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THE INFORMATION INDUSTRY: MEASURING RUSSIA BY INTERNATIONAL STANDARDS

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THE INFORMATION INDUSTRY: MEASURING RUSSIA BY INTERNATIONAL STANDARDS

Structural changes influenced by ICT are having an impact on production processes and the release of products in the information and communication technology (ICT) sphere and content (on the level of individual enterprises) and are resulting in the pursuit of new approaches to socio-economic development, to increase the competitiveness of the country and to participate in the international division of labour. In order to identify development priorities and prospects in the information industry we therefore need a clear understanding of what the information industry is, what its boundaries are, what forms of economic activity make up this economic segment, and which products form the corresponding market.

This working paper summarizes the results of a study to ‘measure’ the information industry as a segment of the economy producing goods and services linked to ICT and content. Methodological approaches are proposed to establish the ‘Information industry’ definitions based on the Russian Classification of Economic Activities (OKVED) and the Russian Classification of Products by Economic Activities (OKPD) in line with international standards and recommendations by the Organization for Economic Cooperation and Development (OECD). Key indicators of the development of the information industry are also tentatively calculated for Russia and compared with countries abroad.

The content of this paper is based on research results commissioned by the Ministry of Telecom and Mass Communications of the Russian Federation and the outcome of evaluations and testing at a round table on the subject ‘IT industry: problems of classification and application’ round table (2014) and a session of the statistics section of the Central House of Scientists at the Russian Academy of Sciences on the subject of ‘Developing the “Information industry” and “IT industry” definitions based on the OKVED2 and OKPD2’ (http://www.gks.ru/free_doc/new_site/rosstat/sec/tez-abdr.doc). The paper was also supported by the Basic Research Program at the National Research University Higher School of Economics (HSE) and the subsidy granted to the HSE by the Government of the Russian Federation for the implementation of the Global Competitiveness Program.

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Introduction

The structural changes in the economy beginning in the 1990s gave rise to the origins of the information era, which various theorists have dubbed ‘post-industrialism’, the ‘new economy’, the ‘knowledge-based economy’, the ‘information society’, the ‘Internet economy’, and the ‘digital economy’. The basic conditions underpinning these changes were primarily linked to a transformation in the role of information, the pace at which information and communication technology (ICT) spread, computerization, and the emergence of new forms of economic activity. Key theorists in the field of post-industrial development and the formation of the information society are the following: Daniel Bell, Alvin Toffler, Manuel Castells, Taichi Sakaiya, Peter Ferdinand Drucker [*Lazarev, Khizha, Lazarev, 2010*], Frank Webster [*Webster, 2004*] and others.

Structural changes influenced by ICT are having an impact on production processes and the release of products in the ICT sphere and content (on the level of individual enterprises) and are resulting in the pursuit of new approaches to socio-economic development, to increase the competitiveness of the country and to participate in the international division of labour.

To achieve various objectives on a global scale, international and regional programmes are being undertaken: The World Summit on the Information Society (WSIS) Targets [ITU(2014)], the Seoul Declaration for the Future of the Internet Economy [OECD(2008)], and the Digital Agenda in the Europe 2020 Strategy [EC(2011)], among others. Many countries have been developing and adapting their national ICT strategies, with a number of them establishing an entire collection of programmes and policy initiatives, each of which has its own particular focus (for example, the national policy on the digital economy was implemented in a similar way in the USA and Russia). Among the priority areas identified in these programmes are:

- further developing telecommunications infrastructure (with a focus on developing broadband access);
- developing the ICT sector, including its internationalization;
- increasing the number and quality of state electronic services;
- encouraging the creation and development of digital content (including national content);
- fostering trust in online collaboration and adhering to principles such as confidentiality and information security;

- adapting the latest ICT developments for business;
- expanding the penetration and use of the Internet by the public, especially among those less involved in online collaboration through public social groups;
- propelling ICT into key sectors of the social sphere such as healthcare, education, public transport and others [OECD, 2015].

In Russia, ICT development is also one of the strategic objectives of state policy. The Concept of Long-term Socio-Economic Development of the Russian Federation for the Period up to the year 2020, approved by Order of the Government of the Russian Federation No. 1662-r, dated 17 November 2008 (and as amended and supplemented on 8 August 2009) listed among its main objectives promoting the competitiveness of products and services in the information and communication technology sphere. ICT market dynamics are expected to outstrip average annual economic growth figures and ICT production is set to become one of the leading industries in the economy. Under the Russian ‘Information Society (2011–2020)’ state programme, by 2020 there are plans to establish a modern information infrastructure across the Russian territory, achieve technological independence for the country in the information technology (IT) industry, and create a competitive domestic information industry.

In order to identify development priorities and prospects in the information industry we need a clear understanding of what the information industry is, what its boundaries are, what forms of economic activity make up this economic segment, and which products form the corresponding market. International classifications and standards provide a general understanding of the information industry but additional research of the activities of ICT sector, taking into account the Russian legal framework, is needed to gain a full picture of the industry.

Methodology and scope

The main hypothesis of this study is that it is possible to collect and collate statistical data in Russia reflecting the information industry, which is one of the leading sectors capable of contributing to the innovative development of the economy and society as a whole.

The methodological basis of the study comprises the following:

- an in-depth analysis of international statistical standards and a qualitative study of Russian statistics on measuring the information industry, and comparing, systematizing and summarizing them;
- the logical and analytical structuring and formation definitions based on International Standard Industrial Classification of All Economic Activities (ISIC) and Russian Classification of Economic Activities (OKVED), and Central Product Classification (CPC) and Russian Classification of Products by Economic Activities (OKPD);
- economic and statistical approaches to measuring the phenomena under investigation and experimental calculations of key indicators.

Based on the chosen methods, the authors of the study analysed international standards and Russian practices in statistical survey of activities in the information industry, developed proposals to the 'Information industry' definitions based on the Russian Classification of Economic Activities and Russian Classification of Products by Economic Activities, products and services and evaluated key indicators.

The problem of achieving a comprehensive measurement of a segment of the economy linked to ICT was raised by the OECD in the late 1990s. The first achievement in this field was the approval of a definition of the ICT sector based on the Standard Industrial Classification of All Economic Activities (ISIC) Rev. 3 in 1998. The principles underlying the field of the definition are the following: For manufacturing industries, the products of a candidate industry: must be intended to fulfil the function of information processing and communication including transmission and display; must use electronic processing to detect, measure and/or record physical phenomena or control a physical process. For services industries, the products of a candidate industry: must be intended to enable the function of information processing and communication by electronic means [OECD (2003)]. Due to the spread and greater penetration of ICT into fields of activity such as content and media, the international community, under the guidance of the OECD, revised its approaches to measuring the boundaries of activity types linked to technology and information and introduced the new 'Information economy', 'ICT

sector’, and ‘Content and media sector’ definitions. The composition of these groups is based on the new version of the International Standard Industrial Classification of All Economic Activities – ISIC Rev. 4 [UN (2009)].

