other 7% – "*prefer to shop in person*" explaining this by the *force of habit* and that they *like to see product*. Much less respondents have *doubts about quality of goods or services* (3%), *safety of payment procedure* and *trust concerns about receiving or returning goods* (2% each). *Lack of skills* and *too high costs* each were reported by only 1% of respondents.

The Russian survey questionnaire was supplemented by the replies that were most often used by the respondents of the survey of Internet users[11], which reflected the problems of the Russian Internet market: *not always it is possible to find that is necessary (poor assortment); no the information concerning guarantee service*, but their actuality in representative sampling appeared to be rather low (less than 1% of respondents mentioned each of the reasons).

[11] See? For example, the results of surveying the clients of online shops obtained by the Research Holding ROMIR Monitoring in the first quarter of 2006. On the whole, 2425 customers and visitors of the sites of online shops at the age of 14 and older were survey. Source: http://www.rmh.ru/news/res_results/189.html

Figure 8. **The reasons for the failure to participate in buying/ordering goods or services over the Internet**
(per cent of respondents)

What were the reasons for not buying/ordering any goods or services in the last 12 months?



e-Skills

The module is intended to study the skills in the narrow sense – which share of users has acquired some skills of using personal computer and the Internet rated according to the degree of complexity, as well as the forms of acquire the skills and barriers to the training.

The survey proves that 2/3 of respondents have not acquired any computer skills (66%) and 4/5 of respondents have not acquired skills of using the Internet (82%).

More than a quarter of respondents can apply the simplest functions "copying, paste or moving" in the file system (29%) and word processors (25%) (Fig. 9). Each fifth respondent can use basic arithmetic formulas in a spreadsheet (22%). A slightly lesser share of respondents can cope with more complicated tasks "compressing files (16%), installing new standard programs (15%) and installing and connecting new devices, e.g. a printer or a modem (13%)". Only each tenth respondent can write a computer program using a specialised programming language (9%) and only 4% replied that they can solve the most difficult tasks from the list - detect and solve computer problems.

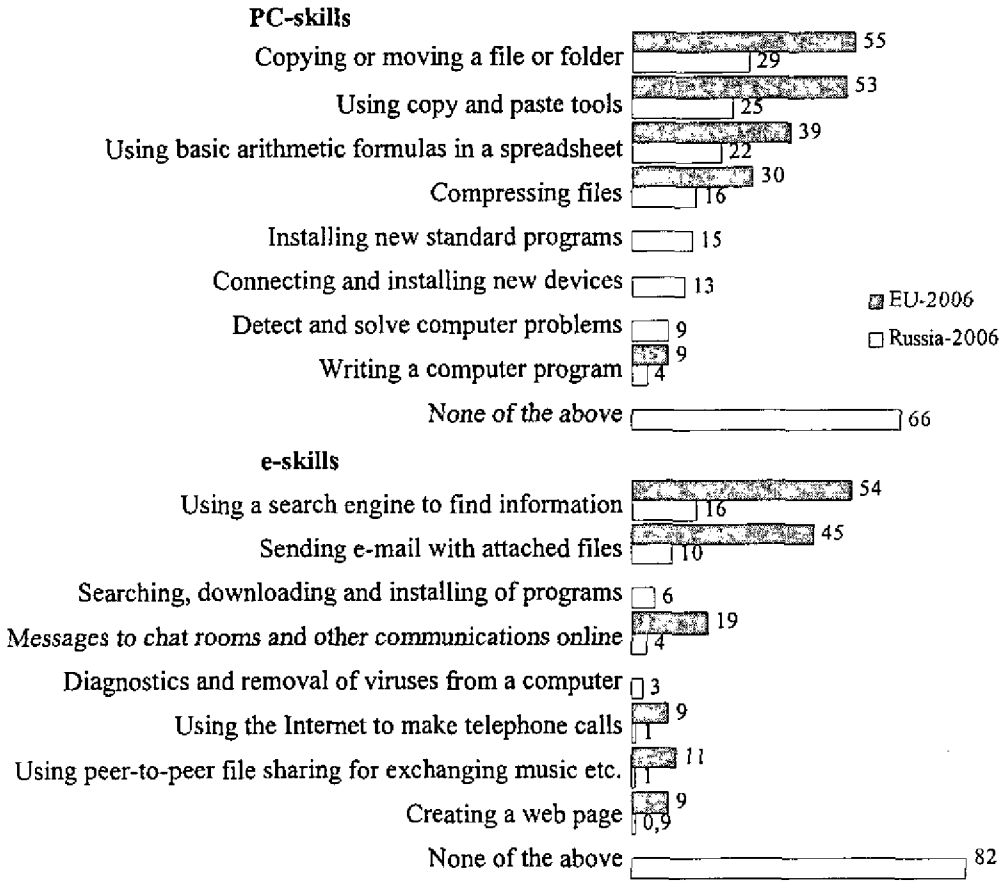
Only 16% of respondents have acquired the simplest Internet skills – using a search engine to find information, whereas on the average this indicator has reached 54% in European countries.

The share of those who can send e-mail with attached files is much lower again (10%), in Europe – 45%. Other online communication types – posting messages to chat rooms and other – are used much less often, by only 4% of Russian respondents (in Europe – by 19%). The same is valid for making telephone calls – only 1% (in Europe - 9%) - and using peer-to-peer file sharing for exchanging movies, music, etc. (in Europe - 11%).

The third most frequent is searching, downloading and installing of programs (6%). But much fewer respondents are capable of diagnostics and removal of viruses from a computer (3%), and only 0,9% can create a web page – 0,9%.

Figure 9. **Level of PC- and e-skills**
(per cent of respondents)

Which of the following computer related and Internet related activities have you already carried out?



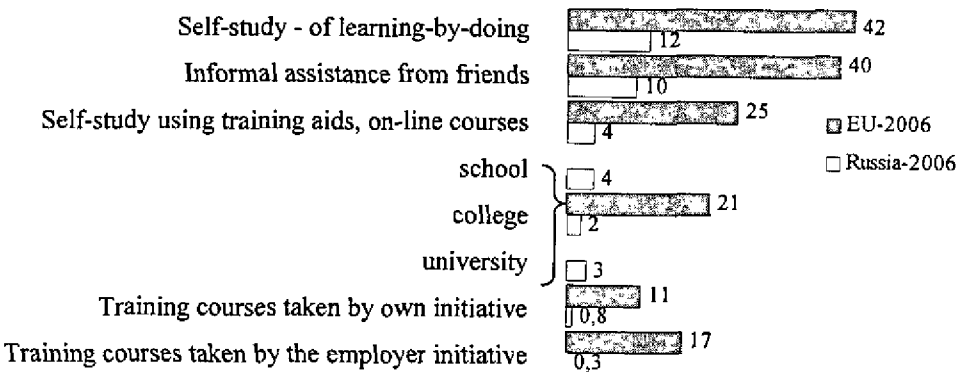
Training of Internet-skills mainly occurs as self-study. The highest share of respondents reported "in the sense of learning-by-doing" – 12% (in Europe - 42%), the other 10% of respondents accept "informal assistance from colleagues, relatives, friends."

Special manuals (books, cd-roms) or on-line courses in the Internet are used by very few respondents – 4% (in Europe - 25%). At very low level is training at education institutions: at school (primary or lower secondary education) - 4%, college (upper secondary education) - 2%, university (tertiary education) - 3% (in Europe education institutions were mentioned by 21% of respondents).

Training courses were attended by less than 1% of respondents – by own initiative 0.8%, by the employer initiative– 0.3% (in Europe the ratio is inverse - 11 and 17%).

Figure 10. **Forms of training of Internet-skills**
(per cent of respondents)

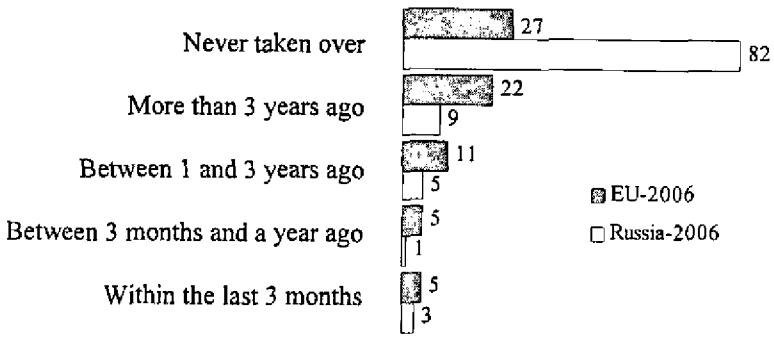
Where or how did you obtain the skills to carry out these activities?



Some 9% of respondents attended special training computer courses within the last 3 years, 3% - within the last 3 months, 1% - between 3 months and a year ago and 5%, - between 1 and 3 years ago. As much as 9% of respondents took a training course more than 3 years ago. Over the same period almost twice as much respondents took computer courses in European countries. The share of respondents who had never taken over special training courses is 82% of respondents (in Europe - 27%).

Figure 11. **Forms of training of Internet-skills**
(per cent of respondents)

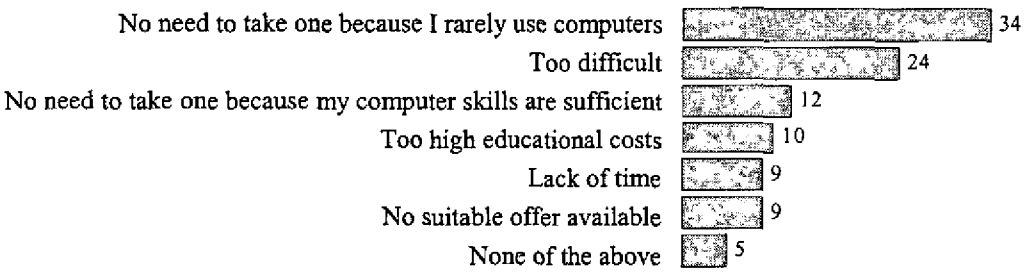
When did you last take a training course (of at least 3 hours) on any aspect of computer use?



The most frequent answers to the question "What are the reasons for never having taken a course on computer use?" are "I rarely use computers" (34%) and "too difficult" (24%). Every tenth respondent mentioned "lack of means" (too high educational costs) or "lack of time", as well as "no suitable offer available". Some 12% of respondents replied that their computer skills are sufficient.

Figure 12. **Barriers to having taken a course on computer use**
(per cent of respondents)

What are the reasons for never having taken a course on computer use or for having taken a course only more than 3 years ago?



4. RECOMMENDATIONS FOR THE DEVELOPMENT OF INETRNATIONALLY COMPARABLE ICT STATISTICS FOR THE RUSSIAN FEDERATION

In accordance with the main objective of the project, methodological approaches and statistical статистический инструментарий have been developed on the basis of contemporary methods and international standards for ICT statistics. Testing of the tools and empirical data obtainedas a result of pilot surveys made it possible to compile internationally comparable information-statistics database for the ICT sector, training of ICT specialists in Russia's higher education institutions and the use of ICT in households.

This section contains methodological recommendations for the building of the pool of data on the ICT sector, training of ICT specialists, and the use of ICT in households that is consistent and comparable with international concepts, definitions, and standards.

ICT sector

Completed examination of the information and statistics base and applicable classifiers, as well as the survey of enterprises, yielded a conclusion on principal feasibility of creation of internationally comparable statistics of the ICT sector in Russia. This effort should be based on the acceptance of the proposed approaches to the design of the universe of ICT enterprises according to the classification of the types of economic activity RCTEC (Annex 1). This definition will enable the use of statistical data about the enterprises with the aim of compilation of main performance indicators of the ICT sector:

- number of enterprises;
- number of employees;
- investments;
- sales.

Today the ICT sector statistics in accordance with the classifiers of products in Russia can be compiled only for the national indicators of external trade. To implement this opportunity, the development of cumulative internationally comparable group of ICT products should based on the trade nomenclature of foreign economic activity (TNFEA)/ The list of products is presented in Annex 13.

Due to limitations of the existing classifications, formation of the ICT sector data in the production and internal trade classifications of products is currently not feasible. The problem can be solved upon introduction of the Russian Classifier of Products by the Types of Economic Activity in 2007-2008 (RCPTEA). This classifier will comply with RCTEA and Statistical Classification of Products according to the types of Economic Activity in the European Economic Community. Introduction of RCPTEA will ensure comparability of information on production, sales, export, import and consumption of products both at national and international levels. Until RCPTEA is introduced in the statistical practice, it is expedient to estimate the product pattern of the ICT using tailor-made surveys. Practicability of such surveys was confirmed by the observations of ICT sector enterprises undertaken within this project.

Training of ICT specialists

The following recommendations have been developed on the basis of the examination of the capacity of the Russian Federation statistics for the monitoring of training of ICT specialists and the survey of senior managers of higher education institutions completed within the project:

- a generally recognised list of ICT specialties should be defined for higher education institutions. Proposals for the list are presented in Annex 6;
- current observations in statistics of education provide indicators of the number of employees, enrolment and completions of ICT specialists, number of universities that carry out training in ICT specialties. To perform these calculations, a list of ICT specialties should be approved and appropriate changes should introduced in processing programmes for the results of statistical observations undertaken by Rosstat.
- Investigation of conditions of training of ICT specialties and demand for ICT specialists requires additional observations. It would be expedient if the observation should use the experience of the the survey of senior managers of higher education institutions completed within the project.

Survey of e-skills of the population

The survey results proved principal applicability of the Eurostat methodology to the examination of the processes of informatisation of the population of Russia. The study made it possible to compare the dynamics and scales of the process with the processes occurring in the EU countries. The data obtained confirm that the process of informatisation of the population of Russia is at the very beginning but it rapidly gathers race. Main reasons for which the population is reluctant to get involved in the process can be overcome. The reasons are not so much that skills or material resources are lacking, but rather the lack of a certain "critical mass", Internet is not "in fashion" yet. However there prejudice against computers and the Internet observed in 1998 has been overcome.

Respondents selected various response versions, almost all versions from offered versions were selected by some of them (there is only one exception – nobody selected the version «Share purchases / Financial Services / Insurance» in the question on the types of goods and services ordered over the Internet for private use during the last 12 months (even in EU this responses was selected by 3% of respondents only).

The least frequent purpose of use of the Internet among Russians is e-commerce and e-government (1-2% of respondents). In the field "e-government", there are signs of acceleration of the rates of development. For example, among the Muscovites, the share of respondents who selected "Obtaining information about the schedule of such organizations" is much higher than in other cities. Whereas this fact is almost always an evidence of the start of emergence of an audience for this field) and the Internet demonstrates the results of actions of the authorities in development of their sites and portals, the process of involvement in e- commerce is slow and has low indicators in all social groups – probably some support from the side of the government is needed.

It is too early to initiate large-scale studies. Thus far the results of sampling observations has been sufficient, the sample should be representative for Russia and main socio-demographic groups.

It is advisable to run such sampling surveys once a year.

The tools should be modified in accordance with Eurostat questionnaires.

Conclusions

Systemic approach to the investigation of phenomena and processes induced by the development and distribution of ICT should be used as a basis for statistical study of the ICT sphere. One of the basic principles of such an approach consists in considering ICT as an integral object of statistical research. This suggests investigation of all aspects of activity related to ICT manufacturing and use in economy and other spheres of public and private life. It is the comprehensive approach that will enable the creation of internationally comparable statistics of ICT in Russia.

During the project the programmes of surveying ICT enterprises, higher education institutions and households (population) were developed on the basis of international standards.

Analysis of all stages of preparation and completing the survey yielded the following conclusions and proposals:

- pilot survey proved the soundness of methodological approaches to shaping the indicators included in the questionnaires, real completion of requested information by respondents revealed problematic indicators, to calculate them some primary information is lacking;
- the results obtained form theoretical and methodological basis for further building up and development of the investigation of the ICT-sector;
- the data of pilot studies of ICT enterprises, higher education institutions, and households (population) were analysed within the project. These results and official data of the Russian Federation statistics made it possible to analyse the ICT sector on the whole and estimate the role of the ICT sector in the Russian economy, the level of training of ICT specialists, e-skills;
- pilot testing of the developed statistical tools formed a basis for the main methodological recommendations for improving the ICT statistics and introduction of international standards in the statistical practice in Russia.

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Annexes

Annex 1. RCEAT DESCRIPTION FOR THE ICT SECTOR

1) Manufacture of office equipment and computes (code 30). This is, first of all, manufacture of typewriters, machinery for text processing, calculators, computers and their parts; photocopiers, office machinery for offset printing and other office machinery and equipment and their parts. The services on the office equipment installation is a sub-type of activity. Manufacture of computers is understood as manufacture of computers and other equipment for information processing.
2) Manufacture of insulated wires and cables (code 31.3) includes:

- Manufacture of insulated wires, cables, tapes, cord and other insulated conductors with feature connectors or without them;
- Manufacture of fiber optic cables, consisting of filaments with individual frames to transfer code signals: signals of telecommunication, video-signals, excitation and information signals, etc.