In Russian statistical practice the similar definition linked to ICT based on the OKVED has been ongoing since 2003 and is in line with the recommendations of the OECD from 1998–2002. The need for updating them arose this year due to the introduction of the new version of the Russian Classification of Economic Activities – OKVED2.

The proposed classification of the information industry is in line with the requirements of Russian statistics and could be used as a standard to describe the ‘Information industry’, ‘ICT sector’, and ‘Content and media sector’ when aggregating the results of federal statistical surveys.

The proposed approaches to update the definitions of the information industry and sectors included in it were tested when calculating key indicators (the number of enterprises, average employees, gross added value) and upon comparison with other countries (comparing with EU countries).

The initial data for the study were materials from the OECD, UN, Partnership on Measuring ICT for Development [OECD (2011); UN, 2009; ITU (2010); ITU (2010)], the Federal Service for State Statistics [Rosstat (2014)], the Ministry of Telecom and Mass Communications of the Russian Federation [Ministry of Telecom (2014)] and others.

International approaches to measuring the information industry

In general terms, the information industry refers to the wide-ranging manufacture and provision of goods and services linked to ICT and directly to information [*Gokhberg (ed.)*, 2012]. Based on this definition, international statistical practice suggests using two subject groups to describe the information industry – the ICT sector and the Content and Media sector.

The first attempts to develop international approaches to defining the boundaries of activities linked to ICT were undertaken by the OECD in the late 1990s. Initially, they approved the principles underpinning the formation of the ICT sector according to the types of economic activity and corresponding umbrella groups for the sector according to the ISIC Rev. 3. **The ICT sector** was defined as the aggregation of enterprises engaging in economic activity linked to the manufacture, diffusion and active use of ICT. The main principle underpinning the formation of

the ICT sector was that the production of goods and services should satisfy one of the following requirements:

Goods:

- are intended to assist in the functioning of telecommunications and carry out the processing of information, including its transmission and presentation;
- use electronics to detect, measure and/or describe physical phenomena or to control and manage physical processes;
- are individual components intended predominantly for use in the goods defined above;

Services:

- allow for the processing and transmission of information using electronic equipment, including linked to trading or leasing technical equipment, as well as direct use of ICT [HSE, 2007].

With the introduction of the new version of ISIC Rev. 4, the OECD revised its definition of the ICT sector. It removed from the conceptual principles underpinning its formation the approach whereby it incorporates products using electronic data processing to detect, measure and/or record physical processes or manage them. This became possible due to the fact that ISIC Rev. 4 set out forms of activity linked to ICT services in far greater detail than previous versions. In the new revision, the ICT sector was defined as the aggregation of enterprises whose operations give rise to:

- goods intended to carry out (or make it possible to carry out) the processing of information and communications using electronic equipment, including the transfer and provision of information;
- services intended to carry out the processing of information and communications using electronic equipment [OECD, 2011].

Table 1 offers a comparison of the criteria in general terms.

Tab. 1 – The ICT sector definition

Main principles of the ICT sector: the manufacture of goods and the provision of services must satisfy one of the requirements		
	<i>ISIC rev. 3.1 (2002)</i>	<i>ISIC rev. 4 (2007)</i>
Goods	<ul style="list-style-type: none"> - are intended to assist in the functioning of telecommunications and carry out the processing of information, including its transmission and presentation - use electronics to detect, measure and/or describe physical phenomena or to control and manage physical processes - are individual components intended predominantly for use in the goods defined above 	<ul style="list-style-type: none"> - are intended to carry out (or make it possible to carry out) the processing of information and communications using electronic equipment, including the transfer and provision of information
Services	<ul style="list-style-type: none"> - allowing for the processing and transmission of information using electronic equipment, including linked to trading or leasing technical equipment, as well as direct use of ICT 	<ul style="list-style-type: none"> - are intended to carry out the processing of information and communications using electronic equipment

Source: compiled by the authors from [OECD, 2011].

The increased relevance of the international classification to current economic phenomena following the introduction of new categories made it possible not only to specifically define the ICT sector, but also to establish the boundaries of the Content and Media sector. The singling out of Section J ‘Information and Communication’ in ISIC Rev. 4, which covers the production and distribution of information and cultural products, the provision of the means to transmit or distribute these products, as well as data transfer, communications, and information technology activities and the processing of data and other information service activities, served as the basis for the development of the Content and Media sector definition. This sector covers types of economic activity which were previously categorized under different sectors of the economy, such as publishing, audio and video recording, broadcasting and telecommunications, information services and data processing. The inclusion of this section in the classifications was recognition of the close ties between industries which create and distribute mass marketing information and cultural products in various forms and industries which provide means to disseminate these products and communications. It was suggested that enterprises engaging, in the main, in creating and distributing information and cultural products or providing means to process and disseminate them should be included in the Content and Media sector. The Content

and Media sector was based on the Section J ‘Information and communication’ of ISIC Rev. 4, with the exception of those included in the ICT sector.

Thus, the **Content and Media sector** includes the manufacture of goods and provision of services mainly aimed at informing, training and/or entertaining people via mass media. Enterprises in this sector are engaged in the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content corresponds to an organized message intended for people [UN (2009)].

The conceptual model of the Information Industry is given in Figure 1.