3) Manufacture of electronic valves and tubes and other electronic components (code 32.1) includes manufacturing of the following:

- electric capacitors, including power condensers;
- resistors, including rheostats and potentiometers;
- printed circuits (cardboards); vacuum apparatus;
- semiconductor elements, apparatus (including photosensitive and optoelectronic), built-in piezoelectric crystals;
- integrated circuits, micro-assemblies and micro-modules;
- parts of vacuum machinery and other electro- and radio elements, not included in other groups.

4) Manufacture of transmitting apparatus, apparatus for telephone and telegraph communication (code 32.2) is divided into:

- manufacture of radiobroadcast and television broadcast apparatus;
- manufacture of electric apparatus for wire telephone and telegraph communication производство;
- manufacture of parts of television broadcast and radiobroadcast apparatus, telephone and telegraph apparatus;

and it also includes the service of installation, repair and maintenance of TV and radio transmitters.

5) Manufacture of apparatus for receiving, sound and video recording and reproducing (code 32.3) is divided into manufacture of:

- radio receivers;
- television receivers, including video-monitors and video- projectors;
- sound recording and reproducing apparatus and apparatus for video recording and reproducing;
- microphones, loud speakers, earphones, receiving apparatus for radio-telephone or radio-telegraph communication;
- parts of sound and video recording and reproducing apparatus; antennas;

and also it includes the service of installation, repair and maintenance of professional radio, television, sound recording and reproducing apparatus and video apparatus.

6) Manufacture of checking and measuring instruments and appliances (code 33.2) includes manufacture of:

- navigating, meteorological, geodesic, geophysical and similar devices and instruments;
- radar, radio-navigating apparatus and radio devices for distance control;
- accurate scales; hand tools for drawing, marking and calculations; hand tools for measuring linear dimensions, not included in other groups;
- devices for measuring electric magnitudes and ionizing radiation;
- devices for controlling other physical magnitudes;
- other devices and instruments for measuring, control and testing;
- devices and appliances for regulation or control (center or desk of self operating control);
- parts of apparatus, devices and instruments for measuring, control, testing, navigating and other purposes;

as well as provision of services of installation, repair and maintenance of devices and instruments for measuring, control, testing, navigating, location and other purposes.

7) Assembly of devices of technological processes' control and regulation
Manufacture of industrial process control equipment (code 33.3).
8) Wholesale of radio and television apparatus, information media (with and without records) (code 51.43.2) includes:

- wholesale of tapes, CDs, audio and video cassettes, gramophone records, etc.;
- wholesale of literature, textbooks, electronic data mediums.

9) Wholesale of office machinery (code 51.64.1) includes the wholesale of office machinery excluding computer (typewriters, copiers, calculators, etc.).
10) Wholesale of computers and peripheral equipments (code 51.64.2).
11) Wholesale of operational materials and accessories for machinery and equipment (code 51.65.2).
12) Wholesale of industrial electric and electronic equipment, including telecommunications equipment (code 51.65.5). In particular this type of activity includes:

- wholesale of wires, switches and other wiring devices for industrial usage;
- wholesale of other electric devices (electric motors, transformers and their electro- and radio elements);
- wholesale of industrial robots;
- wholesale of measuring instruments, appliances and equipment.

13) Telecommunications (код 64.2) include:

a) Activity in telephone communication and document communication, including the following:

- international telephone communication;
- intraband telephone communication;
- local (urban and rural) telephone communication;
- mobile radio communication, including satellite, cellular, trunking communication, personal radio call, etc.;

– radio communication;
– fixed satellite communication;
– telegraph communication;
– telematics service: fax, processing of messages and e-mails, teleconferences, information service, including access to information resources, service of vocal communication, service of transmitting voice data by using batch communication;
– data transmission and exchange between PCs, access to the global computer networks and data placement;

b) TV and radio programs' broadcasting and distribution, including:

– TV program broadcasting by telecommunications (cables, microwave, satellite lines, etc.);
– Radio program broadcasting by telecommunications (broadcasting appliances, cables, microwave, satellite lines, etc.);

c) Other activity in the field of telecommunications, in particular:

– maintenance of telecommunications circuits;
– leasing of communication channels;
– control of communication systems and devices, radio-electronic devices, high-frequency appliances of various users and industrial-technological communication networks;
– regulation of central and de-central radio-frequencies and radio-electronic devices (HF devices) of civic application;

14) Renting of office machinery and equipment, including computer techniques (code 71.33).
15) Computer and ICT-related activities (code 72) includes the following sub-types:

a) Hardware consultancy (code 72.1), covers the following:

– Consultancy on hardware types and configuration, their installation, maintenance, upgrading, on using the appropriate software;
– Analysis of consumers' information demands and development of optimal decisions on communication systems creation;

b) Software development and consultancy (code 72.2), including:

– software development: systems software, development software, application software;
– development of individual software and other services in the sphere of informatics: software upgrading and adjustment to the customers requirements while developing information systems and networks, system analysis and consultancy on choosing software, services on software installation and maintenance;
– software development for working with data bases;
– other services related to software;

c) Data processing (code 72.3), including:

– all stages of data processing, including data preparation and input, by using customer' software or one's own software;
– machine translation;
– information security;

d) Database activities and online distribution of electronic content (code 72.4), covering the following:

– data design (development of data bases' concept, structure, compound);
– data base setup and maintenance, including data collection from one or more resources, data input, verification and updating;
– data administration, including on-line and telecommunication access to data base;
– data retrieval, selection, sorting on customer request; on-line provision of selected data for customers;
– creation of different level information resources (federal, departmental, corporative, enterprise level);

e) Maintenance and repair of office, accounting and computing machinery (code 72.5), i.e.:

– maintenance and repair of office, accounting and computing machinery within and after guarantee period;
– other activity on maintenance of office, accounting and computing machinery;

f) Other computer and IT related activity (code 72.6) including:

– development and support of all level public authority information systems and networks, diagnostic and expert systems, systems of scientific research, systems of design and management, development of technological process for data processing, information support and consultancy in these spheres;
– IT development, system integration, web design, multimedia technique, electronic trade and marketing, offshore (ordered) programming, creation of Internet information resources;
– Activity on manufacturing informatization products and providing informatization services, not accounted in other groups.

Annex 2. MODEL QUESTIONNAIRE "ICT SECTOR AND USE OF INFORMATION AND COMMUNICATION TECHNOLOGIES"

1. Production of goods and services

Indicator	№	Total, thousand roubles
1	2	3
Total sales of goods and services produced intramurally (excluding VAT and excises)	101	
Of them:		
Sales of ICT-related goods and services produced intramurally (excluding VAT and excises) (sum of lines 103, 108-117)	102	
Of which: ICT goods	103	
Of which: Computers	104	
Audio and video equipment	105	
Computer software	106	
Other ICT goods	107	
Consulting in purchase, mounting and maintenance of computer hardware	108	
Consulting in computer software	109	
Consulting in information services and data processing, data preparation and input	110	
Services in development of automated information systems, systems for scientific research, CAD/CAM and data bases	111	
Repair and maintenance of computer hardware, peripherals, and office equipment	112	
Services in software development	113	
Electronic information and inquiry services	114	
Telematics and data transmission	115	
ICT training services	116	
Other ICT related services	117	
Sale of ICT-related goods produced elsewhere (excluding VAT and excises)	118	
Of which: Computer hardware	119	
Computer software	120	

Note 1.
Estimated anticipated changes in the sales of ICT-related goods produced intramurally in the next year against the reference year on the following scale:
3 – Increase; 2 – No changes; 1 – Decrease; 0 – Undecided.

Hardware (121) _____
Software (122) _____
Services (123) _____

2. Expenditures accomplished by the enterprise

Indicator	№	Total, thousand roubles
1	2	3
Total expenditure on production and trade in goods and services	201	
of which labour cost	202	
Capital investment	203	
Intangible investment	204	
R&D expenditure	205	
Expenditure on information technologies, total	206	
of which:	207	
Purchasing computer hardware (including mounting and fine-tuning)	208	
Purchasing software	209	
Training related to ICT development and utilisation	210	
ICT services of external enterprise and consultants (excluding training)	211	
Other ICT expenditure	212	

3. Employment at the enterprise

Indicator	№	Total
1	2	3
Full-time personnel at the end of the reference year	301	
Of them: Computer system developers and analysts	302	
Programmers	303	
Electronic engineers, communication and apparatus building engineers	304	
Computer technicians and operators	305	
Technicians in electronics and telecommunications	306	

Section 2. Use of information and communication technologies

4. General information

Did your enterprise use in the reference year and/or intends to use in the next year the following equipment and technologies? (Yes – 1, No - 0)

	№	Used in the reference year	Intends to use in the next year
1	2	3	4
Personal computers	401		
Computers of other types	402		
Local area networks	403		
E-mail	404		
Internet	405		
Other global information networks	406		
Dedicated communication lines	407		

Note 2.
Estimated share of personnel having used:

Personal computers (408) _____
Internet (409) _____

on the following scale: 0- did not use;
1- < 10%;
2 – 10-29%;
3 – 30-49%;
4 – 50-69%;
5 – 70-100%.

5. Availability of personal computers and local area networks

(to be filled in by the enterprises having reported "1" in at least one of the above lines 401, 402, column 3)

Indicator	№	Total
1	2	3
Number of personal computers, total	501	
Of which purchased in the reported year	502	
Number of personal computers: connected to local area networks	503	
having access to global information systems	504	
of which to the Internet	505	

Note 3.
Availability of specialised software, besides common-use software for (Yes – 1, No – 0):

Indicator	№	Evaluation codes
1	2	3
Scientific research	506	
CAD	507	
CAM or management of technical facilities or technological processes	508	
Resolving organisational, managerial and economic issues	509	
E-payment	510	
Access to databases of your enterprise via global information systems, including the internet	511	
Desktop publishing systems	512	
Electronic legal-reference information systems	513	
Education	514	
Other	515	

Note 4.
Availability of the enterprise's Web site on the Internet (Yes – 1, No – 0) (516) _____

Note 5.
Estimated share of the value of raw materials and products (services) transferred (acquired) via global networks in the total value of purchases (sales) on the following scale: 0- did not use;

1- < 10%;
2 – 10-29%;
3 – 30-49%;
4 - 50-69%;
5 – 70-100%.

purchases (517) _____
sales (518) _____

Annex 3. GUIDELINES FOR VARIABLES COMPILATION FOR THE ICT SECTOR ENTERPRISE QUESTIONNAIRE

Variable	Questionnaire indicator No	Explanations
Total sales of goods and services produced intramurally (excluding VAT and excises)	101	The value of shipped goods in the course of sales and direct barter (swap contract) of all goods produced intramurally shall be stated, as well as the value of performed works or rendered services in actual transaction prices (exclusive of VAT, excises and analogous compulsory payments). This line does not reflect the means obtained from budgets of any sources to cover losses arising from the sales of goods or services at state administered prices (rates). The value *of shipped goods* is the amount paid for all goods produced by the specific legal entity and actually shipped (transferred) over the reporting period to the party (other legal and physical entities), including the goods transferred to the customer on the site under the handover act, paid or unpaid to the seller. The date of shipment means: - in case to shipment to another city – the date of handing-over to the transportation or communication agency that is specified in the document certifying the fact of acceptance of freight for transportation by the transportation agency (consignment note, bill of lading, railway receipt, train list, etc.), or a document produced by communications agency; - in case of commodities delivery to the buyer's or seller's warehouse – the date of on-site delivery of the commodities delivery or signing of the documents proving the acceptance of goods by the customer; - in case of sales of goods of own production as retail sales – the date of sales. The cost of goods accepted and paid-in by the customer but left as an exception for seller's safekeeping for the reasons beyond his control and certified by safekeeping receipts is stated in the value of shipped goods. If the legal entity produces semi finished articles, work pieces and parts to be transferred to another legal entity (with or without pay) for partial treatment or finishing and then receives them back and uses in manufacture of end products, the cost of end products, when the production is completed and the product is actually shipped to the customer, is stated in the value of shipped goods. The products, which according to the contract are accepted or paid by customer in instalments depending on the state of readiness, are stated under this item in the amount of work stages delivered and accepted by the customer within the reporting period. The value of shipment shall reflect the cost of works and services in research and development completed by the enterprise and accepted by customers under acceptance acts. The income from leasehold of owned property (property being on the balance of the enterprise) is also stated in this row, whether this activity is main for the enterprise or not. The income for services rendered to other legal entities and population in the field of communications, health care, education, repair of appliances and personal demand items, delivery of personal services, hotel services, and activity related to utilisation of computing technique and information technologies, activity in recreation and entertainment, culture, sports, etc. shall also be stated in this row. Goods and services delivered under swap contract (barter), delivered to customers on a gratis basis, granted to employees on account of remuneration of labour are estimated at average selling price of these or analogous goods and services calculated for the period during which the estimated goods and services were delivered, in case of absence of these or analogous goods/services

Variable	Questionnaire indicator No	Explanations
		over the period – reasoning from the price of its last sales, which cannot be less than its actual cost. For goods (works, services) delivered for export the contract prices translated in accordance with the exchange rate established by the Central Bank of the Russian Federation for the date of shipment of goods (performance of works, delivery of services) – exclusive of VAT, excises, export taxes and analogous payments shall be stated. The cost of sold goods produced by other enterprises, the cost of goods transferred to other units of this legal entity, the cost of services rendered by one unit of the enterprise to another unit of the enterprise, income from sales of product obtained under swap contract (barter) without preliminary treatment, as well as the value of sales of fixed assets, intangible assets and stocks, currency valuable and valuable security shall not be stated under this item.
Sales of ICT-related goods and services produced intramurally (excluding VAT and excises)	102-117	The value of ICT-related shipped (delivered) goods produced intramurally and services delivered by the reporting enterprise to the population or other legal entities shall be stated. Goods and services are related to information technologies if they are a result of specific types of economic activity that belong to the ICT sector (according to RCEA): 30 Manufacture of office equipment and computers 31.3 Manufacture of insulated wires and cables 32 Manufacture of television and radio, television and communication equipment and apparatus 33.2 Manufacture of checking and measuring instruments and appliances 33.3 Assembly of devices of technological processes' control and regulation 51.43.2 Wholesale of radio and television apparatus, information media (with and without records) 51.64.1 Wholesale of office machinery 51.64.2 Wholesale of computers and peripheral equipments 51.65.2 Wholesale of operational materials and accessories for machinery and equipment 51.65.5 Wholesale of industrial electric and electronic equipment, including telecommunications equipment 64.2 Telecommunications 71.33 Renting of office machinery and equipment, including computer techniques 72 Computer related activities The following items are distinguished among the total value of ICT-related shipped goods produced intramurally: computers audio and video equipment software The category "computers" includes: analogue or analogue-digital computers, digital portable computers that include at least data processor, keyboard and display, data processor digital blocks with or without one of the following devices in one package: data store, input equipment, output equipment, magnetic or optical data readers, devices for encoded data transfer to data carriers, parts and accessories of computers and their units. The category "audio and video equipment" includes TV sets, video recorders, tape recorders, radio sets, microphones, players, turn tables, compact-disk players, voice recorders, magnetic tapes, magnetic disks, cassettes, video cameras, video projectors. The cost of services on assembly, check-out, hook-up and maintenance of hardware is included if these services are a part of the contract on shipment of hardware and the cost of the equipment cannot be separated from the cost of appropriate services. The cost of shipped operating software delivered together with the equipment is stated in the same row if the shipment is specified in the

Variable	Questionnaire indicator No	Explanations
		contract on shipment of the hardware, and it is impossible to split the cost of hardware and software within the contract. The value of shipment of ready software of any kind produced intramurally, developed without preliminary order of the customer and shipped without adaptation upon customer's request shall be stated in the value of shipped software. The cost of services on adaptation and maintenance of shipped software, as well the costs of training of users are stated only if the delivery of these services is included in the contract on delivery of software and within the contract it is impossible to split the cost of the software and the appropriate services. The delivery of ready software can be validated in any way: sale software license, singing a contract with the software customer in explicit or implicit *form, according to which* a copy of software on electronic carrier or a copy downloaded via electronic network are paid. The following services shall be distinguished in the value of *rendered* ICT-services: - *consulting in computer hardware* related to their purchase, mounting and maintenance, including consulting on software types and configuration with respect to the software used. Consulting usually includes analysis of customer needs and problems, proposals and recommendations for a more efficient and economical decision on purchase and use of computer complexes and systems; - *consulting in software* include the analysis of customer needs and problems in order to propose the most economical decision and development of required software to implement the decision, if such a development is carried out within the single contract on rendering of consulting services and the cost of software development cannot be separated from the cost of services. These services include also the maintenance, adaptation, provision of auxiliary materials and documenting both the ready standard software and software options if these services are not included in contract on software development; - *consulting in information services and data processing; services in data preparation and input* related to the arrangement of information support (using information gathering systems, input and output forms, regulatory and engineering provisions and legal groundwork), development of data specification systems (glossaries and classifications), development of recommendations on the structure of databases and data-query languages, data preparation and input, organisation of data upload and use of computer time. These services include also all types of data processing and report generation on the basis of data provided by the customers. This also includes all types of preparation of input data, for example, perforation, tape recording, optical recognition, etc. The services can be rendered directly or via remote terminals, using customer or standard programme, using customer's data processing devices or devices owned by other companies or private persons; - *services on development of automated information systems, systems for scientific research, design and management based on computer databases,* including database creation. This group of services includes also the development of diagnostic and expert systems, decision support systems, electronic reminder files, etc.; - *services in maintenance and repair of office equipment, computer technique and attached peripherals,* including check-out and maintenance of local area computer networks; - *services in development of operating and programming and application software* upon customer request. Operating software includes operating systems and extenders, data base management software, software development and transformation tools, interface and communication management software, software tools for enterprise of computational process, utility functions and software tools for servicing computing devices, including tests.

Variable	Questionnaire indicator No	Explanations
		Applied software tools include software for computer-aided design, management of tools and processes, business application purposes, training, simulation and other purposes related to practical activity; - *customer guidance e*-services, including network provision of information upon customer request; - *telematic services and data transfer*. These services can be rendered only in accordance with the appropriate service license issued by the Ministry of information Technologies and Communications of the Russian Federation. Appendices to the licenses define the specific types of services in this category, which should be used as a guidance in completing this row; - *ICT-training services;* - Other ICT services
Sales of ICT-related goods produced elsewhere (excluding VAT and excises)	118-120	The cost of sold goods bought for resale (the purchase is recorded in the cost accounting at the debit side of acc 41) (articles, materials, products bought for resale or ready commodity designed for integration, whose cost is not included in the sold product cost but should be reimbursed by customers separately) shall be stated. Sold excessive raws and materials should also be stated in this row. The data are presented in actual selling prices exclusive of VAT, excises and analogous obligatory payments. The value of sales of fixed assets, intangible assets, currency valuable and valuable security should not be specified in this row. The following items should be singled out of the total value of sales of ICT products manufactured by other producers: - the cost of shipped *finished hardware* (resulting from economic activity types specified by RCEA codes 30, 31.3, 32, 33.2, 33.3). The cost of rendered related services for mounting, check-out and maintenance of hardware is included in this row only if they are a constituent part of the contract on shipment of the hardware and the cost of the hardware and the appropriate services cannot be separated. The cost of shipped operating software delivered together with the hardware should be stated in this row if the delivery is a constituent part of the contract on shipment of the hardware and the cost of the hardware and the related software in the contract cannot be separated; - the cost of shipped *finished software* bought from producers and supplied without adaptation on customer's request. The cost of services on software adaptation and maintenance, as well as training of users is stated in this row only if the services are a constituent part of the contract on delivery of the software and the cost of the software cannot be separated from the costs of the service within the contract. Grounds for shipment of software bought from producers can vary: dealer or distributor agreement or any other contract on software distribution with developer or other right holder, purchase of author rights for the software, database, etc.
Distribution of enterprises by expected changes in volume of production of intramurally produced ICT-related goods and services in the year next to the reported year	121-123	Expected changes in the value of shipped ICT product produced intramurally next year as compared to the reporting year are to be estimated using the codes: increase – 3; no changes – 2; decrease – 1; cannot answer – 0. If no hardware is produced and there are no plans to arrange its production (software was not developed and such a development is not planned, the services were not rendered and rendering is not envisaged), the code 2 (no changes) shall be selected; if arrangements for production and sales are planned (development of a new software, planned works on rendering services and its is expected that the efforts are in demand by external customers), answer 3 (increase) shall be selected.
Total expenditure on production and trade in goods and services	201	Statement of the expenditures for production and sales of goods, works, services (according to the chart of accounts they reflect the debit side of the account of production expenses). Wholesale enterprises shall state selling expenses.
of which labour cost	202	Labour costs of employees (excluding secondary job employees and employees working under contract of hiring work) should be separated and stated in this

Variable	Questionnaire indicator No	Explanations
		row.
Capital investment	203	Statement of fixed capital expenditures (fixed asset formation): costs of construction, expansion, renovation, technical upgrading, purchase of machinery, equipment, tools, fittings, etc. Investment from all sources should be accounted for.
Intangible investment	204	Statement of investments in intangible assets – patents, licenses, leasehold estate, nature use objects, author rights, organisational expenses, trade names and trade marks, software, know-how, etc. The data are provided on the basis of paid invoices or invoices approved for payment upon taking on charge and filing of the intangible assets.
R&D expenditure	205	Statement of total input (current and capital outlays) for research and development (at cost) in ICT completed both by the enterprise and under outsourcing contracts. Current outlays incurred primarily at the expense of cost of products (works, services) include labour costs of employees involved in research and development, benefits-related deduction, as well as other expenses that do not belong to capital outlays, for example, cost to buy raws, materials, equipment, etc. The depreciation costs for complete recovery of fixed assets related to research and development should be deduced from the stated amount. Capital outlays are costs of construction and purchase of buildings, purchase of equipment, other capital outlays required for research and development. Research and development mean creative activity undertaken systematically in order to augment the body of scientific knowledge, including knowledge about man, nature and society, as well as search for new fields of application of the knowledge. The criteria for distinguishing research and development from accompanying activity types is a considerable novelty component of research and development.
ICT expenditure	206-212	Statement of total input, including current and capital costs of development, purchase, introduction and use of information technologies incurred in 2005 at any stage of development or introduction of the information technology: final stage (hardware is mounted, software is developed, employees are trained and have started to fulfil their tasks using the information technology), intermediate (some hardware and standard software have been purchased but have not been installed, or the development of application software is underway, but has not been commissioned yet). The costs of *purchase of computer facilities* includes the costs of purchase of computers of any type, peripherals (printers, scanners, back-up devices, additional monitors, disks, etc.), network equipment (modems, multiplexers, multiprotocol routers, network cables, etc.), computer components, including the costs of computing technique necessary to develop software intramurally, and that purchased specially to equip computer classes). The costs of installation, hook-up and maintenance of hardware are stated in this row only if they are a constituent part of the contract on delivery of computing technique and the cost of the technique cannot be separated from the costs of the appropriate service. Costs of operating software supplied together with the computing technique should be stated in this row only if the delivery is a constituent part of the contract on delivery of the hardware and the costs of hardware and software cannot be split within the contract. The cost of *training of employees* related to ICT development and use shall include the costs of training employees by external enterprises and specialists under contracts with the reporting enterprise and by employees of reporting enterprises, when training is not their duty and is paid separately. Training costs do not include the cost of computing technique purchased specially for the training classes and costs of purchase of training software. In completing the section for the costs of services of external enterprises please consult the inventory of services presented in comments to rows 102-107 above.
Full-time per-	301, 302-	Statement of the payroll (excluding external secondary job employees) as of

Variable	Questionnaire indicator No	Explanations
sonnel	306	January 1, 2006. The payroll shall include employees working under labour contract for permanent, temporary or seasonal work at least for one day, including employed owners of the enterprises who drew salary in the enterprise. The payroll of employees for each calendar year shall include those who actually worked and those on leave for any reason. Each employee working part-time and employed under half-pay labour contract is accounted for as a unit. Secondary job employees and the employees working under fixed term employment contract are not included in the payroll. The unit of measure is person (whole numbers). Employees classified under the following categories of the Russian Classification of Occupations (RCO) should be distinguished from the payroll: Developers and analysts of computer systems (RCO 2131) Programmers (RCO 2132) Electronics, communications and instrumentation engineers (RCO 2139) Service persons and operators for maintenance of computers and other computer devices (RCO 3121) Electronics and telecommunications technicians (RCO 3122)
Personal computers	401, 501	Personal computers (PC) of any type – PC/XT, AT, Pentium and compatible computers, Macintosh, notebook computers, portable personal computers, and other analogous computers. All computers shall be taken into account (those owned by the enterprise or leased, provided gratuitously or obtained under other conditions)
Computers of other types	402	Supercomputers (Elborus, and similar computers), large computers (EC-1020 - EC-1060, EC-1191 -1195, IBM 3090, ES/9000, ES/9021, Siemens Nixdorf H90, H120, H130 and similar computers), small computers (СМ ЭВМ, EC-1120, PDP, VAX 3000, VAX 4000, RM400, RM600, DEC7000, DEC10000, AlfaServer 1000, HP 3000, HP 9000, Proliant - 1000, IBM ES/9121, ES/9221, AS/400, RS/6000, Sun SPARK and similar computers) shall be accounted for in this row. Technological equipment with digital, microprocessor and digital computer control carried out by empanelled computers shall not be taken into consideration. If a computer is designed for equipment control, but, if necessary, can be used for other purposes, it should be included in the list of computer technique and taken into consideration while completing this row.
Local area networks	403	Unlike the worldwide information network, it connects two or more computers (which can be of different types) placed within one building or several neighbouring buildings without using common user facilities for this purpose. Connection of a computer to production equipment or peripherals is not a local or global network.
E-mail	404	E-mail – exchange of text messages in electronic form along communication channels. Both internal e-mail used for communication by employees within the building and external exchange, which provides exchange of messages with remote computers, regardless of technologies, protocols and communication channels used for communication, shall be taken into account
Global information network	405, 406	Global information network covers the aggregate of computers, which can be located in any place worldwide, connected by means of long distance channels (dial-up and allocate) provided by telephone companies or other telecommunication agencies. The global information network enables users to exchange information, share technical means, software, and information resources. The global network can be public (Internet, e-mail) and specialised (corporate or departmental). If a computer can receive and send information in electronic form to remote computers placed beyond the limits of one or several buildings, it is considered to be connected to the global network irrespective of the type of equipment and software used, protocols and regulations of information exchange.
The share of payroll employees using personal	408, 409	The share of payroll employees using personal computers/Internet at least once a week is to be estimated according to the provided scale.

Variable	Questionnaire indicator No	Explanations
computers/Internet		
Number of enterprises using specialised software	506-515	Availability of special software for any types of computing technique used to solve the problems of a certain category shall be stated, whether the software is developed intramurally, purchased from other developers, developed under enterprise's order by external companies and specialists, or obtained and used under other conditions. General purpose software, such as operating systems, compilers, standard software used to solve a certain category of problems (for example, text and graphic editors, electronic spreadsheets, database management systems), unless special software application, mail programme, etc. are developed on their basis, are not taken into account.
Distribution of enterprises by the share of value of purchase and sales of the carried out upon orders transferred via global information networks	517-518	The share of value of purchase and sales of the enterprise carried out upon orders transferred via global information networks is estimated using the following scale: 0 the enterprise did not use global networks, 1 – the share of use of global network was less than 10%, 2 - 10-29%, 3 - 30-49%, 4 - 50-69%, and 5 - 70-100%.

Annex 4. NUMBER OF ENTERPRISES THAT FAILED TO PROVIDE DATA FOR CERTAIN INDICATORS

	Total	Number of personnel			
		1-9	10-49	50-249	250+
Production of goods and services					
Total sales of goods and services produced intramurally (excluding VAT and excises)	110	30	38	32	10
Of them:					
Sales of ICT-related goods and services produced intramurally (excluding VAT and excises)	363	81	114	119	49
Sale of ICT-related goods produced elsewhere (excluding VAT and excises)	1630	219	506	582	323
Expenditures accomplished by the enterprise					
Total expenditure on production and trade in goods and services	327	73	108	99	47
Employment at the enterprise					
Full-time personnel at the end of the reference year	7	7			
Use of information and communication technologies					
Personal computers	47	32	10	4	1
Local area networks	314	134	126	49	5
Internet	235	104	91	27	13
The share of payroll employees using personal computers/Internet:					
Personal computers	47	32	10	4	1
Internet	235	104	91	27	13
Availability of personal computers and local area networks					
Number of personal computers, total	47	32	10	4	1
Number of personal computers:					
connected to local area networks	329	136	133	53	7
having access to global information systems	242	108	95	32	7
of which to the Internet	263	109	97	40	17
Estimated share of the value of raw materials and products (services) transferred (acquired) via global networks in the total value of purchases (sales) on the following scale:					
purchases	1272	204	426	436	206
sales	1299	197	441	447	214

Annex 5. THE RESULTS OF ICT ENTERPRISES SURVEY

Table 1. **Number of enterprises and employment at them**

		Number of enterprises	Full-time personnel at the end of the reference year
Total		**1751**	**545197**
Ownership	Public	631	72063
	non-public	1120	473134
Russian Classification of Economic Activity Types (**code** RCEAT)	30	15	14036
	31.3	46	26458
	32	33	15698
	33.2	21	8943
	33.3	9	1277
	51.43.2	8	509
	51.64.1	8	1051
	51.64.2	30	5169
	51.65.2	38	1449
	51.65.5	34	2191
	64.2	958	427330
	71.33	10	205
	72	541	40881
Number of personnel	1-9	229	1100
	10-49	539	14380
	50-249	640	73103
	250+	343	456614
Federal districts	Central	490	174143
	North-Western	254	56950
	Southern	185	66206
	Volga	302	119856
	Urals	175	31655
	Siberian	225	67928
	Far-Eastern	120	28459

Table 2. **Production of goods and services**

		Sales of the ICT sector, thousand roubles	Total sales of goods and services produced intramurally (excluding VAT and excises)	As a per cent of total sales of goods and services produced intramurally		Sales of ICT-related goods produced elsewhere (excluding VAT and excises)	As a per cent of shipment of ICT-related goods produced elsewhere	
				ICT goods	ICT services		Computer hardware	Computer software
Total		**424050579.3**	**270268648.9**	**9.9**	**90.1**	**18867142.9**	**98.7**	**1.3**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	4108772.4	3035453.0	95.1	4.9	16299.0	42.8	57.2
	31.3	26728371.9	5063548.2	99.8	0.2	-	-	-
	32	14176806.4	13190009.0	99.7	0.3	23935.0	100.0	-
	33.2	2919911.0	1587174.9	68.8	31.2	-	-	-
	33.3	347780.0	56741.0	100.0	0.0	-	-	-
	51.43.2	167523.0	3247.0	20.1	79.9	94287.1	100.0	0.0
	51.64.1	881846.0	18475.0		100.0	449616.0	98.9	1.1
	51.64.2	4669465.7	371231.0	30.0	70.0	3020330.4	98.3	1.7
	51.65.2	478827.0	-	-	-	-	-	-
	51.65.5	869167.0	601.0		100.0	37836.0	100.0	-
	64.2	344259028.1	226459523.4	0.1	99.9	692469.9	97.5	2.5
	71.33	769930.4	25591.0		100.0	-	-	-
	72	23673150.4	20457054.4	20.5	79.5	14532369.5	98.9	1.1
Number of personnel	1-9	2345564.2	361545.3	21.5	78.5	17927.0	90.5	9.5
	10-49	12017164.0	6825036.0	5.0	95.0	266535.4	93.7	6.3
	50-249	63043485.2	43588641.3	10.1	89.9	3299812.1	93.9	6.1
	250+	346644365.9	219493426.3	10.0	90.0	15282868.4	99.9	0.1
Federal districts	Central	147568372.4	107231537.6	7.3	92.7	14086206.4	99.4	0.6
	North-Western	63887583.8	41584709.1	23.5	76.5	2486451.2	97.6	2.4
	Southern	48346714.1	32436779.9	2.0	98.0	87030.1	99.9	0.1
	Volga	66595953.3	42569206.2	10.1	89.9	233798.1	85.9	14.1
	Ural	32329255.4	16683828.5	2.8	97.2	57165.6	36.1	63.9
	Siberian	41807530.8	23357955.2	12.7	87.3	1908721.4	99.0	1.0
	Far-Eastern	23515169.5	6404632.4	13.1	86.9	7770.1	97.5	2.5

Table 3. **Production of ICT goods, thousand roubles**

		Computers	Audio and video equipment	Computer software	Other ICT goods
Total		**5584285.6**	**8742333.0**	**1869705.2**	**10618929.2**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	1154261.6	-	-	1731392.4
	31.3	-	-	-	5053635.2
	32	2612911.8	8491963.4	0.0	2049085.9
	33.2	109138.0	109137.99	237.0	873103.9
	33.3	-	-	-	56741.0
	51.43.2	-	-	-	653.0
	51.64.1	-	-	-	-
	51.64.2	60271.8	-	10880.0	40181.2
	51.65.2	-	-	-	-
	51.65.5	-	-	-	-
	64.2	-	-	10786.0	249210.1
	71.33	-	-	-	-
	72	1647702.4	141231.6	1847802.2	564926.5
Number of personnel	1-9	7638.8	5641.0	63179.1	1410.2
	10-49	82833.9	51633.1	154695.0	49608.3
	50-249	1460379.3	1486294.9	761882.4	704274.1
	250+	4033433.6	7198764.0	889948.7	9863636.6
Federal districts	Central	2914100.2	2369090.6	545009.6	1951724.8
	North-Western	690453.3	3398671.3	243642.5	5454539.4
	Southern	356294.3	243652.3	31233.0	29999.8
	Volga	648204.5	1052511.0	640665.4	1976367.8
	Ural	346822.9	44020.8	62802.0	5208.1
	Siberian	457925.5	1537061.4	328466.0	649136.1
	Far-Eastern	170484.9	97325.5	17886.7	551953.2