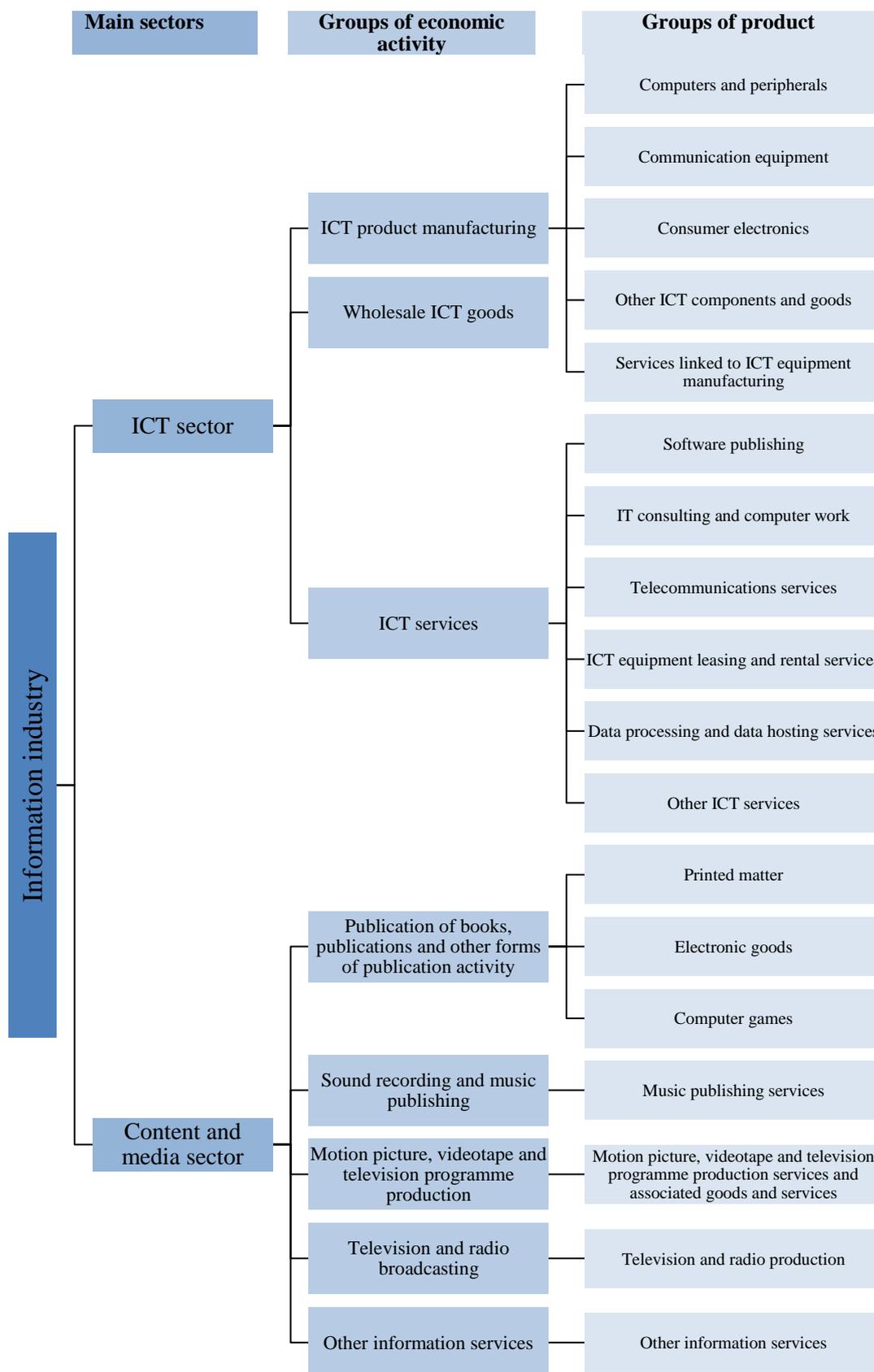


Fig. 1 – Conceptual model of the Information Industry

Source: compiled by the authors from [OECD, 2011].

This single interpretation of the information industry by economic activities allows us to evaluate key macroeconomic indicators: the amount of gross value added, sales, number employed, and the investment and innovative activities of the information industry.

The classification of the information industry and the sectors making up the information industry based on ISIC Rev. 4 makes it possible to present a list of products in a structured format.

As noted above, one of the main criteria for attributing type of economic activity to the information industry is the type of product that is being produced. These same criteria were used when establishing the classification groups for products and services in the ICT sector and the Content and Media sector based on the Central Product Classification (CPC).

Products associated with ICT include goods and services intended to carry out (or make it possible to carry out) the processing of information and communications using electronic equipment, including the transfer and representation of information and making it possible to carry out this function, and in the majority of instances the results are derived from activities in the ICT sector. According to this, the proposal is to categorize products in the ICT sector into nine groups:

- computers and peripherals;
- telecommunications equipment;
- consumer electronics;
- other components and goods associated with information and communication technologies (ICT);
- services linked to the manufacture of ICT equipment;
- software publishing; information technology and computer consultancy; telecommunications services;
- ICT equipment leasing or rental services;
- data processing services, data hosting services;
- other services associated with information and communication technologies (ICT).

The main characteristic of the groups linked to the CPC is that they cover goods and services which are not results derived from the activities of the ICT sector, but clearly tie in with the basic definition:

- digital cameras, cards with magnetic strips, and other media. According to the majority of experts, these products are closely linked to ICT and meet the principles underpinning the formation of the ICT sector;
- leasing and rental services, business process management services, engineering services for telecommunications and broadcast projects, and installation services.

Goods and services in the Content and Media sector include products where the consumer value does not lie in their tangible qualities, but rather in their informativeness. This list includes:

- all products in the Content and Media sector;
- products by enterprises in the ICT sector which, based on their content, are in line with the conceptual principles underpinning the Content and Media sector. These include: computer games on electronic media, computer games for download, online computer games and Internet portal content;
- products which do not result from the activities of information industry sectors, but tie in with the conceptual principles of the Content and Media sector in terms of their content. These include: complete advertising services, buying and selling advertising space and time, advertisements and associated photographic services, originals by authors and composers, excluding artists, painters and sculptors [OECD, 2011].

The output of the Content and Media sector has been grouped into five categories:

- printed products;
- motion picture, video and television programme services and associated goods and services;
- music publishing services;
- computer games; electronic products;
- other information services.

The grouping of the information industry by product and service types is the methodological basis for research into the ICT and content markets.

The coordinated definitions of the information industry and its sectoral components are set out in basic international methodological materials:

- Guide to Measuring the Information Society. OECD, 2011;
- Core ICT Indicators. Geneva: Partnership on Measuring ICT for Development, 2010;
- Handbook for the Collection of Administrative Data on Telecommunications/ICT. ITU, 2011.

In addition, the make-up of the ICT sector and the Content and Media sector is set out in the ‘Alternative aggregation for the information economy’ section of the most recent ISIC publication [UN, 2009].

These international approaches to defining the boundaries of the information industry and the output of this industry are developed in close collaboration with experts from national statistics services, which makes it possible to put coordinated recommendations into practice at international organizations (OECD, Eurostat) and to apply them on a national level. In this way, data on the ICT sector is calculated and published by the statistics services of Germany⁴, the Czech Republic⁵, Canada⁶, and others.

Russian experience of defining the information industry

In Russian statistical practice, a definition of the information industry and its ICT sector was first introduced by Rosstat in 1998 while developing the toolkit for the one-time federal statistical survey of IT use, computer and software production and computer services (questionnaire No. 2-Inform). The ICT sector was grouped by economic activities based on the Russian Classification of Economic Activity, Products and Services valid at this time, in accordance with international recommendations. Enterprises were identified as belonging to the ICT sector if at least 50 per cent or more of the goods and services produced during the financial year were ICT related. [HSE (2007)].