Table 4. **Production of ICT services, thousand roubles**

		Consulting in purchase, mounting and maintenance of computer hardware	Consulting in computer software	Consulting in information services and data processing, data preparation and input	Services in development of automated information systems, systems for scientific research, CAD/CAM and data bases	Repair and maintenance of computer hardware, peripherals, and office equipment	Services in software development	Electronic information and inquiry services	Telematics and data transmission	ICT training services	Other ICT related services
Total		**405723.6**	**1636996.2**	**3119412.8**	**1985655.2**	**1944204.3**	**141426.0**	**1438926.1**	**69519936.8**	**80754.6**	**163180360.3**
Russian Classification of Economic Activity Types (code RCEAT)	30	-	-	4569.0	-	1248.0	-	143982.0	-	-	-
	31.3	-	-	-	-	-	-	-	-	-	9913.0
	32	-	-	-	-	212.0	-	-	-	-	35836.0
	33.2	-	311.0	-	-	44489.0	-	-	-	-	450758.0
	33.3	-	-	-	-	-	-	-	-	-	-
	51.43.2	-	-	-	-	-	-	-	-	-	2594.0
	51.64.1	-	-	17243.0	-	1232.0	-	-	-	-	-
	51.64.2	3715.0	136040.0	-	-	120143.0	-	-	-	-	-
	51.65.2	-	-	-	-	-	-	-	-	-	-
	51.65.5	-	-	-	-	-	-	-	-	-	601.0
	64.2	387208.6	309153.5	105017.0	13530.8	1130650.1	21293.0	264292.3	67434268.8	70156.5	156463956.7
	71.33	-	-	-	-	25591.0	-	-	-	-	-
	72	14800.0	1191491.7	2992583.8	1972124.4	620639.2	120133.0	1030651.8	2085668.0	10598.1	6216701.6
Number of personnel	1-9	1609.0	8014.6	19432.0	174.0	34344.0	11461.0	7258.0	27909.2	433.0	173041.4
	10-49	11222.6	51338.1	118698.8	83071.6	58993.9	39872.0	256025.9	2488293.4	57570.0	3321179.4
	50-249	130370.1	295832.5	804095.0	1165285.8	425331.4	53843.0	387882.8	10877587.4	15720.6	25019862.0
	250+	262521.9	1281811.0	2177187.0	737123.8	1425535.0	36250.0	787759.4	56126146.8	7031.0	134666277.5
Federal districts	Central	287462.7	995196.6	2424127.1	1337392.0	1061152.0	60783.0	566738.0	12834627.4	10356.0	79873777.6
	North-Western	6243.0	223987.6	131155.0	98136.0	161855.0	28924.0	206608.1	25168091.3	1407.0	5770995.6
	Southern	2599.7	1746.9	132508.7	57887.0	60354.0	-	47556.4	3717724.8	9874.5	27745348.5
	Volga	99631.4	177491.0	107236.0	215418.6	133908.5	30910.0	415396.0	12771247.5	29056.1	24271162.4
	Ural	1095.9	188760.5	229809.0	79773.6	344455.0	3643.0	6608.6	4025366.7	2390.0	11343072.3
	Siberian	8440.9	47164.6	79858.0	197048.0	169084.8	7349.0	95810.7	8769072.4	16839.0	10994698.8
	Far-Eastern	250.0	2649.0	14719.0		13395.0	9817.0	100208.3	2233806.7	10832.0	3181305.1

Table 5. **Distribution of enterprises by expected changes in volume of production of intramurally produced ICT-related goods and services in the year next to the reported year**

		Number of enterprises that provided data for the dynamics of shipping, units											
		Hardware				Computer software				services			
		Increase	No changes	Decrease	Undecided	Increase	No changes	Decrease	Undecided	Increase	No changes	Decrease	Undecided
Total		**140**	**486**	**25**	**1100**	**124**	**450**	**23**	**1154**	**555**	**588**	**76**	**532**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	4	7	-	4	-	5	-	10	-	6	-	9
	31.3	2	6	-	38	-	2	-	44	-	2	-	44
	32	10	13	-	10	1	4	-	28	-	10	-	23
	33.2	-	12	-	9	-	6	1	14	-	6	3	12
	33.3	-	1	-	8	-	-	-	9	-	-	-	9
	51.43.2	1	2	-	5	-	3	-	5	-	3	-	5
	51.64.1	-	1	-	7	-	1	-	7	1	1	-	6
	51.64.2	5	-	-	25	2	1	-	27	4	1	-	25
	51.65.2	-	-	-	38	-	-	-	38	-	-	-	38
	51.65.5	1	-	-	33	-	-	-	34	-	1	-	33
	64.2	68	291	12	587	50	277	7	624	400	348	33	177
	71.33	-	-	-	10	-	-	-	10	-	-	-	10
	72	49	153	13	326	71	151	15	304	150	210	40	141
Number of personnel	1-9	7	47	5	170	5	44	5	175	26	85	20	98
	10-49	36	151	7	345	35	152	7	345	138	213	33	155
	50-249	62	173	10	395	59	157	9	415	244	197	20	179
	250+	35	115	3	190	25	97	2	219	147	93	3	100
Federal districts	Central	36	131	7	316	34	108	8	340	141	159	21	169
	North-Western	29	87	3	135	20	88	1	145	76	78	4	96
	Southern	13	43	4	125	13	39	1	132	80	66	10	29
	Volga	24	80	3	195	29	76	2	195	108	98	8	88
	Ural	9	41	2	123	9	40	3	123	50	63	3	59
	Siberian	19	60	4	142	11	59	6	149	69	79	19	58
	Far-Eastern	10	44	2	64	8	40	2	70	31	45	11	33

Table 6. **Expenditures accomplished by the enterprise, thousand roubles**

		Total expenditure on production and trade in goods and services	of which labour cost	Capital investment	Intangible investment	R&D expenditure	Expenditure on information technologies, total
Total		**284962642**	**58111171.1**	**91153358.2**	**253402.4**	**1004749**	**19507218.2**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	3387273	887438	122311	68	15875	37793.8
	31.3	5109530	373854	83822	140	67	49156.1
	32	13449564.2	817610.7	169226	117	706	27547
	33.2	2164381.7	791006.4	36347	28	-	18198.6
	33.3	50138	29022	192	-	-	1467.8
	51.43.2	117725	9842	1381	-	-	1132.5
	51.64.1	432310.1	7406.5	1009	17	-	3908
	51.64.2	3495120	111413	6049	-	-	122693.9
	51.65.2	17422	1352	-	-	-	6860.4
	51.65.5	4102.1	2095.8	-	-	-	33314.1
	64.2	232571340.9	49834113.7	90048422.4	235308	65965	15305090.8
	71.33	21951	1635	-	-	-	536
	72	24141784	5244382	684598.8	17724.4	922136	3899519.2
Number of personnel	1-9	385930.9	138867.4	26505.5	10938.8	10873.4	131234.5
	10-49	8185875.2	1298020.8	1680092.5	39288.6	8799	1283971.3
	50-249	45632812.9	8150012.8	10850379.2	92007	75881.6	3978858.9
	250+	230758023	48524270.1	78596381	111168	909195	14113153.5
Federal districts	Central	98350247.1	20930141.4	26507667.9	41279.4	938413.2	8160197
	North-Western	39887419.6	5466522.2	11161390.6	103032	3310	1448530.7
	Southern	41648702.2	6017113.7	22041682.6	865	370.2	1692495.5
	Volga	43589911.3	9024954.7	17065546.5	59316.4	13481.6	3643182.7
	Ural	16168774.7	4852759.8	3314009.1	10823	38898	1515411.4
	Siberian	30837115.5	7630874.4	7132062	2611	9530	1984699.7
	Far-Eastern	14480471.6	4188804.9	3930999.5	35475.6	746	1062701.2

Table 7. **Employment**

		Full-time personnel at the end of the reference year	As a per cent of full-time personnel				
			Computer system developers and analysts	Programmers	Electronic engineers, communication and apparatus building engineers	Computer technicians and operators	Technicians in electronics and telecommunications
Total		**545197**	**0.9**	**2.2**	**5.6**	**1.5**	**2.9**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	14036	0.1	0.6	0.5	0.8	0.0
	31.3	26458	0.1	0.1	0.0	0.1	-
	32	15698	0.6	0.4	0.5	1.6	0.6
	33.2	8943	0.1	0.4	2.4	0.5	0.3
	33.3	1277	-	-	0.9	-	-
	51.43.2	509	0.6	0.2	0.6	-	-
	51.64.1	1051	0.4	0.6	4.9	0.3	0.3
	51.64.2	5169	0.8	2.0	2.9	2.0	1.3
	51.65.2	1449	0.1	-	0.0	0.1	-
	51.65.5	2191	0.0	0.1	0.0	-	0.0
	64.2	427330	0.4	1.3	6.4	1.2	3.5
	71.33	205	-	-	-	-	-
	72	40881	7.3	14.5	6.0	6.7	1.5
Number of personnel	1-9	1100	3.2	6.6	6.0	3.4	2.0
	10-49	14380	2.0	7.2	7.9	5.2	2.8
	50-249	73103	2.4	4.3	7.3	3.2	2.7
	250+	456614	0.6	1.7	5.2	1.1	2.9
Federal districts	Central	174143	1.3	2.5	6.3	1.3	2.1
	North-Western	56950	0.7	2.4	4.4	1.1	3.3
	Southern	66206	0.3	1.9	5.2	2.4	1.0
	Volga	119856	0.5	2.2	4.7	1.2	2.2
	Ural	31655	1.5	2.3	6.0	1.9	3.2
	Siberian	67928	0.6	1.7	6.9	1.9	7.2
	Far-Eastern	28459	0.8	1.5	4.4	1.3	3.6

Table 8. **Use of information and communication technologies**

		Number of enterprises														
		using:								intending to use in the next year:						
		Personal computers	Computers of other types	Local area networks	E-mail	Internet	Other global information networks	Dedicated communication lines	Web-site	Personal computers	Computers of other types	Local area networks	E-mail	Internet	Other global information networks	Dedicated communication lines
Total		**1704**	**513**	**1437**	**1515**	**1516**	**351**	**1013**	**792**	**1695**	**516**	**1444**	**1538**	**1536**	**391**	**1060**
Russian Classification of Economic Activity Types (code RCEAT)	30	14	5	14	14	14	5	6	11	14	5	14	14	14	6	7
	31.3	45	10	37	41	39	4	20	24	44	10	37	40	38	4	21
	32	31	8	27	27	27	2	12	16	31	8	27	27	27	2	12
	33.2	21	4	18	17	16	3	10	9	21	4	18	18	17	3	10
	33.3	9	1	4	7	6	-	1	1	9	1	3	7	6	-	2
	51.43.2	6		4	5	5	-	2	1	7		4	5	5	-	2
	51.64.1	8	2	7	7	7	-	5	3	8	2	7	7	7	1	5
	51.64.2	29	7	27	28	29	8	25	22	29	7	27	28	29	9	25
	51.65.2	29	1	15	18	21	1	7	8	30	2	15	22	22	1	8
	51.65.5	32	4	22	27	26	5	9	9	32	4	23	27	26	5	9
	64.2	941	352	837	880	877	228	660	495	940	354	836	890	887	255	683
	71.33	6	1	2	4	4	-	2	1	6	1	2	4	4	-	3
	72	533	118	423	440	445	95	254	192	524	118	431	449	454	105	273
Number of personnel	1-9	197	16	95	122	125	14	47	37	194	18	98	130	133	20	53
	10-49	529	102	413	439	448	70	242	199	524	102	418	452	458	88	264
	50-249	636	201	591	617	613	136	439	325	635	202	590	619	613	146	453
	250+	342	194	338	337	330	131	285	231	342	194	338	337	332	137	290
Federal districts	Central	478	148	405	423	417	106	283	240	475	147	406	426	419	112	298
	North-Western	247	67	206	216	218	37	137	127	249	67	210	224	223	42	149
	Southern	183	58	142	150	154	36	97	64	180	59	142	153	158	38	98
	Volga	293	104	255	263	266	74	190	152	291	106	256	266	267	80	197
	Ural	168	53	141	151	153	47	107	75	168	54	142	155	156	49	111
	Siberian	222	53	195	212	206	39	143	85	219	53	196	214	210	56	149
	Far-Eastern	113	30	93	100	102	12	56	49	113	30	92	100	103	14	58

Table 9. **Distribution of enterprises by share of personnel using PCs/Internet (as a percent of total personnel)**

		Number of enterprises by share of personnel using:											
		Personal computers						Internet					
		< 10%	10-29%;	30-49%	50-69%	70-100%	did not use	< 10%	10-29%;	30-49%	50-69%	70-100%	did not use
Total		**128**	**283**	**212**	**196**	**885**	**47**	**452**	**311**	**197**	**156**	**400**	**235**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	1	5	3		5	1	7	3	1	-	3	1
	31.3	15	22	3	3	2	1	30	6	3	-	-	7
	32	11	11	6	3	0	2	23	2	2	0	0	6
	33.2	4	10	3	2	2	-	12	4	-	-	-	5
	33.3	3	5		1		-	4	1	-	1	-	3
	51.43.2	-	3	-	-	3	2	3	-	-	-	2	3
	51.64.1	-	1	1	2	4	-	1	2	2	-	2	1
	51.64.2	2	2	3	3	19	1	3	4	3	3	16	1
	51.65.2	5	8	6	1	9	9	10	5	1	2	3	17
	51.65.5	4	4	4	6	14	2	5	7	6	1	7	8
	64.2	59	174	147	122	439	17	247	188	134	101	207	81
	71.33	1	1	-	-	4	4	1	1	2	-	-	6
	72	23	37	36	53	384	8	106	88	43	48	160	96
Number of personnel	1-9	21	21	14	19	122	32	24	15	18	15	53	104
	10-49	42	68	42	59	318	10	116	91	65	50	126	91
	50-249	42	100	80	80	334	4	174	120	81	69	169	27
	250+	23	94	76	38	111	1	138	85	33	22	52	13
Federal districts	Central	37	64	55	49	273	12	103	67	56	57	134	73
	North-Western	14	39	26	29	139	7	55	36	28	29	70	36
	Southern	20	38	31	21	73	2	70	34	15	10	25	31
	Volga	27	49	28	34	155	9	76	65	34	25	66	36
	Ural	10	29	30	25	74	7	46	44	27	9	27	22
	Siberian	10	48	28	20	116	3	64	46	25	17	54	19
	Far-Eastern	10	16	14	18	55	7	38	19	12	9	24	18

Table 10. **Enterprises using specialised software**

		Number of enterprises using specialised software, total	As a per cent of enterprises using specialised software:									
			Scientific research	CAD	CAM or management of technical facilities or technological processes	Resolving organisational, managerial and economic issues	E-payment	Access to databases of your enterprise via global information systems, including the internet	Desktop publishing systems	Electronic legal-reference information systems	Education	Other
Total		**1588**	**5.4**	**34.6**	**50.5**	**83.5**	**64.8**	**44.1**	**64.7**	**12.2**	**23.9**	**50.0**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	14	7.1	64.3	64.3	100.0	92.9	57.1	71.4	21.4	21.4	42.9
	31.3	41	2.4	41.5	41.5	73.2	51.2	36.6	70.7	9.8	19.5	41.5
	32	29	6.9	55.2	55.2	82.8	65.5	37.9	75.9	6.9	24.1	41.4
	33.2	19	10.5	47.4	57.9	78.9	57.9	36.8	63.2	5.3	21.1	63.2
	33.3	8	-	25.0	25.0	87.5	50.0	12.5	50.0	-	-	25.0
	51.43.2	5	-	20.0	40.0	80.0	40.0	-	80.0	-	-	20.0
	51.64.1	8	-	25.0	62.5	100.0	62.5	50.0	62.5	12.5	25.0	50.0
	51.64.2	29	3.4	34.5	41.4	86.2	82.8	65.5	72.4	17.2	31.0	58.6
	51.65.2	24		8.3	12.5	95.8	50.0	29.2	58.3	-	-	33.3
	51.65.5	28	3.6	7.1	10.7	75.0	53.6	25.0	57.1	-	10.7	39.3
	64.2	896	3.5	38.7	61.0	86.3	71.0	46.2	69.5	12.4	23.5	50.2
	71.33	5	-	-	40.0	60.0	40.0	20.0	60.0		40.0	20.0
	72	482	9.8	27.4	35.9	78.6	55.0	42.9	54.8	13.7	27.2	52.5
Number of personnel	1-9	160	3.8	15.0	21.3	66.9	33.8	26.9	40.0	3.1	16.9	40.0
	10-49	481	4.6	20.0	39.7	80.2	56.5	31.8	52.6	9.6	16.4	45.1
	50-249	613	6.5	37.7	56.1	85.5	70.3	49.1	70.1	12.4	24.1	49.3
	250+	334	5.4	59.3	69.8	92.5	81.4	61.1	83.8	19.8	37.7	63.2
Federal districts	Central	443	7.4	36.1	51.5	84.4	71.1	49.2	60.5	12.6	27.3	49.9
	North-Western	230	5.2	33.5	45.7	83.0	62.6	40.9	73.0	12.2	19.6	49.1
	Southern	165	2.4	27.9	45.5	78.2	49.1	41.2	58.2	10.9	19.4	43.6
	Volga	272	5.5	38.2	52.9	85.3	62.9	46.7	71.3	14.0	26.5	50.4
	Ural	161	5.0	35.4	52.8	78.9	65.8	40.4	63.4	9.9	19.3	55.3
	Siberian	212	5.2	33.5	51.9	87.3	69.8	42.5	65.1	11.3	25.0	48.1
	Far-Eastern	105	2.9	32.4	52.4	83.8	61.0	37.1	58.1	12.4	24.8	57.1

Table 11. **Distribution of enterprises by share of orders for purchases obtained by Internet in 2005 in total volume of purchases**

		Purchases						Sales					
		< 10%	10-29%;	30-49%	50-69%	70-100%	did not use	< 10%	10-29%;	30-49%	50-69%	70-100%	did not use
Total		**267**	**89**	**47**	**34**	**42**	**1272**	**246**	**76**	**55**	**32**	**43**	**1299**
Russian Classification of Economic Activity Types (**code** RCEAT)	30	3	3	1	-	-	8	5	3	1	-	-	6
	31.3	13	3	1	-	-	29	14	3	-	1	-	28
	32	12	0	1	1	0	19	10	3	0	2	0	18
	33.2	5	-	-	-	-	16	6	-	-	-	-	15
	33.3	-	1	-	-	-	8	-	1	-	-	-	8
	51.43.2	3	1	-	-	-	4	-	1	1	-	-	6
	51.64.1	1	2	-	-	2	3	-	1	-	-	2	5
	51.64.2	7	3	3	2	6	9	8	2	7	2	1	10
	51.65.2	5		1	-	-	32	3		1	1	-	33
	51.65.5	2	2	4	1	-	25	3	1	5	1	1	23
	64.2	155	43	21	19	14	706	144	34	21	14	19	726
	71.33	-	-	-	-	-	10	1	-	-	-	-	9
	72	61	31	15	11	20	403	52	27	19	11	20	412
Number of personnel	1-9	8	3	5	2	7	204	10	6	6	2	8	197
	10-49	65	24	8	7	9	426	50	14	15	8	11	441
	50-249	97	44	23	22	18	436	98	40	25	13	17	447
	250+	97	18	11	3	8	206	88	16	9	9	7	214
Federal districts	Central	73	33	21	10	17	336	75	27	23	8	21	336
	North-Western	44	14	3	7	1	185	43	10	10	5	4	182
	Southern	22	4	3	1	3	152	20	4	6	2	4	149
	Volga	52	17	10	5	4	214	52	16	9	3	4	218
	Ural	26	4	2	4	4	135	19	3	3	4	3	143
	Siberian	33	10	4	6	10	162	23	12	4	7	6	173
	Far-Eastern	17	7	4	1	3	88	14	4	-	3	1	98

Table 12. **Availability of personal computers and local area networks**

		Number of personal computers, total	As a per cent of all personal computers				Number of personal computers per 100 personnel	Number of personal computers having access to the Internet per 100 personnel
			Of which purchased in the reported year	connected to local area networks	having access to global information systems	of which to the Internet		
Total		**230749**	**16.0**	**81.3**	**51.1**	**45.2**	**42.3**	**19.1**
Russian Classification of Economic Activity Types (code RCEAT)	30	2710	19.0	73.8	46.4	41.6	19.3	8.0
	31.3	4303	12.7	86.9	33.8	32.9	16.3	5.3
	32	1996	21.6	66.1	26.7	24.4	12.7	3.1
	33.2	1226	16.2	77.8	28.8	20.1	13.7	2.8
	33.3	100	29.0	47.0	9.0	8.0	7.8	0.6
	51.43.2	127	23.6	37.0	52.8	52.8	25.0	13.2
	51.64.1	628	22.6	89.5	27.4	27.4	59.8	16.4
	51.64.2	2477	15.8	92.2	88.7	84.7	47.9	40.6
	51.65.2	411	15.1	65.9	52.6	44.8	28.4	12.7
	51.65.5	866	24.2	91.6	52.2	51.3	39.5	20.3
	64.2	172858	15.1	81.9	50.4	45.5	40.5	18.4
	71.33	42	4.8	54.8	64.3	64.3	20.5	13.2
	72	43005	19.1	79.1	55.8	45.3	105.2	47.6
Number of personnel	1-9	1804	20.5	39.6	57.3	33.1	164.0	54.4
	10-49	13119	19.2	77.0	53.7	49.7	91.2	45.4
	50-249	45545	19.4	83.8	62.4	59.2	62.3	36.9
	250+	170281	14.8	81.5	47.8	41.3	37.3	15.4
Federal districts	Central	76099	14.4	76.6	47.3	43.2	43.7	18.9
	North-Western	27238	15.5	84.5	45.0	43.1	47.8	20.6
	Southern	24864	19.0	86.3	55.4	50.2	37.6	18.9
	Volga	45453	17.0	82.3	54.3	44.2	37.9	16.8
	Ural	19114	12.2	82.7	60.2	50.3	60.4	30.4
	Siberian	27154	18.2	83.9	51.3	45.4	40.0	18.1
	Far-Eastern	10827	19.4	82.7	52.6	48.6	38.0	18.5

Annex 6. FIELDS OF TRANING OF THE HIGHER EDUCATION RELATED TO ICT

RCPE code[12]	Title
	Physics and mathematics
010200	Mathematics. Applied mathematics
010300	Mathematics. Computer sciences
010400	Information technologies
010500	Applied mathematics and informatics
010501	Applied mathematics and informatics
010502	Applied informatics (by branches)
010503	Information systems' mathematic support and administration
010600	Applied mathematics and physics
010800	Radiophysics
010801	Radiophysics and electronics
010802	Fundamental radiophysics and physical electronics
010803	Microelectronics and semiconductor devices
	Education and pedagogics
050202	Informatics
	Public health
060114	Medical cybernetics
080000	**Economics and control**
080700	Business-informatics
080800	Applied informatics
080801	Applied informatics by field
	Information safety
090100	Information safety
090101	Cryptography
090102	Computer safety
090103	Organization and technology of information safety
090104	Complex protection of information objects of informatisation
090105	Complex information safety of automated systems
090106	Information safety of telecommunication systems
090107	Counteraction to technical intelligence
	Power engineering, power engineering machinery construction and electrical engineering
140306	Electronics and automatics of physical equipment
	Metallurgy, machinery construction and metal working
150900	Technology, equipment and automation of machinery construction
	Aeronautical engineering and missile-space technology
160403	Systems of aircraft control
	Transport facilities
190402	Railway automation, remote control and communication
	Electronic technology, radio technology and communication
210100	Electronics and microelectronics
210101	Physical electronics
210103	Quantum and optical electronics
210104	Microelectronics and solid electronics
210105	Electronics devices and instruments
210106	Industrial electronics
210107	Electronic machinery construction
210108	Micro-system equipment

[12] In accordance with the Russian Classification of professions by education (RCPE) training courses are identified by 3 and 4 code unit, specialties – by 5 and 6. Accordingly in courses of training: 5 and 6 code unit is equal to zero.

RCPE code[12]	Title
210200	Design and technology of electronic devices
210201	Design and technology radio electronic devices
210202	Design and technology of computing devices
210300	Radio engineering
210301	Radio physics and electronics
210302	Radio engineering
210303	Common radio electronic apparatus
210304	Radio electronic systems
210305	Facilities for radio electronic protection
210312	Audio visual equipment
210400	Telecommunications
210401	Physics and optical communication facilities
210402	Facilities for mobile objects communication
210403	Protected communication systems
210404	Multi-channel telecommunication systems
210405	Radio communication, radio broadcasting and television
210406	Communication networks and communication systems
	Automation and control
220100	System analysis and control
220200	Automation and control
220201	Control and informatics in technical systems
220202	Ship control systems
220203	Autonomous information and control systems
220300	Computer-aided technologies and production
220301	Automation of technological processes and production (by branches)
220400	Mechanotronics and robotics
220401	Mechanotronics
220402	Robots and robot systems
	Informatics and computer engineering
230100	Informatics and computer engineering
230101	Computing machinery, complexes, systems and networks
230102	Computer-aided systems of information processing and control
230104	Computer-aided design systems
230105	Software of computer engineering and computer-aided systems
230200	Information systems
230201	Information systems and technologies
230202	Information technologies in education
230400	Applied mathematics
230401	Applied mathematics

Annex 7. MODEL QUESTIONNAIRE "ICT PROFESSIONALS TRAINING IN INSTITUTIONS OF HIGHER PROFESSIONAL EDUCATION"

Section 1. Structure of university

end of accounting year

university has (1 — yes, 0 — no)					university provides programmes of (1- yes, 0 – no, 2 – no, but plans to realize):		
student dormitory	library	e-library	data-processing centre	printshop	additional vocational education	additional vocational education with awarding certificate of correspondence to corporate standards	Distant education
101	102	103	104	105	106	107	108

Section 2. Number of students, enrolment, and graduates

persons

Title courses and specialities of the higher vocational education, related to ICT	No	Attendance status of education: full-time, part-time, distant, external	Enrolment	Number of students	Actual graduates (01.10.2004 — 30.09.2005)
1	2	3	4	5	6
Courses and specialities of the higher vocational education, related to ICT, total	201	x			
including those mainstreaming ICT: Physics and mathematics					
Mathematics. Applied mathematics	202				
Mathematics. Computer sciences	203				
Information technologies	204				
Applied mathematics and informatics	205				
Applied mathematics and informatics	206				
Applied informatics (by branches)	207				

Title courses and specialities of the higher vocational education, related to ICT	No	Attendance status of education: full-time, part-time, distant, external	Enrolment	Number of students	Actual graduates (01.10.2004 — 30.09.2005)
1	2	3	4	5	6
Information systems' mathematic support and administration	208				
Applied mathematics and physics	209				
Radiophysics	210				
Radiophysics and electronics	211				
Fundamental radiophysics and physical electronics	212				
Microelectronics and semiconductor devices	213				
Education and pedagogy					
Informatics	214				
Public health					
Medical cybernetics	215				
Economics and control					
Business-informatics	216				
Applied informatics	217				
Applied informatics by field	218				
Information safety					
Information safety	219				
Cryptography	220				
Computer safety	221				
Organization and technology of information safety	222				
Complex protection of information objects of informatisation	223				
Complex information safety of automated systems	224				
Information safety of telecommunication systems	225				
Counteraction to technical intelligence					
Power engineering, power engineering machinery construction and electrical engineering	226				
Electronics and automatics of physical equipment	227				

Title courses and specialities of the higher vocational education, related to ICT	No	Attendance status of education: full-time, part-time, distant, external	Enrolment	Number of students	Actual graduates (01.10.2004 — 30.09.2005)
1	2	3	4	5	6
Metallurgy, machinery construction and metal working	228				
Technology, equipment and automation of machinery construction					
Aeronautical engineering and missile-space technology	229				
Systems of aircraft control					
Transport facilities					
Railway automation, remote control and communication	230				
Electronic technology, radio technology and communication					
Electronics and microelectronics	231				
Physical electronics	232				
Quantum and optical electronics	233				
Microelectronics and solid electronics	234				
Electronics devices and instruments	235				
Industrial electronics	236				
Electronic machinery construction	237				
Micro-system equipment	238				
Design and technology of electronic devices	239				
Design and technology radio electronic devices	240				
Design and technology of computing devices	241				
Radio engineering	242				
Radio physics and electronics	243				
Radio engineering	244				
Common radio electronic apparatus	245				
Radio electronic systems	246				
Facilities for radio electronic protection	247				
Audio visual equipment	248				
Telecommunications	249				

Title courses and specialities of the higher vocational education, related to ICT	No	Attendance status of education: full-time, part-time, distant, external	Enrolment	Number of students	Actual graduates (01.10.2004 — 30.09.2005)
1	2	3	4	5	6
Physics and optical communication facilities	250				
Facilities for mobile objects communication	251				
Protected communication systems	252				
Multi-channel telecommunication systems	253				
Radio communication, radio broadcasting and television	254				
Communication networks and communication systems	255				
Automation and control					
System analysis and control	256				
Automation and control	257				
Control and informatics in technical systems	258				
Ship control systems	259				
Autonomous information and control systems	260				
Computer-aided technologies and production	261				
Automation of technological processes and production (by branches)	262				
Mechanotronics and robotics	263				
Mechanotronics	264				
Robots and robot systems	265				
Informatics and computer engineering					
Informatics and computer engineering	266				
Computing machinery, complexes, systems and networks	267				
Computer-aided systems of information processing and control	268				
Computer-aided design systems	269				
Software of computer engineering and computer-aided systems	270				
Information systems	271				

Title courses and specialities of the higher vocational education, related to ICT	No	Attendance status of education: full-time, part-time, distant, external	Enrolment	Number of students	Actual graduates (01.10.2004 — 30.09.2005)
1	2	3	4	5	6
Information systems and technologies	272				
Information technologies in education	273				
Applied mathematics	274				

Note 1. Competition for free of charge department and competition for paid department in 2005

	№	1 - 1 person per one position and below , 2 - 2 persons per one position, 3 - 3-4 persons per one position, 4 - Over 4 persons per one position, 9 - there is no such form of education
1	2	3
Free of charge department	275	
Paid department	276	

Section 3. Resource base

3.1 Resource adequacy assessment

	№	Assessment of resources' provision (as a per cent of quantity required)	Quality of available resources: 1 – Bad, 2 – Satisfactory, 3 – Good
1	2	3	4
Personal computers & other information-processing equipment	301		
Software & database	302		
Access to the Internet	303		
Administrative & managerial staff	304		
Qualified teachers	305		
Appropriation for bonus for teachers	306		x
Appropriation for advancing teachers' professional excellence	307		x
Modern curricula	308		
Teaching & learning sets	309		
Teaching rooms	310		
Teaching equipment	311		
Scientific equipment and apparatuses	312		
Scientific journals & books	313		

3.2. Teaching staff

	№	Total, persons
Teaching staff	314	
Including multiple job holders	315	
Administrative & managerial staff	316	
Research assistances	317	
Other	318	

№	Age of teachers	Assess teaching staff structure by age, as a per cent of total (sum of lines 319-323 gives 100%)
319	below 30 years old	
320	30 – 39 years old	
321	40 – 49 years old	
322	50 – 59 years old	
323	60 years old and over	

Note 2. Teachers hired during the recent five-year period — fraction of total teaching staff (put "0" if none matches).
Total (324) ___
under 30 years old (325) __
graduates from the university (326) ___

Note 3. Teachers who have research and teaching publications during the recent two-year period — as a per cent of total teaching staff (put "0" if non matches):
Research publications (327) ____;
teaching publications (328) ___;
including textbooks recommended by the Ministry of Education and Science printed in 1000 or more copies (329) ___.

Section 4. Use of information and communication technologies

4.1. Availability of personal computers and local area networks

Indicator	№	Total
1	2	3
Number of personal computers, total	401	
Of which purchased in the reported year	402	
Number of personal computers:		
connected to local area networks	403	
having access to global information systems	404	
of which to the Internet	405	

4.2. Availability of specialised software, besides common-use software for (Yes – 1, No – 0):

Scientific research	406	
Electronic legal-reference information systems	407	
Education	408	

4.3. Availability in the university (Yes – 1, No – 0):

E-mail	409	
Dedicated communication lines	410	

4.4. Access to the Internet and availability of a Website on the Internet

№	Access to the Internet – put "1" in the proper line		№	Availability of a Website on the Internet and its content (1 —yes, 0 — no)	
411	No access to the Internet		415	The university has its own Website or Webpage on the Internet	
412	The Internet is available to administrative & managerial staff only		416	On the Website there is presented information on: Procedures to enter the University	
413	The Internet is available to administrative & managerial staff and teaching staff only		417	Curricula	
414	The Internet is available to administrative & managerial staff, teaching staff and students		418	Detailed training plans	
			419	List of teachers and their CVs	
			420	Financial plan, budget of the University	

Section 5. Description of curricula

Your university is going to change its curricula (1— yes, 0 — no) (501) __
If yes, describe the direction and the target period of changes (as in lines 502–507), if no, provide the reasons for keeping the curricula unchanged (as in lines 508–513)

Direction of changes	№	Within the next	
		Year or two (1— yes, 0 — no)	Three to five years (1— yes, 0 — no)
1	2	3	4
Admission reduced for some training programmes	502		
Admission enlarged for some training programmes	503		
Training programme is cancelled due to limited demand	504		
Training programme start due to evolving demand	505		
Training programme start relying on budgetary financing	506		
Other changes	507		

Reasons for keeping the training programme unchanged within the next 5 years (insert "1" in proper cases)

Programme structure is well done, does not need changes (508)__
Programme has been changed recently (509) __
Insufficient human resources (510) __
Insufficient material resources (511)__
Insufficient financial resources (512)__
Changes are beyond our responsibility (513)__

Section 6. Job placement

Cooperation with possible employers and job placement

Types of co-operation with potential employers	№	(1— yes, 0 — no)	Activities aimed at graduates' job placement	Line number	(1— yes, 0 — no)
Involving business into educational programmes financing	601		Guaranteed assignment	609	
Business investment in equipment, building, and maintenance	602		Assignment is absent	610	
Teaching provided by experts from business	603		Career placement actions	611	
Involving experts from business into curricula development	604		Job fairs	612	
Involving students into practical business activities	605		Cooperation with labour exchanges	613	
Involving teachers into practical placement	606		Contracting graduates for business employment	614	
Financial incentives from business to best students	607				
Training teachers and students with business training facilities	608				

Note 4. Who graduates the university — broad specialists or narrow specialists (put "1" in proper line 615—618): basically broad specialists (615) ___; basically narrow specialists (616) ___; both (617) ____ , difficult to answer (618) _____.