In 2003–2004 after the introduction of the Russian Classification of Economic Activities (OKVED) into statistical practice, the definition of the ICT sector was updated. Most of the changes were related to the wholesale trade of ICT products.

The update of the ‘ICT sector’ definition was fixed in the federal statistical survey ‘Information on the use of information technology and the production of associated products (works, services)’ (questionnaire No. 3-Inform). In 2009, with the introduction of the new revision of OKVED Rev. 1.1, certain adjustments were made which made it possible to achieve

⁴ ICT in enterprises, ICT sector / website of Statistisches Bundesamt: https://www.destatis.de/EN/FactsFigures/NationalEconomyEnvironment/EnterprisesCrafts/ICTEnterprises/CurrentICT_Sector.html.

⁵ ICT sector / website of Czech Statistical office: https://www.czso.cz/csu/czso/ict_sector.

⁶ Information and communications technology sector / website of Statistics Canada <http://www5.statcan.gc.ca/subject-sujet/result-resultat?pid=2256&id=2928&lang=eng&type=ARRAY&pageNum=1&more=0>.

almost total correspondence between the boundaries of the Russian ICT sector and the international equivalent – ISIC Rev. 3.

The **ICT sector** is defined as the aggregation of enterprises engaged in economic activity where the results are considered to be goods and services intended primarily to carry out (or help to carry out) the processing of information and communications using electronic equipment, including the transfer and representation of information [*Gokhberg L. M. (ed.) (2012)*].

As for the second component of the information industry – the Content and Media sector – the Russian grouping of this sector according to the current classification under OKVED Rev. 1.1, as in the first stage of defining the ICT sector, may be developed with a certain degree of conditionality. In particular, under OKVED Rev. 1.1, it is not possible to model ‘Sound recording and music publishing activities’ (code 5920 ISIC Rev. 4) fully in line with ISIC Rev. 4. Alongside the ‘Sound recording publishing’ in OKVED Rev. 1.1 under code 22.14, it also needs to include sound recording activities, which come under ‘Film production’ (code 92.11). It is impossible under OKVED Rev. 1.1 to model ‘Other information service activities not elsewhere classified’, which includes telephone information services, information search services on a fee or contract basis, thematic news selection services, press cutting selection services, etc.

Therefore, we suggest that the conceptual principles for the Content and Media sector based on OKVED Rev. 1.1 and harmonized as much as possible with international standards: **the Content and Media sector** is made up of enterprises engaged in economic activity linked to the production, publication and/or distribution of content (information, cultural output and products for entertainment purposes).

The proposals for the Content and media sector definition, based on the current OKVED Rev. 1.1 according to the OECD conceptual principles by ISIC Rev. 4, are set out in Table 2⁷.

⁷ The Content and media sector definition based on OKVED Rev. 1.1 was developed by the authors and was used for preparing the data book ‘Information society indicators: 2015’.

Tab. 2 – Content and media sector definition according to OKVED Rev. 1.1
in accordance with ISIC Rev. 4

OKVED Rev. 1.1		ISIC Rev. 4	
Code	Economic activity	Code	Economic activity
Publishing activities		Publishing of books, periodicals and other publishing activities	
22.1	Publishing activities	581	Publishing of books, periodicals and other publishing activities
		Sound recording and music publishing activities	
		592	Sound recording and music publishing activities
Film production, recording and publishing activities		Motion picture, video and television programme activities	
92.1	Film production, recording and publishing activities	591	Motion picture, video and television programme activities
Radio and television broadcasting activities		Programming and broadcasting activities	
92.2	Radio and television broadcasting activities	601	Radio broadcasting
		602	Television programming and broadcasting activities
Other information service activities		Other information service activities	
92.4	News agency activities	6391	News agency activities

Source: compiled by the authors from [NRU HSE, 2015 and UN, 2009].

The introduction of the new draft OKVED2, adapted to ISIC Rev. 4, will serve as a basis for further development of the statistical research methodology for the information industry in Russia – the ICT sector, the Content and Media sector and ensuring that it is in line with existing international standards. The breakdown of types of economic activity in OKVED2 linked to the manufacture of ICT products and ICT services allows for a clearer definition of the content of the sectors using the OECD-approved conceptual principles for their formation.

According to these principles, the output of any activity considered for inclusion in the ICT sector must be primarily intended to carry out the processing of information and communications using electronic equipment, including the transfer and representation of information. Guided by this approach, the following types of economic activity have to be excluded from the ICT sector definition by OKVED Rev. 1.1:

- manufacture of office equipment (OKVED Rev. 1.1 code – 30.01),
- manufacture of insulated wires and cables (31.3);

- manufacture of devices and instruments to measure, control, test, navigate, direct and for other purposes (33.2);
- manufacture of devices to control and regulate technological processes (33.3);
- wholesale of manufactured electronic equipment, machinery, hardware and materials (51.87.5);
- lease of office machinery and equipment, including computer equipment (71.33).

‘New’ for the ICT sector in the proposed revision are economic activities linked to the manufacture of finished unrecorded data media (OKVED2 code 26.80).

The introduction of updated, more narrow thematic categories of types of economic activity in the ICT sector increase the clarity with which its composition can be defined and, consequently, the level of analysis of its activities.

As regards the Content and Media sector, with the introduction of OKVED2 it will be possible to model the Content and Media sector fully in line with internationally approved conceptual principles as the aggregation of enterprises engaging in economic activity linked to the manufacture, publication and/or distribution of content (information, cultural output and output for entertainment purposes). Unlike OKVED Rev. 1.1, the new revision of the classifications makes it possible to discern publishing activity and the activities of information services in greater detail. The proposals regarding the ‘Information industry’ by economic activity based on the Russian Classification of Economic Activities are provided in Appendix 1.

With the introduction in 2015 of the Russian Classification of Products by Economic Activities (OKPD2), which is coordinated with OKVED2, it became possible to establish internationally comparable the goods and services of the information industry. When these were developed, they used internationally coordinated approaches and criteria as described above to classify goods and services under the ICT sector or Content and Media sector, which can be summarized as follows:

ICT goods and services – goods and services predominantly intended to carry out or create the necessary conditions to carry out the processing of information and communications using electronic equipment, including the transfer and visual representation of data.

Goods and services associated with information – results of economic activity linked to the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content is an organized message intended for people.

An outline of information industry goods and services is provided in a structured format in Appendix 2.

Thus, the definition of the boundaries of the information industry in terms of type of economic activity serves as a methodological basis for evaluations of its role and place in the economy of the country, including in employment and the creation of gross value product (GDP), for inter-sector comparisons of labour productivity, indicators of investment and innovative activities, the financial state of enterprises, and for use in international comparisons of the share of the information industry in employment and gross value added (GVA).

The groupings of the information industry in terms of goods and services serve as the main analysis of the size and dynamics of the ICT product markets and the potential of domestic ICT manufacturing and the IT industry.

Results of experimental calculations (statistical evaluation)

Estimated by the authors' on the basis of Rosstat data, in 2014 1.5 million persons were employed in the information industry (3% of total employment). The gross value added of the information industry was 2,188 billion roubles (Table 3).

Tab. 3 – Main indicators of the information industry: 2014

	Number of enterprises, <i>at the start of the year</i>		Average number of employees		Gross value added	
	thousands	% of total	thousands	% of total	billions of roubles	% of total
Information industry – total	207	100	1549	100	2188	100
Of which:						
ICT sector – total	159	77	1336	86	1940	89
Manufacture of ICT equipment	16	8	426	28	348	16

Wholesale of ICT goods	38	18	77	5	127	6
Telecommunications	22	11	431	28	1003	46
ICT services	83	40	402	26	462	21
Of these IT industry	68	33	358	23	446	20
Content and media sector – total	48	23	213	14	248	11
Publishing activities	29	14	96	6	74	3
Film production, recording and publishing activities	9	4	35	2	174	8
Radio and television broadcasting activities	6	3	69	4		
News agency activities	4	2	13	1

Source: Estimated by authors' on the basis of Rosstat data.

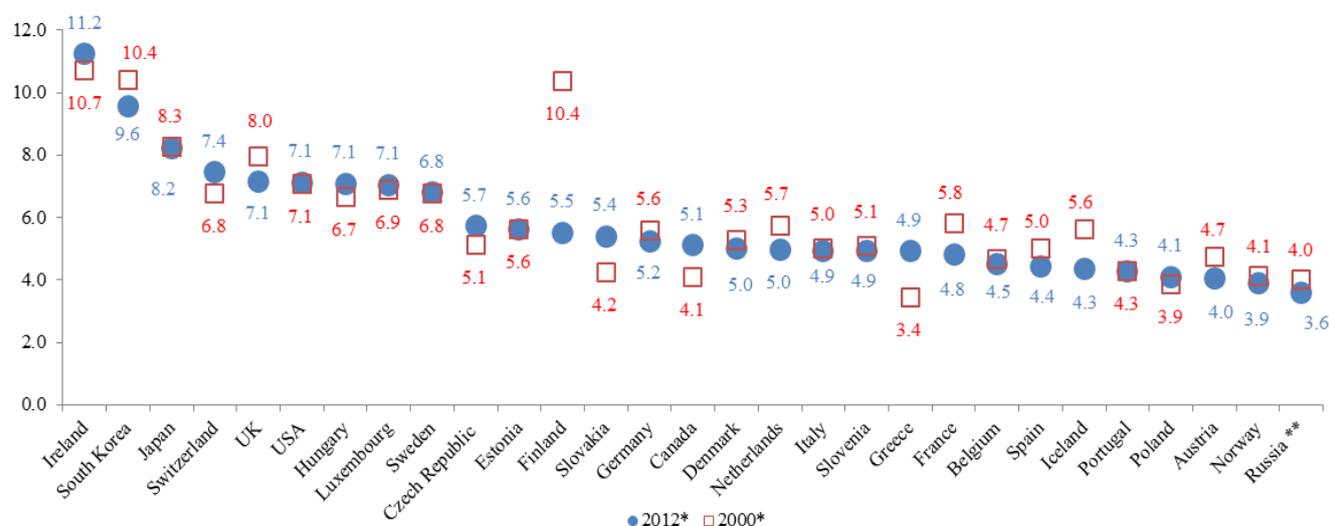
As we can see from the industry breakdown in Table 3, electronic telecommunications accounts for 46% of gross value added in the information industry and the IT industry one fifth (20%). The contribution of ICT equipment manufacturing is less than 16%, the production, recording and showing of motion pictures, radio and television broadcasts is 8%, wholesale of ICT goods is 6% and publishing activity is 3%.

In 2014, information industry sectors accounted for roughly 4% of Russia's GDP. The growth in the industry's gross value added over a ten year period (2005–2014) was 54%, 23 percentage points higher than the corresponding figure for GDP (31%). The leader for growth was the IT industry (growing by 125%). Electronic communications and wholesale of ICT goods had relatively high figures of 69% and 88% respectively, which are both higher than GDP dynamics. The gross value added from the production, recording and showing of motion pictures, radio and television broadcasts increased by 9%. However, the performance of ICT-manufacturers did not surpass 2005 levels and publishing activity saw a decrease of 2%.

In terms of the contribution of the information industry to GDP⁸, Russia is comparable with Belgium, Spain, Iceland, Portugal, Poland, Austria and Norway, lagging 2–3 places behind the leaders Ireland (11%), South Korea (10%), Japan (8%), and the UK, the USA and Hungary (7%).

⁸ International comparisons are given for the information industry's gross value added excluding wholesale ICT goods. The information industry's share in Russian GDP, excluding wholesale ICT goods, was 3.6% in 2012 and 3.4% in 2014.

If we consider the dynamics of the contribution of the information industry to GDP, the majority of OECD countries' share of gross value added for 2000–2012 remained unchanged or reduced, with the greatest reductions seen in Finland (by 4.8 percentage points), France, New Zealand, Iceland (by 1–1.3) and South Korea (by 0.8). In Russia, the fall in this figure was 0.5 of a percentage point⁹ (Fig. 2). Among the main factors shaping this trend, OECD experts noted the structural changes in the information industry, the higher growth in labour productivity than in other sectors of the economy and the relatively low price growth [OECD, 2014].



* Or nearest years for which data is available. Excluding wholesale of ICT goods.

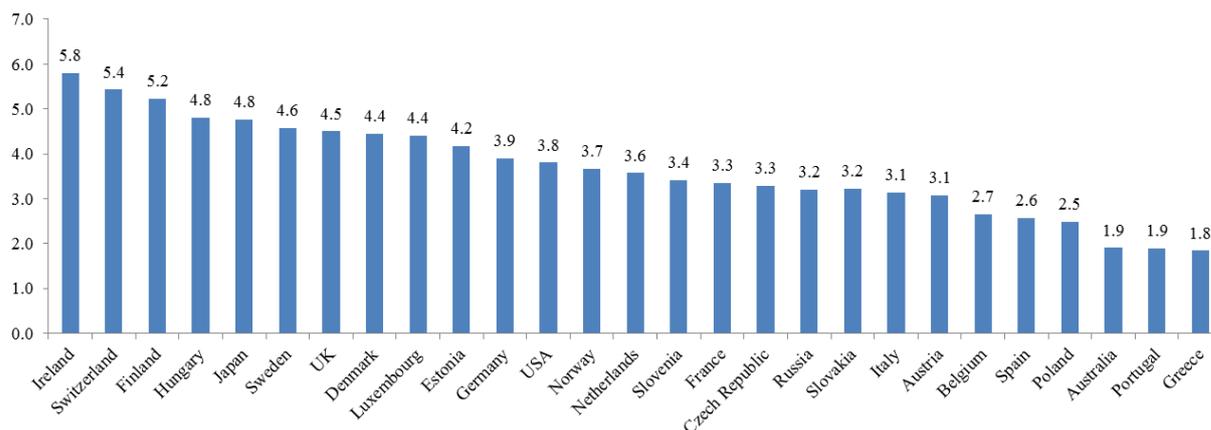
** 2012 and 2005.