Note 5. Estimate the share of students who combine studies and work:

	№	Share of full-time students who combine studies and work (as a per cent of total number of full-time students)	Full-time education is absent (put "0" if given attendance status of education is absent)
Senior students	619		
Junior students	620		

Note 6. Assignment of 2004 graduates

	№	Graduates who found job on their own or due to the educational university (as a percentage of total number of graduates)
Graduates whose education was paid by employers	621	
Graduates who found job in advance on their own	622	
Graduates who found job in advance due to the educational university	623	
Graduates who found job on leaving on their own	624	
Graduates who found job on leaving due to the educational university	625	
Jobless graduates	626	

Total 100%

Annex 8. GUIDELINES FOR COMPLETING THE INDICATORS OF THE QUESTIONNAIRE ON TRAINING OF ICT PROFESSIONALS

Title	Explanation
Enrolment	The number of enrollees accounts for the number of students enrolled in the education university, excluding those reinstalled and transferred from other higher education institutions (or university departments implementing education programmes of secondary-level professional education (branch, college, etc.)) or other forms of education of the higher education institution.
Actual graduates	The number of graduates includes all persons who were awarded federal education diploma or those who graduated from the university during the reporting period, regardless of the school year when they completed theoretical curriculum. This includes the bachelors who continue their education in the university.
Teaching staff	The number of teachers includes all professors and teachers of the higher education institution holding teacher appointments envisaged by the staffing specifications (excluding external secondary job employees, i.e. those who have primary employment at another organisation or institution and teaching at the university as regular secondary job employees). Teachers paid by the hour are not taken into account. The age of teachers is counted in the number of full years as of the beginning of year.
Number of personal computers & other information-processing equipment	All computers and terminals mounted in the universityss shall be taken into account (those owned by the institution or leased, provided gratuitously or obtained under other conditions). Personal computers can be of any type – PC/XT, AT, Pentium and compatible with them, Macintosh, notebook, portable personal computers, and of other analogous types. Terminal consists of a display and keyboard is designed for information input/output and ensuring connection of a user to computer. Usually its capabilities are limited to the ability to display the information transmitted to it, process the input information and transfer it to the computer. Multiterminal systems can be mounted in classes: for example, the teacher's workbench is equipped with a computer, while the tables of the students are equipped with terminals connected to the computer. If the institute uses multiterminal systems, a sum of terminals and the computer to which they are connected should be taken into account, if the latter is an additional workbench (teacher's workbench, for example) equipped with a monitor and a keyboard. If there are no personal computers or terminals in the university, but they are used by students and teachers in other places, rows 401-405 remain empty.
Number of personal computers & other information-processing equipment connected to local area networks	Local area network connects two or more computers (which can be of different types) placed within one building or several neighbouring buildings without using common user facilities. This row accounts for the use of multiterminal systems, which actually ensure a possibility of network interaction of several users. Connection of a computer to peripherals (for example, printer) is not a local area network.
Number of personal computers & other information-processing equipment having access to global information systems	Global information network covers the aggregate of computers, which can be located in any place worldwide, connected by means of long distance channels (dial-up and allocate) provided by telephone companies or other telecommunication agencies. The global information network enables users to exchange information, share technical means, software, and information resources. The global network provides an opportunity of information exchange between users, share technical tools and software, and information resources. If a computer can receive and send information in electronic form to remote computers placed beyond the limits of one or several buildings, it is considered to be connected to the global network, irrespective of the type of equipment and software used, protocols and regulations of information exchange.
Number of personal computers & other information-processing equipment purchased in the reported year	The equipment purchased, leased or obtained under other conditions in 2005 shall be singled out of the total number of personal computers and terminal listed.
Availability of specialised software	Subsection 4.2. accounts for the availability of special software used to solve the problems of a certain category shall be stated irrespective of the conditions under which the software is obtained. General purpose software, such as operating systems, compilers, standard software used to solve a certain category of problems (for example, text and graphic editors, electronic spreadsheets, database management systems), unless special software application, mail programme, etc. are developed on their basis, are not taken into account.

Title	Explanation
Availability in the University e-mail	Availability of university e-mail address is stated if the university has an official e-mail address specified among its contact data (address, telephone, fax, etc.); personal e-mail addresses of teachers and students are not accounted for even if they are used to send and receive documents addressed to the university.
Availability of a Website on the Internet	Availability of the university website is stated if the university has at least one web-page in the Internet at which it publishes and regularly (at least once every six months) updates the information about its activity. The university webpage should have a unique address which can be accessed by any Internet user. It makes no difference who publishes the information in the Internet (teachers, students, graduates, etc.) and under what conditions the university uses the network address space.

Annex 9. THE LIST OF SURVEYED HIGHER EDUCATION INSTITUTIONS THAT PROVIDE TRAINING OF ICT-PROFESSIONALS

	Number of higher education
Russian Federation	60
Central Federal District	
Voronezh region	4
Kursk region	1
Lipetsk region	1
Moscow region	1
Tambov region	1
Tver region	2
Yaroslavl region	1
Moscow	*16*
North West Federal District	
Republic of Karelia	1
Arkhangelsk region	1
Kaliningrad region	1
Novgorod region	1
Pskov region	1
Saint-Petersburg	2
South Federal District	
Republic of Karachaevo-Cherkessia	1
Krasnodar Territory	4
Stavropol Territory	2
Volgograd region	1
Rostov region	2
Privolzhsky (Volga) Federal District	
Republic of Chuvashia	1
Nizhny Novgorod region	1
Samara region	2
Ulyanovsk region	1
Ural Federal District	
Chelyabinsk region	1
Siberian Federal District	
Republic of Altay	1
Republic of Khakassia	2
Irkutsk region	1
Kemerovo region	2
Novosibirsk region	3
Tomsk region	1

Annex 10. THE RESULTS OF ICT-PROFESSIONALS TRAINING IN INSTITUTIONS OF HIGHER PROFESSIONAL EDUCATION

Table 1. **Number of HE institutions by share of students of ICT-related specialties**

	Number of the higher vocational educational institutions	Number of students	Enrolment 2005	Actual graduates (01.10.2004 - 30.09.2005)
Total	**60**	**116955**	**26188**	**18311**
Of which by type of education				
Full-time education	58	84961	18903	14402
Part-time education	39	8624	1522	1349
Distant education	55	19942	4875	2417
External education	14	3428	888	137

Table 2. **Distribution of surveyed HE institutions by share of students of ICT-related specialties**

	Number of the higher vocational educational institutions	Number of students	
		total	including ICT-related courses and specialities provided by the HE institution,
	HE institutions, total		
Total	**60**	**545146**	**116955**
of which universities with share of students of ICT-related specialties:			
80-100%	3	19409	16409
50-79%	9	63655	43480
less than 50%	48	462082	57066
	Public HE institutions		
Total	**47**	**501662**	**111985**
of which universities with share of students of ICT-related specialties:			
80-100%	2	19212	16212
50-79%	8	60904	41852
less than 50%	37	421546	53921
	Private HE institutions		
Total	**13**	**43484**	**4970**
of which universities with share of students of ICT-related specialties:			
80-100%	1	197	197
50-79%	1	2751	1628
less than 50%	11	40536	3145

Table 3. **Facilities available at HE institutions**

	Total	of which have:				
		student dormitory	library	e-library	data-processing centre	printshop
Number of HE institutions, total	**60**	**40**	**60**	**48**	**57**	**41**
of which universities with share of students of ICT-related specialties:						
80-100%	3	1	3	2	2	
50-79%	9	7	9	7	8	6
less than 50%	48	32	48	39	47	35

Table 4. **HE institutions providing programmes of additional education**

	Number of the HE institutions, total	Of which: number of universities that		
		provide programmes of additional vocational education	plan to provide programmes of additional vocational education	don't provide and don't plan to provide programmes of additional vocational education
Total	**60**	**50**	**7**	**8**
of which universities with share of students of ICT-related specialties:				
80-100%	3	2		1
50-79%	9	7	3	1
less than 50%	48	41	4	6

Table 5. **Distribution of HE institutions by entrance exams competition rate, 2005**

	Total	of which universities with share of students of ICT-related specialties:		
		80-100%	50-79%	less than 50%
Number of HE institutions having entrance exams for free of charge department	**49**	**2**	**8**	**39**
Of which: Competition for free of charge department: 1 and below person per position	-	-	-	-
2 persons per position	9	-	1	8
3-4 persons per position	23	1	3	19
Over 4 persons per position	17	1	4	12
Number of HE institutions having entrance exams for paid department	**60**	**3**	**9**	**48**
Of which: Competition for paid department 1 person and below per position	20	-	5	15
2 persons per position	33	2	4	27
3-4 persons per position	5	1	-	4
Over 4 persons per position	2	-	-	2

Table 6. **HE institutions by availability of resource**

	Availability of resources				
	80-100%	50-79%	30-49%	20-39	less than 20%
	Number of HE institutions				
Personal computers & other information processing equipment	43	12	1	-	-
Software & database	32	16	4	3	2
Access to the Internet	47	7	-	2	-
Administrative & managerial staff	49	5	-	-	1
Qualified teachers	47	9	-	-	-
Appropriation for bonus for teachers	8	27	5	13	6
Appropriation for advancing teachers' professional excellence	12	25	6	12	6
Modern curricula	45	7	2	2	-
Teaching & learning sets	44	12	-	-	-
Teaching rooms	39	15	1	-	1
Teaching equipment	18	33	4	2	-
Scientific equipment and apparatuses	18	22	7	5	1
Scientific journals & books	37	17	1	-	-

Table 7. **Teaching staff**

	Total, persons	of which universities with share of students of ICT-related specialties:		
		80-100%	50-79%	less than 50%
Teaching staff	57875	1730	24359	31786
Including multiple job holders	10094	661	2879	6554
Administrative & managerial staff	8507	409	1945	6153
Research assistances	14079	100	11083	2896
Other	26247	20	8548	17679
Of the total teaching staff: teachers hired during the recent five-year period	8575	130	2814	5631
Of them				
under 30 years old	1909	6	518	1385
graduates from the university	2121	6	487	1628
teachers who had research and teaching publications during the recent two-year period:				
research publications	42425	346	18718	23361
teaching publications	42320	659	18794	22867
of which textbooks recommended by the Ministry of Education and Science printed in 1000 or more copies	3562	130	328	3104

Table 8. **Number of teachers by age group (as a per cent to total number of teachers)**

	Below 30 years old	30 – 39 years old	40 – 49 years old	50 – 59 years old	60 years old and over
Total	14.4	22.2	21.3	27.2	14.8
of which universities with share of students of ICT-related specialties:					
80-100%	12.1	13.2	33.8	19.8	21.1
50-79%	10.9	27.0	20.1	30.0	11.9
less than 50%	17.2	19.0	21.5	25.5	16.8

Table 9. Access to the Internet

	Number of HE institutions, total	of which having access to the Internet	of which providing access to the Internet for:		
			administrative & managerial staff, teaching staff and students	administrative & managerial staff and teaching staff only	administrative & managerial staff only
Total	**60**	**60**	**59**	**1**	**-**
of which universities with share of students of ICT-related specialties:					
80-100%	3	3	2	1	-
50-79%	9	9	9	-	-
less than 50%	48	48	48	-	-

Table 10. Availability of a Website on the Internet

	Number of HE institutions, total	Of which having availability of a Website on the Internet and its content	of which placing on the Website the following information:				
			Procedures to enter the University	Curricula	Detailed training plans	List of teachers and their CVs	Financial plan, budget of the University
Total	**60**	**56**	**49**	**36**	**25**	**23**	**5**
of which universities with share of students of ICT-related specialties:							
80-100%	3	3	3	2	1	1	
50-79%	9	9	9	9	5	5	1
less than 50%	48	44	37	25	19	17	4

Table 11. **HE institutions planning to change their curricula**

	Number of HE institutions, total	of which planning to change curricula	of which in the following directions:									
			reducing admission for some training programmes		increasing admission for some training programmes		cancellation of training programme due to limited demand		launching training programme due to evolving demand		launching training programme relying on provisional budgetary financing	
			within the next year or two	within the next three to five years	within the next year or two	within the next three to five years	within the next year or two	within the next three to five years	within the next year or two	within the next three to five years	within the next year or two	within the next three to five years
Total	**60**	**47**	**24**	**19**	**30**	**23**	**18**	**14**	**36**	**28**	**20**	**21**
of which universities with share of students of ICT-related specialties:												
80-100%	3	1	1	1	1	1	-	-	-	-	-	-
50-79%	9	7	4	2	7	5	3	2	6	3	3	4
less than 50%	48	39	19	16	22	17	15	12	30	25	17	17

Table 12. **HE institutions which do not plan to change their curricula**

	Number of HE institutions, total	of which is not planning to change curricula	of which for the following reasons					
			Programme structure is well done, does not need changes	Programme has been changed recently	Insufficient human resources	Insufficient material resources	Insufficient financial resources	Changes are beyond university's responsibility
Total	**60**	**13**	**8**	**3**	-	-	-	-
of which universities with share of students of ICT-related specialties:								
80-100%	3	2	2	-	-	-	-	-
50-79%	9	2	1	-	-	-	-	-
less than 50%	48	9	5	3	-	-	-	-

Table 13. **HE institutions activities towards job placement of graduates**

	Number of HE institutions		Number of students	
	total	as a per cent of number of the higher vocational educational institutions	total	as a per cent of number of students
Activities aimed at graduates' job placement:				
Guaranteed assignment	1	11.1	6301	9.9
Assignment is not provided				
Career placement actions	7	77.8	49421	77.6
Job fairs	9	100.0	63655	100.0
Cooperation with labour exchanges	3	33.3	19654	30.9
Contracting graduates for business employment	8	88.9	57523	90.4
Types of co-operation with potential employers:				
Involving business into educational programmes financing	6	66.7	35058	55.1
Business investment in equipment, construction and maintenance of premises	5	55.6	40149	63.1
Teaching provided by experts from business	7	77.8	43160	67.8
Involving experts from business into curricula development	6	66.7	34730	54.6
Involving students into practical business activities	8	88.9	57851	90.9
Involving teachers into practical placement	7	77.8	57335	90.1
Financial incentives from business to best students	5	55.6	34605	54.4
Training teachers and students with business training facilities	1	11.1	6301	9.9

Table 14. **Distribution of HE institutions by share of full-time students who combine studies and work**

Share of full-time students who combine studies and work (as a per cent of total number of full-time students)	Senior students which combine studies and work	Junior students which combine studies and work
80-100%	13	-
50-79%	16	7
30-49%	12	5
20-29%	8	11
10-19%	3	18
less than 10%	-	6
Reference: number of HE institutions, provided relevant data	52	47

Table 15. **Job placement of graduates (as a percent of total number of graduates)**

	Total	of which universities with share of students of ICT-related specialties:		
		80-100%	50-79%	less than 50%
Total	100	100	100	100
Including:				
Graduates whose education was paid by employers	9.3	-	13.3	9.6
Graduates who found job in advance on their own	38.3	48.3	42.0	33.4
Graduates who found job in advance due to the educational university	35.4	48.9	21.0	39.7
Graduates who found job on leaving on their own	8.3	-	13.6	7.7
Graduates who found job on leaving due to the educational university	6.9	2.8	7.1	8.0
Jobless graduates	1.7	-	3.0	1.5

Table 16. **Distribution of HE institutions by training profile ("broad" and "narrow")**

	Total	Of which training:		
		mostly broad specialists	mostly narrow specialists	both
Number of HE institutions, total	60	19	3	37
of which universities with share of students of ICT-related specialties:				
80-100%	3	2	1	-
50-79%	9	3		6
less than 50%	48	14	2	31

Table 17. **Availability of personal computers and their provision to students**

	Total	of which			
		purchased in the reported year	connected to local area networks	having access to global information systems	of which to the Internet
Number of personal computers, total	71961	12509	43261	47983	47983
of which in the HE institutions with share of students of ICT-related specialties:					
80-100%	2650	482	1717	1570	1570
50-79%	22428	5975	7778	16291	16291
less than 50%	46883	6051	33766	30122	30122
Number of personal computers per 100 students, units	19	3	12	13	13
Of which in the HE institutions with share of students of ICT-related specialties:					
80-100%	19	4	13	11	11
50-79%	41	11	14	30	30
less than 50%	15	2	11	10	10

Table 18. **Availability of specialised software**

	Number of HE institutions, total	HE institutions using specialised software for:			Reference: HE institutions having	
		Scientific research	Legal-reference	Education	E-mail	Dedicated communication lines
Total	60	56	59	58	57	47
of which universities with share of students of ICT-related specialties:						
80-100%	3	3	3	3	3	2
50-79%	9	9	9	9	8	8
less than 50%	48	44	47	46	46	37

Annex 11. MODEL QUESTIONNAIRE OF HOUSEHOLDS

1. Do you or anyone in your household have access to any of the following devices at home?

1 Phone
2 Mobile phone
3 Fax
4 Television (except digital)
5 Digital TV
6 Games console
7 Satellite dish
8 Cable TV
9 Videocamera (except digital)
10 Digital videocamera
11 Camera (except digital)
12 Digital camera
13 Desktop computer
14 Portable computer (laptop)
15 Handheld computer (palmtop)
16 None of the above

Go to question 2

2. Does any member of the household have access to the Internet at home?

1 No ---------->*Go to question 3*
2 Yes ---------->*Go to question 4*
3 Don't know --->*Go to question 4*

3. What are the reasons for not having access to the Internet at home?

1 There is not access to the Internet at our region, house
2 Don't want Internet
3 Don't need Internet
4 Equipment costs too high
5 Access costs too high
6 Lack of skills
7 Privacy or security concerns
8 Have access to the Internet elsewhere
9 None of the above, but other

Go to question 4

4. Do you use a mobile phone?

1 Yes
2 No

Go to question 5

5. When did you most recently use a computer?

1 Within the last 3 months ---------->*Go to question 6*
2 Between 3 months and a year ago---->*Go to question 8*
3 More than 1 year ago ----------> *Go to question 8*
4 Never used one ---------->*Go to question 8*

6. How often on average have you used a computer in the last 3 months?

1 Every day or almost every day
2 At least once a week (but not every day)
3 At least once a month (but not every week)
4 Less than once a month

Go to question 7

7. Where have you used a computer in the last 3 months?

1 At home
2 At place of work (other than home
3 At place of education
4 At other person's home
5 Other (e.g. library, hotel, airport, Internet café, etc.)