Fig. 2 – Share of the information industry's gross value added in GDP, *per cent*

Sources: estimated by the authors on the basis of Rosstat data (for Russia), [OECD, 2014] (for other countries).

In terms of the information industry's share in employment, Russia is comparable with Slovakia (3.2%) and close neighbours France, the Czech Republic, Italy and Austria (Fig. 3).

⁹ The period under consideration is 2005 to 2012.



* Or nearest years for which data is available. Excluding wholesale of ICT goods.

Fig. 3 – Share of the information industry in employment in the economy: 2012*, *per cent*

Sources: estimated by the authors on the basis of Rosstat data (for Russia), [OECD, 2014] (for other countries).

The best information industries for the labour market are in Ireland, Switzerland, Finland, Hungary and Japan. In these countries, the information industry accounts for between 4.8% and 5.8% of total employment. The information industry’s lowest shares for this figure can be seen in Austria, Portugal and Greece – less than 2%.

Conclusion

ICT is an efficient tool for transforming social and economic life. Information society statistics is an important data source for assessing ICT-related processes, management decision-making and budget planning practices in the ICT sphere. A major objective of official statistics is “providing relevant and reliable information to the President, government, enterprises and citizens, and to international organisations”¹⁰. Official statistics play a key role in providing information support for shaping and implementing government policy, in particular initiatives aimed at developing the information society. Further development of Russian statistics, including statistical methodology, were reflected in the State Program of the Russian Federation “Information society (2011–2020)”, and in the Strategy of Information Technology Industry Development in the Russian Federation for 2014–2020 and until 2025. These documents set the objective to provide statistical support and update ICT-related classification groups, and further develop Russian

¹⁰ Rosstat Goals and Objectives for 2015: http://www.gks.ru/free_doc/new_site/rosstat/Declaration2015.pdf.

classifications in line with international equivalents such as the ISIC and NACE, to identify ICT-related economic activities and products.

The Government has approved the Action Plan to develop methodology for data structuring and coding, and for improving and updating Russian classifications, registries, and other information resources. Next year the Russian Classification of Economic Activities, revision 2 (OKVED2) and the Russian Classification of Products by Economic Activities, revision 2 (OKPD2) will be finalised and completely harmonised with international standards. This work includes designing combined classification groups in the format of appendices to the classifications, in particular those covering the ICT, content, and media spheres.

In the light of the above it can be noted that defining the scope of the new segment of the economy – the information industry – for the Russian classifications becomes a necessary condition for generating statistics on development of production of ICT-related goods and services, and their contribution to the national economy.

Based on the proposed methodological approaches to measuring the information industry and the sectors incorporated into this industry, it is possible to develop a methodological basis for the modelling of internationally harmonized statistical data on the production of ICT goods and the provision of ICT services.

The information industry refers to the aggregation of activities in two interrelated sectors of the economy: the ICT sector and the Content and Media sector.

The **ICT sector** is defined as the aggregation of types of economic activity linked to the manufacture of products intended to carry out (or make it possible to carry out) the processing of data and communications using electronic equipment, including the transfer and representation of information.

The **Content and Media sector** comprises types of economic activity linked to the production, publication and/or distribution of content (information, cultural output and products for entertainment purposes).

The results derived from the activities of the information industry are as follows:

ICT goods and services – goods and services predominantly intended to carry out or create the necessary conditions to carry out the processing of information and communications using electronic equipment, including the transfer and visual representation of data.

Goods and services associated with information – results of economic activity linked to the production, publishing and/or the distribution of content (information, cultural and entertainment products), where content is an organized message intended for people.

The use of a single definition makes it possible to carry out a comprehensive analysis, foresight studies and international comparisons based on development figures for the information industry and digital economy and engage in full-scale monitoring of the development of the information society in Russia.

Practical application of the suggested approaches to information industry definitions will become possible after the relevant regulation¹¹ is approved. It will provide a methodological framework for the Russian expert and research communities to study and forecast development of the Russian information industry, and extend the information basis of the national ICT policy, in particular for setting national priorities to promote the growth of the Russian ICT market and support Russian ICT producers.

Introducing the “ICT Sector” and “Content and Media Sector” definitions will make assessment of relevant economic activities more transparent and ensure international compatibility of relevant statistics, which would allow one to more precisely estimate Russia’s positions in the global economy.

¹¹ Draft Regulation of Ministry of Telecom and Mass Communications of the Russian Federation executive order “On approval of aggregation for the information economy” is being agreed with relevant government stakeholders.

Appendix

Appendix 1 – Information industry by types of economic activity
according to OKVED Rev. 1.1 and OKVED2 in accordance with ISIC Rev. 4

OKVED Code Rev. 1.1	OKVED Title Rev. 1.1	ISIC Code Rev. 3.1	Code OKVED 2	OKVED2 Title	ISIC Code Rev. 4
Information and communication technology sector (ICT sector)					
Manufacture of information and communication technologies (ICT)			Manufacture of information and communication technologies (ICT)		
30	Manufacture of office equipment and computer equipment	30	26.1	Manufacture of electronic components and boards	2610
31.3	Manufacture of insulated wires and cables	313	26.20	Manufacture of computers and peripheral equipment	2620
32	Manufacture of electronic components and devices for radio, television and telecommunications	32	26.30	Manufacture of communication equipment	2630
33.2.	Manufacture of devices and instruments to measure, control, test, navigate, direct and for other purposes	3312	26.40	Manufacture of consumer electronics	2640
33.3	Manufacture of devices to control and regulate technological processes	3313	26.80	Manufacture of magnetic and optical media	2680
	Wholesale of goods associated with information and communication technologies (ICT)			Wholesale of goods associated with information and communication technologies (ICT)	
51.43.2.	Wholesale of radio and television equipment and technical media (with and without records)	5152	46.51	Wholesale of computers, computer peripheral equipment and software	4651
51.84	Wholesale of computers, computer peripheral equipment and software	5151	46.52	Wholesale of electronic and telecommunications equipment and parts	4652

51.86	Wholesale of other electronic components (parts) and equipment	5152
51.87.5.	Wholesale of manufactured electronic equipment, machinery, hardware and materials	5152
Services associated with information and communication technologies (ICT)		
64.2.	Telecommunications activities	642
71.33	Lease of office machinery and equipment, including computer equipment	7123
72.1	Consulting on computer hardware	721
72.2	Software development and consulting	722
72.3	Data processing	723
72.4	Database and information resource creation and use activities, including Internet resources	724
72.5	Servicing and repair of office machinery and computer equipment	725
72.6	Other activities linked to the use of computer equipment and information technology	726

Services associated with information and communication technologies (ICT)		
58.2	Software publishing	5820
61.10	Wired telecommunications activities	6110
61.20	Wireless telecommunications activities	6120
61.30	Satellite telecommunications activities	6130
61.90	Other telecommunications activities	6190
62.01	Computer programming activities	6201
62.02	Computer consultancy	6202
62.03	Computer facilities management	6202
62.09	Other information technology and computer service activities	6209
63.11	Data processing, hosting and related activities	6311
63.12	Web portals	6312
95.11	Repair of computers and peripheral equipment	9511
95.12	Repair of	9512

			communication equipment	
Content and media sector				
Publishing activities			Publishing activities	
22.1	Publishing activities		58.1	Publishing of books, periodicals and other publishing activities
				581
Film production, recording and publishing activities			Film production, recording and publishing	
92.1	Film production, recording and publishing activities		59.1	Motion picture, video and television programme activities
				591
Radio and television broadcasting activities			Sound recording and music publishing	
			59.2	Sound recording and music publishing activities
				592
92.2	Radio and television broadcasting activities		Television and radio broadcasting	
			60	Programming and broadcasting activities
				60
Other information service activities			Other information services	
92.4	News agency activities		63.91	News agency activities
				6391
			63.99	Other information service activities not elsewhere classified
				6399

Source: compiled by the authors from [Rosstat, 2014; OKVED, 2007; OECD (2011)].

Appendix 2 –Information industry goods and services classification
according to OKPD2

OKPD2 Code	OKVED2 Title
ICT goods and services	
Computers and peripherals	
26.20.11	Portable computers with a mass of no more than 10 kg such as notebooks, tablet computers, pocket computers, including those combining the functions of a mobile telephone, electronic notebooks and equivalent computer equipment
26.20.12	Cash terminals, ATMs and equivalent equipment connected to a computer or data transfer network
26.20.13	Electronic digital computers containing, in a single body, a central processor and input-output device, integrated or otherwise, for automatic data processing
26.20.14	Electronic digital computers in the form of systems for automatic data processing
26.20.15	Other electronic digital computers containing or not containing, in a single body, one or two of the following devices for automatic data processing: memory devices, input devices, output devices
26.20.16	Input or output devices containing or not containing memory devices in one body
26.20.17	Monitors and projects predominantly used in automatic data processing systems
26.20.18	Peripherals with two or more functions: data printing, copying, scanning, facsimile reception and transmission
26.20.2	Memory devices and other data storage devices
26.20.30	Other automatic data processing devices
26.20.40	Computer modules, parts and accessories
Telecommunications equipment	
26.30.11	Communication and transmission device with receiver devices
26.30.12	Communication and transmission device without receiver devices
26.30.13	Television cameras
26.30.21	Wired telephone devices with cordless handsets
26.30.22	Telephone devices for cellular communications networks or other wireless networks
26.30.23	Other telephone devices, equipment and apparatus to transmit and receive speech, images or other data, including communication equipment to operate in wired or wireless communications networks (for example, local and global networks)
26.30.30	Communications equipment parts and components

26.30.40	Antennae and dishes of all types and parts; transmission parts of radio and television equipment and television camera
26.30.50	Security devices or fire alarms and similar equipment
Consumer electronics	
26.40.1	Broadcast radio receivers
26.40.20	Television receivers combined or not combined with broadcast radio receivers or equipment to record or reproduce sound or images
26.40.31	Electronic disk playing devices, record players, cassette players and other equipment to reproduce sound
26.40.32	Tape recorders and other sound recording equipment
26.40.33	Video cameras for recording and other equipment to record or reproduce images
26.40.34	Monitors and projects without built-in television receiver equipment and mostly not used with automatic data processing systems
26.40.4	Microphones, loud-speakers, receiver equipment radio-telephone or radio-telegraph communications
26.40.51	Audio and video equipment parts and accessories
26.40.60	Games consoles used with a television receiver or equipped with a built-in screen, and other commercial games and games of chance with electronic displays
26.70.13	Digital video cameras
Other components and goods associated with information and communication technologies (ICT)	
26.11.1	Electronic vacuum or gas-filled valves and tubes with a hot cathode, cold cathode, photocathode, including cathode ray tubes
26.11.2	Diodes and transistors
26.11.30	Integrated circuit boards
26.11.40	Parts of electronic lamps and tubes and other electronic components not elsewhere classified
26.12.10	Printed circuit boards
26.12.20	Sound cards, video cards, network and similar cards for automatic data processing machines
26.12.30	Cards with built-in integrated boards (smart cards)
26.30.60	Parts for security devices or fire alarms and similar equipment
26.40.52	Parts for radio receivers and radio transmitters
26.70.23	Liquid crystal devices; lasers, excluding laser diodes; optical devices and other instruments not elsewhere classified
26.70.25	Parts and accessories for liquid crystal devices, lasers (excluding laser diodes), other optical devices and other instruments not elsewhere classified

26.80.11	Magnetic media, not recorded, except cards with a magnetic stripe
26.80.12	Optical media, not recorded
26.80.13	Other recording media, including matrices and masters for the production of disks
26.80.14	Magnetic cards
Services linked to the manufacture of ICT equipment	
26.11.9	Services linked to the manufacture of electronic integrated systems; certain operations relating to the process of manufacturing electronic components carried out by a subcontractor
26.12.9	Services linked to the production of printed boards; certain operations relating to the process of mounted electronic boards carried out by a subcontractor
26.20.9	Computer and peripheral equipment manufacturing services; certain operations relating to the process of computer and peripheral equipment manufacturing carried out by a subcontractor
26.30.99	Communication equipment manufacturing services carried out by a subcontractor
26.40.99	Consumer electronics manufacturing services carried out by a subcontractor
26.80.99	Magnetic and optical media manufacturing services carried out by a subcontractor
Software publishing	
58.29.11	Operating systems on electronic media
58.29.12	Network software on electronic media
58.29.13	Database administration software on electronic media
58.29.14	Developer tools and programming language software on electronic media
58.29.21	General applications to increase the efficiency of a business and applications for household use, sold separately
58.29.29	Other application software on electronic media
58.29.31	System software for download
58.29.32	Application software for download
58.29.40	Online software
58.29.50	Computer software licensing services
Information technology and computer consultancy	
62.01.11	Information technology design and development services for software application and testing
62.01.12	Information technology design and development services for networks and systems
62.02.10	Computer equipment consulting services