Go to question 8

8. When did you most recently use the Internet?

1 Within the last 3 months ----------> *Go to question 9*
2 Between 3 months and a year ago----> *Go to question 11*
3 More than 1 year ago ----------> *Go to question 11*
4 Never used one ---------- > *Go to question* 19

9. On average how often did you use the Internet in the last 3 months?

1 Every day or almost every day
2 At least once a week (but not every day)
3 At least once a month (but not every week)
4 Less than once a month

Go to question 10

10. Where have you used the Internet in the last 3 months?

1 At home
2 At place of work (other than home
3 At place of education
4 At other person's home
5 Public library (e.g. library, hotel, airport, Internet café, etc.)
6 Post office
7 Public office, town hall, government agency
8 Community or voluntary organization
9 Internet club, Internet café, etc.
10 hotspot (at the airports, stations, in hotels, restaurants, at exhibitions, etc.)

Go to question 11

11. Do you use any of the following mobile devices to access the Internet?

1 Mobile phone via WAP or GPRS
2 Mobile phone via UMTS (3G)
3 Handheld computer (palmtop)
4 Portable computer (laptop)
5 None of the above

Go to question 12

12. Do you use a personal e-mail address?

1 Yes
2 No

Go to question 13

13. For which of the following activities did you use the Internet?

Communication

1 Sending / receiving e-mails
2 Telephoning over the Internet / videoconferencing
3 Other (use of chat sites, etc.)

Information search and on-line services related to ...

4 Goods or services
5 Tourism

6 Listening to radios / watching television
7 Playing or downloading games, images, music, films
8 Downloading software
9 Reading news, newspapers, magazines
10 Keeping of the personal information on the specialized sites
11 Looking for a job or sending a job application
12 Other information search

Selling of goods or services, banking

13 Selling goods or services (e.g. via auctions)
14 Banking

Interaction with government and municipalities (administration at national, regional and city level)

15 Obtaining information about the schedule of such organizations
16 Downloading official forms, samples of documents
17 Sending in filled forms
18 consultations on-line

Education and training

19 Looking for information about education, training or course offers, etc.
20 Consulting the Internet with the purpose of learning
21 Post educational courses for raising the skills level
22 Post educational courses not for work
23 Formalised educational activities (school, university etc.)

Health, Medical services

24 Seeking health-related information (e.g. nutrition, injury, disease, etc.)
25 Seeking -related information about health services (clinics, hospitals, etc.)
26 Making online an appointment with a doctor about a consultation
27 Medical advice online from a practitioner

Go to question 14

14. When did you most recently buy or order goods or services for private use over the Internet?

1 Never bought or ordered ---------- > *Go to question 16*
2 More than 1 year ago ---------- > *Go to question 16*
3 Between 3 months and a year ago ---- > *Go to question 15*
4 Within the last 3 months ---------- > *Go to question 15*

15. What types of goods and services did you order over the Internet for private use in the last 12 months?

1 Foods
2 Films, music
3 Books / Magazines / Newspapers / E-Learning materials
4 Clothes, sports goods
5 Computer software and upgrades (incl. computer and video games)
6 Computer hardware
7 Home appliances (e.g. mobile phones, cameras, radios, TVs, stereos, DVD players, video recorders)
8 Other household goods
9 Share purchases / Financial Services / Insurance
10 Travel and holiday accommodation
11 Tickets for events
12 Lotteries or betting
13 Other

Go to question 17

16. What were the reasons for not buying/ordering any goods or services in the last 12 months?

1 Have no need
2 Prefer to shop in person, like to see product, loyalty to shops, force of habit
3 Lack of skills
4 Not always it is possible to find that is necessary (poor assortment)

5 No the information concerning guarantee service
6 Too difficult procedure of the buying, requirement to registration
7 Too long procedure of the buying
8 Too long delivery period, inconvenient time of day
9 Too high costs
10 Uncomfortable payment system, don't have a payment card allowing to pay over the Internet
11 Doubts about safety of payment procedure
12 Doubts about quality of goods or services
13 Trust concerns about receiving or returning goods, complaint/redress concerns
14 Others

Go to question 17

17. Which of the following internet related activities have you already carried out?

1 Using a search engine to find information
2 Sending e-mail with attached files
3 Posting messages to chatrooms, newsgroups or any online discussion forum
4 Using the Internet to make telephone calls
5 Using peer-to-peer file sharing for exchanging movies, music etc.
6 Creating a web page
7 Searching, downloading and installing of programs
8 Diagnostics and removal of viruses from a computer
9 None of the above

Go to question 18

18. Where or how did you obtain the skills to carry out these activities?

1 Formalised educational institution – school (primary or lower secondary education)
2 – college (upper secondary education)
3 – university (tertiary education)
4 Training courses taken by own initiative, not the employer
5 Training courses taken by the employer initiative
6 Self-study in the sense of learning-by-doing
7 Self-study using books, cd-roms, on-line courses in the Internet, etc.
8 Informal assistance from colleagues, relatives, friends
9 Some other way

Go to question 19

19. What are your barriers to use (more intensive use) of the internet?

1 Have no need in Internet
2 Slow speed of Internet connection
3 Lack of time
4 There is not access to the Internet at our region, house
5 Foreign language skills
6 Too high connection costs
7 Content (not interesting enough to make more use or the internet)
8 lack of skills or knowledge
9 security or privacy concerns
10 None of the above

Go to question 20

20. In the last 3 months have you taken part in a course (any training, not only computer or Internet training, including school, college, and university)? If yes, have you used Internet to education?

1 No, I didn't take part in a course
2 Yes, I took part in a course, but I have not use Internet to education

Yes, I used Internet to ...

3 Looking for the availability of a book or article for my course
4 Reading learning content, which was provided on-line

5 Doing research as part of a training course
6 Exchanging messages with teachers
7 Exchanging messages relating to the course content with other learners
8 Other

Go to question 21

21. When did you last take a training course (of at least 3 hours) on any aspect of computer use?

1 Never taken over ---------- > *Go to question 22*
2 More than 3 years ago ---------- > *Go to question 22*
3 Between 1 and 3 years ago---------- > *Go to question 23*
4 Between 3 months and a year ago ----- > *Go to question 23*
5 Within the last 3 months---------- > *Go to question 23*

22. What are the reasons for never (or more than 3 years ago) having taken a course on computer use?

1 No need to take one because my computer skills are sufficient
2 No need to take one because I rarely use computers
3 Lack of time
4 Too high educational costs
5 No suitable offer available
6 Too difficult
7 None of the above

Go to question 23

23. Which of the following computer related activities have you already carried out?

1 Copying or moving a file or folder
2 Using copy and paste tools to duplicate or move information
3 Using basic arithmetic formulas in a spreadsheet
4 Compressing files
5 installing new standard programs (games, translator, etc.)
6 Connecting and installing new devices, e.g. a printer or a modem
7 Writing a computer program using a specialised programming language
8 Detect and solve computer problems (e.g. computer runs slowly)
9 None of the above

Socio-demographic background characteristics

24. Age

25. Sex

1 man
2 woman

26. Educational level

1 No formal education completed, primary or lower secondary education (corresponding to ISCED 0, 1 or 2);
2 Upper secondary education (corresponding to ISCED 3 or 4);
3 Tertiary education (corresponding to ISCED 5 or 6)

27. Employment situation

1 management
2 specialists
3 white collars
4 qualified worker
5 non-qualified worker
6 student
7 pensioner
8 housewife
9 Unemployed

28. Type of locality

5 Moscow and St.-Petersburg
6 Big towns with population more 300 000 habitants
7 Small towns with population less 300 000 habitants
8 Villages

Annex 12. RESULTS OF THE ALL-RUSSIA SAMPLE SURVEY "e-SKILLS"
(2006, N 2107)
(per cent of respondents)

1. Do you or anyone in your household have access to any of the following devices at home?

	All (2107)
Phone	54
Mobile phone	57
Fax	3
Television (except digital)	89
Digital TV	2
Games console	6
Satellite dish	2
Cable TV	12
Videocamera (except digital)	7
Digital videocamera	2
Camera (except digital)	34
Digital camera	6
Desktop computer	21
Portable computer (laptop)	1
Handheld computer (palmtop)	0.2
None of the above	3

2. Does any member of the household have access to the Internet at home?

	All (2107)
Yes	14
No	81
Don't know	5

3. What are the reasons for not having access to the Internet at home?

	Not having access to the Internet (1749)	All (2107)
There is not access to the Internet at our region, house	11	9
Don't want Internet	3	2
Don't need Internet	68	57
Equipment costs too high	11	10
Access costs too high	10	8
Lack of skills	3	2
Privacy or security concerns	0.2	0.2
Have access to the Internet elsewhere	3	2
None of the above, but other	1	1
Don't know	5	4
Having access to the Internet at home	-	17

4. Do you use a mobile phone?

	All (2107)
Yes	51
No	49

5. When did you most recently use a computer?

	All (2107)
Within the last 3 months	29
Between 3 months and a year ago	6
More than 1 year ago	6
Never used one	59

6. How often on average have you used a computer in the last 3 months?

	Users (618)	All (2107)
Every day or almost every day	52.5	15
At least once a week (but not every day)	27.7	8
At least once a month (but not every week)	15	4
Less than once a month	5	2
Have not used a computer in the last 3 months	-	71

7. Where have you used a computer in the last 3 months?

	Users (618)	All (2107)
At home	53	16
At place of work (other than home)	41	12
At place of education	7	2
At other person's home	22	6
Other (e.g. library, hotel, airport, Internet café, etc.)	3	1
Have not used a computer in the last 3 months	-	71

8. When did you most recently use the Internet?

	All (2107)
Within the last 3 months	15
Between 3 months and a year ago	4
More than 1 year ago	2
Never used one	79

9. On average how often did you use the Internet in the last 3 months?

	Users (321)	All (2107)
Every day or almost every day	33	5
At least once a week (but not every day)	34	5
At least once a month (but not every week)	19	3
Less than once a month	14	2
Have not used the Internet in the last 3 months		85

10. Where have you used the Internet in the last 3 months?

	Users (321)	All (2107)
At home	53	8
At place of work (other than home)	40	6
At place of education	9	1
At other person's home	23	4
Public library	3	0.4
Post office	0.4	0.1
Public office, town hall, government agency	0.3	0
Community or voluntary organization	0.9	0.1
Internet club, Internet café, etc.	6.4	1
hotspot (at the airports, stations, in hotels, restaurants, at exhibitions, etc.)	0.7	0.1
Have not used the Internet in the last 3 months		85

11. Do you use any of the following mobile devices to access the Internet?

	Users (444)	All (2107)
Mobile phone via WAP or GPRS	36	8
Mobile phone via UMTS (3G)	1	0.3
Handheld computer (palmtop)	1	0.2
Portable computer (laptop)	3	0.7
None of the above	60	13
Never used the Internet		79

12. Do you use a personal e-mail address?

	Users (444)	All (2107)
Yes	39	8
No	61	13
Never used the Internet		79

13. For which of the following activities did you use the Internet?

	Users (444)	All (2107)
Communication		
Sending / receiving e-mails	56	12
Telephoning over the Internet / videoconferencing	8	2
Other (use of chat sites, etc.)	0	0
Information search and on-line services related to ...		
Goods or services	26	6
Tourism	9	2
Listening to radios / watching television	10	2
Playing or downloading games, images, music, films	39	8
Downloading software	23	5
Reading news, newspapers, magazines	33	7
Keeping of the personal information on the specialized sites	10	2
Looking for a job or sending a job application	19	4
Other information search	40	8
Selling of goods or services, banking		
Selling goods or services (e.g. via auctions)	5	1
Banking	4	1
Interaction with government and municipalities (administration at national, regional and city level)		
Obtaining information about the schedule of such organizations	9	2
Downloading official forms, samples of documents	10	2
Sending in filled forms	4	1
consultations on-line	2	0.3
Education and training		
Looking for information about education, training or course offers, etc.	18	4
Consulting the Internet with the purpose of learning	7	2
Post educational courses for raising the skills level	6	1
Post educational courses not for work	8	2
Formalised educational activities (school, university etc.)	3	0.6
Health, Medical services		
Seeking health-related information (e.g. nutrition, injury, disease, etc.)	14	3
Seeking -related information about health services (clinics, hospitals, etc.)	6	1
Making online an appointment with a doctor about a consultation	1	0.2
Medical advice online from a practitioner	0.3	0.1
Never used the Internet		79

14. When did you most recently buy or order goods or services for private use over the Internet?

	Users (444)	All (2107)
Never bought or ordered	85	18
More than 1 year ago	4	0.8
Between 3 months and a year ago	6	1
Within the last 3 months	6	1
Never used the Internet	-	79

15. What types of goods and services did you order over the Internet for private use in the last 12 months?

	e-Buyers (52)	All (2107)
Foods	3	0.1
Films, music	30	0.8
Books / Magazines / Newspapers / E-Learning materials	28	0.7
Clothes, sports goods	3	0.1
Computer software and upgrades (incl. computer and video games)	19	0.5
Computer hardware	14	0.3
Home appliances (e.g. mobile phones, cameras, radios, TVs, stereos, DVD players, video recorders)	16	0.4
Other household goods	20	0.5
Share purchases / Financial Services / Insurance	0	0
Travel and holiday accommodation	10	0.2
Tickets for events	7	0.2
Lotteries or betting	2	0
Other	5	0.1
Not bought or ordered in the last 12 months	-	98

16. What were the reasons for not buying/ordering any goods or services in the last 12 months?

	Users, non-Buyers (391)	All (2107)
Have no need	72	13
Prefer to shop in person, like to see product, loyalty to shops, force of habit	35	7
Lack of skills	4	1
Not always it is possible to find that is necessary (poor assortment)	1	0.2
No the information concerning guarantee service	3	0.5
Too difficult procedure of the buying, requirement to registration	3	0.6
Too long procedure of the buying	1	0.3
Too long delivery period, inconvenient time of day	2	0.4
Too high costs	6	1
Uncomfortable payment system, don't have a payment card allowing to pay over the Internet	3	0.6
Doubts about safety of payment procedure	8	2
Doubts about quality of goods or services	15	3
Trust concerns about receiving or returning goods, complaint/redress concerns	10	2
Others	0.4	0.1
Non-Users the Internet + Buyers	-	81

17. Which of the following internet related activities have you already carried out?

	Users (444)	All (2107)
Using a search engine to find information	74	16
Sending e-mail with attached files	48	10
Posting messages to chatrooms, newsgroups or any online discussion forum	20	4
Using the Internet to make telephone calls	5	1
Using peer-to-peer file sharing for exchanging movies, music etc.	6	1
Creating a web page	4	0/9
Searching, downloading and installing of programs	28	6
Diagnostics and removal of viruses from a computer	15	3
None of the above	12	3
Never used the Internet	-	79

18. Where or how did you obtain the skills to carry out these activities?

	Users (444)	All (2107)
Formalised educational institution – school (primary or lower secondary education)	20	4
Formalised educational institution – college (upper secondary education)	8	2
Formalised educational institution – university (tertiary education)	16	3
Training courses taken by own initiative, not the employer	4	0.8
Training courses taken by the employer initiative	2	0.3
Self-study in the sense of learning-by-doing	55	12
Self-study using books, cd-roms, on-line courses in the Internet, etc.	20	4
Informal assistance from colleagues, relatives, friends	48	10
Some other way	0	0
Never used the Internet	-	79

19. What are your barriers to use (more intensive use) of the internet?

	All (2107)
Have no need in Internet	63
Slow speed of Internet connection	3
Lack of time	10
There is not access to the Internet at our region, house	8
Foreign language skills	5
Too high connection costs	15
Content (not interesting enough to make more use or the internet)	0.8
Lack of skills or knowledge	12
Security or privacy concerns	1
None of the above	5

20. In the last 3 months have you taken part in a course (any training, not only computer or Internet training, including school, college, and university)? If yes, have you used Internet to education?