62.02.20	Systems and software consulting services
62.02.30	Information technology technical support services
70.22.17	Business process management services
Telecommunications services	
61.10.11	Wired telecommunications services - providing access and telephone connections
61.10.12	Additional wired telecommunications services
61.10.13	Wired telecommunications services in specific telecommunications networks
61.10.20	Wired telecommunications operator services
61.10.30	Wired telecommunications network data transmission services
61.10.41	Main Internet information and communication services
61.10.42	Wired narrowband Internet information and communication services
61.10.43	Wired broadband Internet information and communication services
61.10.49	Other wired telecommunications services over the Internet
61.10.5	Cable broadcasting communications services
61.20.11	General use mobile communications services - user access and support
61.20.12	Additional mobile communications services
61.20.13	Mobile communications services in certain radio networks
61.20.20	Communications operator services in wireless telecommunications
61.20.30	Wireless telecommunications network data transmission services
61.20.41	Wireless narrowband Internet information and communication services
61.20.42	Wireless broadband Internet information and communication services
61.20.49	Other wireless telecommunications services over the Internet
61.20.50	Aerial broadcasting communications services
61.30.10	Satellite communications services, excluding for television and radio broadcasting purposes
61.30.20	Satellite communications services for television and radio broadcasting purposes
61.90.10	Other telecommunications services
ICT equipment leasing and rental services	
77.29.11	Leasing services concerning televisions, radio receivers, video tape recorders and similar equipment and accessories
77.33.12	Leasing and rental services concerning computers
77.39.14	Leasing and rental services concerning telecommunications equipment
Data processing services, data hosting services	
63.11.11	Data processing services

63.11.12	Internet hosting services
63.11.13	Services providing software without installing it on the user's computer equipment
63.11.19	Other services to make available and provide information technology infrastructure
63.11.2	Video and audio streaming services
Other services associated with information and communication technologies (ICT)	
62.01.29	Other software originals
62.03.11	Network management services
62.03.12	Computer system management services
62.09.10	Computer and peripheral equipment installation services
62.09.20	Other information technology and computer services not elsewhere classified
71.12.18	Telecommunications, television and radio broadcasting technical design services
95.11.10	Computer and peripheral equipment repair services
95.12.10	Communication equipment repair services
Goods and services associated with information	
Printed products	
58.11.11	Educational textbooks, in print
58.11.12	Professional, technical and scholarly books, in print
58.11.13	Children's books, in print
58.11.14	Dictionaries and encyclopaedias, in print
58.11.15	Atlases and other map books, in print
58.11.16	Maps and hydrographic or similar charts, in print, but not in book form
58.11.19	Books, brochures, leaflets, in print, and similar printed materials
58.11.20	Books on disks, tapes or other physical media
58.12.10	Address directories or lists of addresses, in print or on physical media
58.13.10	Newspapers, in print
58.14.1	Journals and periodicals, in print
58.19.11	Printed post-cards, congratulatory cards and other printed matter
58.19.12	Reproductions, sketches and photographs, in print
58.19.13	Transfers (decalcomanias) and printed calendars
58.19.19	Other printed matter not elsewhere classified
Motion picture, video and television programme services and associated goods and services	
59.11.11	Motion picture production services

59.11.12	Propaganda or advertising motion picture and videotape production services
59.11.13	Other television programme production services
59.11.21	Motion picture, video and television programme originals
59.11.22	Film strips
59.11.23	Other films and video recordings on disks, magnetic tapes or other physical media
59.12.11	Audiovisual editing services
59.12.12	Transfers and duplication of masters services
59.12.13	Colour correction and digital restoration services
59.12.14	Visual effects services
59.12.15	Animation services
59.12.16	Captioning, titling and subtitling services
59.12.17	Sound editing and design services
59.12.19	Other editing of motion picture and videotape removed materials and television programme arrangement services
59.13.12	Other motion picture, videotape and television programme distribution services
59.14.10	Motion picture distribution services
59.20.21	Radio programme production services
59.20.22	Radio programme originals
60.10.11	Radio broadcast production and transmission services
60.10.12	Radio broadcast originals
60.10.20	Radio channel programmes
60.10.30	Radio advertising time
60.20.1	Television programme and radio broadcast production services
60.20.20	Television broadcast originals
60.20.3	Television channel programmes
60.20.40	Television advertising time
Music publishing services	
59.20.1	Sound recording and direct sound recording services; sound recording originals
59.20.31	Music publication, in print
59.20.33	Musical audio disks, tapes or other physical media
59.20.35	Musical audio downloads
Computer games	
58.21.10	Computer games on electronic media

58.21.20	Computer games for download
58.21.30	Online computer games
62.01.21	Computer game software originals
Electronic products	
58.11.30	Electronic books
58.12.20	Electronic address directories or lists of addresses
58.13.20	Electronic newspapers
58.14.20	Electronic journals and periodicals
58.19.21	Electronic adult publications
58.19.29	Other electronic publications not elsewhere classified
59.11.24	Films and other video content for download
59.20.32	Electronic scores
63.12.10	Internet portal content
Other information services	
58.11.41	Advertising space in printed books
58.11.42	Advertising space in electronic books
58.11.50	Publishing services, on a fee or contract basis
58.11.60	Licensing services for the right to use books
58.12.30	Licensing services for the right to use address directories and address lists
58.13.31	Advertising space in printed newspapers
58.13.32	Advertising space in electronic newspapers
58.14.31	Advertising space in printed journals and periodicals
58.14.32	Advertising space in electronic journals and periodicals
58.14.4	Licensing services linked to journals and periodicals
58.19.3	Licensing services linked to other printed matter
58.21.4	Licensing services for the right to use computer games
59.11.30	Sale of advertising space or time in motion pictures, videotapes and television programmes
59.13.11	Licensing services for the rights to motion pictures and income derived from them
59.20.34	Other audio disks and tapes
59.20.40	Licensing services for the right to use audio material originals
63.11.30	Internet advertising space or time
63.91.11	News agency services to newspapers and periodicals
63.91.12	News agency services to audiovisual media
63.99.10	Other information services not elsewhere classified
63.99.20	Original collections of facts/information

73.11.11	Full advertising services
73.12.1	Services selling advertising space on a fee or contract basis

Source: compiled by the authors from [OKPD2, 2014].

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