	All (2107)
No, I didn't take part in a course	87
Yes, I took part in a course, but I have not use Internet to education	10
Yes, I used Internet to ...	
Looking for the availability of a book or article for my course	4
Reading learning content, which was provided on-line	0.8
Doing research as part of a training course	0.7
Exchanging messages with teachers	0.4
Exchanging messages relating to the course content with other learners	1
Other	0

21. When did you last take a training course (of at least 3 hours) on any aspect of computer use?

	All (2107)
Never taken over	83
More than 3 years ago	9
Between 1 and 3 years ago	5
Between 3 months and a year ago	2
Within the last 3 months	3

22. What are the reasons for never having taken a course on computer use?

	Non-learned on PC use (1916)	All (2107)
No need to take one because my computer skills are sufficient	13	12
No need to take one because I rarely use computers	38	34
Lack of time	10	9
Too high educational costs	11	10
No suitable offer available	10	9
Too difficult	26	24
None of the above	5	5
Learned on PC use	-	9

23. Which of the following computer related activities have you already carried out?

	All (2107)
Copying or moving a file or folder	29
Using copy and paste tools to duplicate or move information	25
Using basic arithmetic formulas in a spreadsheet	22
Compressing files	16
installing new standard programs (games, translator, etc.)	15
Connecting and installing new devices, e.g. a printer or a modem	13
Writing a computer program using a specialised programming language	4
Detect and solve computer problems (e.g. computer runs slowly)	9
None of the above	66

Socio-demographic background characteristics

24. Age

	All (2107)
16-24	17.2
25-39	27.1
40-54	27.6
55-74	23.0
75-90	5.1

25. Sex

man	45.8
woman	54.2

26. Educational level

No formal education completed, primary or lower secondary education (corresponding to ISCED 0, 1 or 2);	22.9
Upper secondary education (corresponding to ISCED 3 or 4);	35.9
Tertiary education (corresponding to ISCED 5 or 6)	42.2

27. Employment situation

management	3.5
specialists	11.0
white collars	9.4
qualified worker	20.2
non-qualified worker	5.8
student	6.4
pensioner	27.5
housewife	5.5
Unemployed	6.5
No answer	4.2

28. Type of locality

Moscow and St.-Petersburg	10.7
Big towns with population more 300 000 habitants	16.6
Small towns with population less 300 000 habitants	46.8
Villages	25.9

28. Region

North + North West	10.7
Central	20.3
Central-Chernozemny	5.2
Volgo-Vyatsky	6.4
Povolzhye	12.5
North Caucasus	10.5
Uralsky	13.2
Western Siberia	8.6
Eastern Siberia	6.1
Far East	6.4

Annex 13. ICT GOODS CLASSIFICATION (BY BROAD CATEGORY)

	CNEEA
Telecommunications equipment	
Line telephone sets with cordless handsets	8517 11
Other telephone sets, video phones	8517 19
Facsimile machines	8517 21
Teleprinters	8517 22
Telephonic or telegraphic switching apparatus	8517 30
Other apparatus, for carrier-current line systems or for digital line systems	8517 50
Other electrical apparatus for line telephony or line telegraphy	8517 80
Parts for other electrical apparatus for line telephony or line telegraphy	8517 90
Telephone answering machines	8520 20
Transmission apparatus for radio-telephony, radio-telegraphy, radio-broadcasting or television not incorporating reception apparatus	8525 10
Transmission apparatus for radio-telephony, radio-telegraphy, radio-broadcasting or television incorporating reception apparatus	8525 20
Television cameras	8525 30
Radar apparatus	8526 10
Reception apparatus for radio-telephony, radio-telegraphy or radio-broadcasting, whether or not combined, in the same housing, with sound recording or reproducing apparatus or a clock, n.e.s	8527 90
Aerials and aerial reflectors of all kinds; parts suitable for use therewith	8529 10
Burglar or fire alarms and similar apparatus	853110
854420 854420 Co-axial cable and other co-axial electric conductors	8544 20
Optical fibre cables	8544 70
Computer and related equipment	
Analogue or hybrid automatic data processing machines	8471 10
Portable digital automatic data processing machines, weighing not more than 10 kg, consisting of at least a central processing unit, a keyboard and a display	8471 30
Digital automatic data processing machines comprising in the same housing at least a central processing unit and an input and output unit, whether or not combined	8471 41
Other digital automatic data processing machines, presented in the form of systems	8471 49
Digital processing units other than those of subheadings 8471.41 and 8471.49, whether or not containing in the same housing one or two of the following types of unit : storage units, input units, output units	8471 50
Automatic data processing machines, input or output units, whether or not containing storage units in the same housing	8471 60
Automatic data processing machines, storage units	8471 70
Other units of automatic data processing machines	8471 80
Magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, not elsewhere specified or included	8471 90
Parts and accessories of the machines of heading No. 84.71	8473 30
Electronic components	
Electrical transformers having a power handling capacity not exceeding 1 kVA	8504 31
Inductors	8504 50
Parts of: electrical transformers, static converters (for example, rectifiers) and inductors	8504 90
Cards incorporating a magnetic stripe, unrecorded	8523 30
Cards incorporating a magnetic stripe, recorded	8524 60
Parts suitable for use solely or principally with the apparatus of headings Nos. 85.25 to 85.28 except aerials and aerials reflectors	852990
Capacitors, fixed, tantalum having a reactive power handling capacity of less than 0.5 kvar	853221

	CNEEA
Capacitors, fixed, ceramic dielectric, multilayer having a reactive power handling capacity of less than0.5 kvar	8532 24
Variable or adjustable (pre-set) capacitors	8532 30
Fixed carbon resistors, composition or film types	8533 10
Electrical resistors, fixed, (including rheostats and potentiometers), other than heating resistors, for a power handling capacity <= 20 W	8533 21
Electrical resistors, fixed, (including rheostats and potentiometers), other than heating resistors, n.e.s..	8533 29
Wirewound variable resistors, for a power handling capacity <= 20 W	8533 31
Wirewound variable resistors, for a power handling capacity <= 20 W	8533 39
Other variable resistors, including rheostats and potentiometers	8533 40
Parts for electrical resistors (including rheostats and potentiometers), other than heating resistors	8533 90
Printed circuits	8534 00
Cathode-ray television picture tubes, including video monitor tubes, colour	8540 11
Cathode-ray television picture tubes, including video monitor tubes, black and white or other mono-chrome	8540 12
Television camera tubes; image converters and intensifiers; other photo-cathode tubes	8540 20
Data/graphic display tubes, colour, with a phosphor dot screen pitch smaller than 0.4 mm	8540 40
Data/graphic display tubes, black and white or other monochrome	8540 50
Other cathode-ray tubes	8540 60
Microwave tubes, magnetrons, excluding grid-controlled tubes	8540 71
Microwave tubes - klystrons, excluding grid-controlled tubes	8540 72
Microwave tubes, other, excluding grid-controlled tubes	8540 79
Receiver or amplifier valves and tubes	8540 81
Valve and tubes, n.e.s.	8540 89
Parts of cathode-ray tubes	8540 91
Parts of thermionic or photo-cathode, valve and tubes, other than cathode-ray tubes	8540 99
Diodes, other than photosensitive or light emitting diodes	8541 10
Transistors, other than photosensitive, dissipation rate < 1 W	8541 21
Transistors, other than photosensitive transistors, n.e.s.	8541 29
Thyristors, diacs and triacs, other than photosensitive devices	8541 30
Photosensitive semiconductor devices, including photovoltaic cells whether or not assembled in mod-ules or made up into panels; light emitting diodes	8541 40
Other semiconductor devices	8541 50
Mounted piezo-electric crystals	8541 60
Parts for semiconductor devices	8541 90
Cards incorporating electronic integrated circuits ("smart" cards)	8542 10
Digital monolitihic integrated circuits	8542 21
Other monolithic integrated circuits	8542 29
Hybrid integrated circuits	8542 60
Electronic microassemblies	8542 70
Parts for electronic integrated circuits and microassemblies	8542 90
Audio and video equipment	
Microphones and stands therefor	8518 10
Single loudspeakers, mounted in their enclosures	8518 21
Multiple loudspeakers, mounted in the same enclosure	8518 22
Other loudspeakers, n.e.s	8518 29
Headphones and earphones, whether or not combined with a microphone, and sets consisting of a mi-crophone and one or more loudspeakers	8518 30
Audio-frequency electric amplifiers	8518 40
Electric sound amplifier sets	8518 50

	CNEEA
Parts of microphones, loudspeakers, headphones, earphones, combined microphone/loudspeaker sets, audio-frequency electric amplifiers and electric sound amplifier sets	8518 90
Coin- or disc-operated record-players	8519 10
Record-players, without loudspeaker	8519 21
Record-players, n.e.s.	8519 29
Turntables with automatic record changing mechanism	8519 31
Turntables, n.e.s.	8519 39
Transcribing machines	8519 40
Pocket-size cassette-players	8519 92
Other sound reproducing apparatus, cassette-type	8519 93
Sound reproducing apparatus, not incorporating a sound recording device, n.e.s.	8519 99
Dictating machines not capable of operating without an external source of power	8520 10
Other magnetic tape recorders incorporating sound reproducing apparatus, Digital audio type	8520 32
Other magnetic tape recorders incorporating sound reproducing apparatus, cassette-type	8520 33
Other magnetic tape recorders incorporating sound reproducing apparatus	8520 39
Magnetic tape recorders and other sound recording apparatus, whether or not incorporating a sound reproducing device, n.e.s.	8520 90
Video recording or reproducing apparatus, whether or not incorporating a video tuner - magnetic tape-type	8521 10
Video recording or reproducing apparatus, whether or not incorporating a video tuner - other type	8521 90
Parts and accessories suitable for use solely or principally with the apparatus of headings Nos. 85.19 to85.21 - pick-up cartridges	8522 10
Parts and accessories suitable for use solely or principally with the apparatus of headings Nos. 85.19 to85.21 - other	8522 90
Magnetic tapes, unrecorded, width <= 4 mm (1/6 in.)	8523 11
Magnetic tapes, unrecorded, width > 4 mm (1/6 in.) but <= 6.5 mm (1/4 in.)	8523 12
Magnetic tapes, unrecorded, width > 6.5 mm (1/4 in.)	8523 13
Magnetic discs, unrecorded	8523 20
Other prepared unrecorded media for sound recording or similar recording of other phenomena? other than products of Chapter 37	8523 90
Still image video cameras and other video camera recorders, digital cameras	8525 40
Pocket-size radio cassette-players capable of operating without an external source of power	8527 12
Radio-broadcast receivers, capable of operating without an external source of power, combined with sound recording or reproducing apparatus	8527 13
Other radio-broadcast receivers, capable of operating without an external source of power, not combined with sound recording or reproducing apparatus	8527 19
Radio-broadcast receivers with sound recording or reproducing apparatus, for motor vehicles, requiring *external source of power*	8527 21
Other radio-broadcast receivers for motor vehicles, not combined with sound recording or reproducing apparatus	8527 29
Other radio-broadcast receivers, including apparatus capable of receiving also radio-telephony or radio-telegraphy, combined with sound recording or reproducing apparatus	8527 31
Other radio-broadcast receivers, including apparatus capable of receiving also radio-telephony or radio-telegraphy, not combined with sound recording or reproducing apparatus but combined with a clock	8527 32
Other radio-broadcast receivers, including apparatus capable of receiving radio-telephony or radio-telegraphy, n.e.s.	8527 39
Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus, colour	8528 12

	CNEEA
Reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus, black and white or other monochrome	8528 13
Video monitors, colour	8528 21
Video monitors, black and white or other monochrome	8528 22
Video projectors	8528 30
Other ICT goods	
Word-processing machines	8469 11
Electronic calculators capable of operation without an external source of electric power and pocket-size data recording, reproducing and displaying machines with calculating functions	8470 10
Other electronic calculating machines incorporating a printing device	8470 21
Other electronic calculating machines	8470 29
Accounting machines	8470 40
Cash registers	8470 50
Parts and accessories (other than covers, carrying cases and the like) suitable for use solely or principally with machines of heading No. 84.69	8473 10
Parts and accessories of the electronic calculating machines of subheading No. 8470.10, 8470.21 or8470.29	8473 21
Parts and accessories equally suitable for use with machines of two or more of the headings Nos. 84.69 to 84.72	8473 50
Radio navigational aid apparatus	8526 91
Radio remote control apparatus	8526 92
Apparatus for the projection or drawing of circuit patterns on sensitised semiconductor materials - direct write-on-wafer apparatus	9010 41
Apparatus for the projection or drawing of circuit patterns on sensitised semiconductor materials - step and repeat aligners	9010 42
Apparatus for the projection or drawing of circuit patterns on sensitised semiconductor materials - other	9010 49
Direction finding compasses	9014 10
Instruments and appliances for aeronautical or space navigation (other than compasses)	9014 20
Other navigational instruments and appliances	9014 80
Parts and accessories of direction finding compasses, other navigational instruments and appliances	9014 90
Photogrammetrical surveying instruments and appliances	9015 40
Other surveying instruments and appliances	9015 80
Electro-cardiographs	9018 11
Ultrasonic scanning apparatus	9018 12
Magnetic resonance imaging apparatus	9018 13
Scintigraphic apparatus	9018 14
Other electro-diagnostic apparatus (including apparatus for functional exploratory examination or for checking physiological parameters)	9018 19
Computed tomography apparatus	9022 12
Other apparatus based on the use of X-rays, for dental uses	9022 13
Other apparatus based on the use of X-rays, for medical, surgical or veterinary uses	9022 14
Other apparatus based on the use of X-rays, for other uses	9022 19
Machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials, metals	9024 10
Other machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials	9024 80
Parts and accessories for machines and appliances for testing the hardness, strength, compressibility, elasticity or other mechanical properties of materials	9024 90
Instruments and apparatus for measuring or checking the pressure of liquids or gases, excluding instruments and apparatus of heading Nos. 9014, 9015, 9028 or 9032	9026 20

	CNEEA
Instruments and apparatus for physical or chemical analysis, gas or smoke analysis apparatus	9027 10
Spectrometers, spectrophotometers and spectrographs using optical radiations (UV, visible, IR)	9027 30
Instruments and apparatus for measuring or checking quantities of heat, sound or light, exposure meters	9027 40
Other instruments and apparatus using optical radiations (UV, visible, IR)	9027 50
Other instruments and apparatus for physical or chemical analysis	9027 80
Gas meters	9028 10
Liquid meters	9028 20
Electricity meters	9028 30
Parts for gas, liquid or electricity supply or production meters, including calibrating meters therefor	9028 90
Revolution counters, production counters, taximeters, mileometers, pedometers and the like	9029 10
Speed indicators and tachometers; stroboscopes	9029 20
Parts and accessories for revolution counters, production counters, taximeters, mileometers, pedometers and the like; speed indicators and tachometers, other than those of heading No. 90.14 o90.15; stroboscopes r	9029 90
Instruments and apparatus for measuring or detecting ionising radiations	9030 10
Cathode-ray oscilloscopes and cathode-ray oscillographs	9030 20
Multimeters without a recording device	9030 31
Other instruments and apparatus for measuring or checking voltage, current, etc. without a recording device	9030 39
Other instruments and apparatus, specially designed for telecommunications (for example, cross-talk meters, gain measuring instruments, distortion factor meters, psophometers)	9030 40
Other instruments for measuring or checking semiconductor wafers or devices	9030 82
Other instruments for measuring or checking semiconductor wafers or devices with a recording device	9030 83
Measuring or checking instruments, appliances and machines n.e.s, machines for balancing mechanical parts	9031 10
Measuring or checking instruments, appliances and machines n.e.s, test benches	9031 20
Measuring or checking instruments, appliances and machines n.e.s, profile projectors	9031 30
Other optical instruments and appliances, for inspecting semiconductor wafers or devices or for inspecting photomasks or reticles used in manufacturing semiconductor devices	9031 41
Other measuring or checking instruments, appliances and machines, n.e.s.	9031 80
Parts and accessories for measuring or checking instruments, appliances and machines, n.e.s.	9031 90
Thermostats	9032 10
Manostats	9032 20
Other automatic regulating or controlling instruments and apparatus, n.e.s.	9032 89
Parts and accessories for automatic regulating or controlling instruments and apparatus	9032 90