RUS®SOFT

2015

Export of Russian Software Development Industry

12-th Annual Survey

With support from
RVC and APKIT Association

RUSSOFT Association
2015

Dear colleagues!
Dear friends!

I have particular honor to introduce to you results of the annual (this time already 12th) survey of the software development export industry in Russia. The research was conducted by RUSSOFT Association from February to April 2015.

More than 120 market players were interrogated within the research, additionally a wide range of sources of information were studied, expert judgments were received from dozens of CEOs of software development companies.

The last 2014 year passed within the climate of marked aggravation of the world geopolitical situation due to events in Ukraine that eventually resulted in adoption of economic sanctions against Russia by the United States and by the European Union. And the end of the year was marked by fall in oil prices and by a corresponding ruble's decline against leading world currencies.

Negative factors had an impact on growth rate in sales of software and of development services offered by Russian software industry which decreased from 17% in 2013 to 11% in 2014. At the same time, devaluation of national currency added to marketability of Russian industry in the global market. According to forecasts of our respondents, in 2015 the volume of foreign sales of Russian companies will amount to $7 billion with enhancing growth rate to 16%.

Unfortunately, prospects for export growth in no small measure will depend not on companies themselves but on political developments. Russian companies are feeling the appearance of political barriers although typical only for clients who lack experience in working with Russia.

Taking the opportunity, I would like to thank ConfirmIT and Toy Opinion for their effective information collection, and also would like to express gratitude to PROMT for its excellent translation of the report into English. Special thanks to HeadHunter for submission into our report of their internal review of labor market situation in IT area.

Also I would like to express profound gratitude to Andrey Terekhov, professor of St. Petersburg State University, for his traditionally outstanding work of editing this report.

And certainly, I wish to express kind words to our analyst Dmitry Zhelvitsky for his arduous efforts for collection of complementary information and for his analytical works.

We are very grateful to the Russian Venture Company and to the Association of Computer and Information Technology Companies (APKIT), also to other our sponsors for financial support in conductance of research.

Many thanks to all survey participants who provided information on their companies!

Best regards,
Valentin Makarov
Executive Editor
RUSSOFT Association, President

RUS®SOFT

RUSSOFT Association is the most important nation-wide amalgamation of software development companies (both — software vendors and software development service providers) from Russia, but also comprising a number of companies from Ukraine and Belarus.

RUSSOFT Association was created in 1999 in St. Petersburg (Russia) as a noncommercial partnership under the name of "Consortium Fort Ross" composed of 10 local companies. Consortium was primarily intended to coordinate joint marketing efforts of its members for promoting Russian software development services worldwide. After the merger with NSDA, a Moscow based Software Developers Association, in 2004, the united Association took the name of RUSSOFT Association.

RUSSOFT unites over 108 companies with the total staff exceeding 30 thousand qualified software engineers. 9 member companies of RUSSOFT enter the List of 100 World leading outsourcing service providers (Global Services, 2014). Names of 8 RUSSOFT members are listed in the ratings of World leading software vendors in particular software segments (including Gartner Magic Quadrants).

RUSSOFT is the major lobbyist of the industrial interests in the State bodies at all levels. The Association also works on developing IT-education and professional retraining, on diminishing administrative barriers, on High-Tech export support.

RUSSOFT organizes numerous marketing events worldwide, it also conducts marketing campaigns among major Russian customers, including State corporations.

Members of RUSSOFT Association form the Pyramid of the Russian software development industry — from startups to worldly known corporations — which represents the major Russian IT-centers — Moscow, St. Petersburg, cities from Siberia, Ural and Volga areas.

Beginning from 2004, RUSSOFT Association has been conducting the annual market surveys which studied the entire Russian software development industry. The results whereas form the unique source of information for the State bodies, international analysts and clients, as well as for the whole Russian software industry itself.

You are welcome to look through results of our study in Y2015!

Contents

Chapter 1

Russian positions on the world IT market

Consortium KODEKS is a group of IT-companies with 25-year history, which surely occupies the unique niche in the market of information products and services. We develop Professional Reference Systems KODEKS and TECHEXPERT, modern Systems of Electronic Document Flow as well as exclusive Software developments and technology solutions for leading enterprises in all industries. We experienced not one financial crisis in quarter of century and had accumulated good experience in these difficult circumstances. Therefore, despite a difficult foreign policy and economic situation in Russia, I am sure we should not currently expect a serious recession in IT Industry, as that was in 2008. Yes, working conditions have changed: worse for some companies and new opportunities for other ones. But in whole, industry should be able to work and develop in all circumstances, especially such an innovative and professional industry as ours.

There is currently being allocated less money for information technology because of the economy difficulties. However, there are not only the obvious disadvantages but advantages as well. In my opinion, customers and consumers of information technology, in particular the state ones, now feel more responsibility in expenditure of funds. Previously, there were many examples of thrown out the window funds, allocated for IT. I hope money will go mostly for really useful and effective developments in current situation.

Russia has held a course for import substitution, and, as a developer, I welcome this initiative. Indeed, it can benefit the software development industry but only on the condition that it will be harmonized with the course for cooperation with the global community of professionals. Phase-out of imports should concern lines and products that we are able to provide with a good quality. If in contrast, it implies manufacture of everything exclusively within Russia, nothing good will come of it. Besides, by developing decent counterparts within the framework of import substitution Russian companies will be able not only to satisfy the requirements of domestic market but also make export supplies at a later stage.

Generally, the Russian IT-market may anticipate success in the years to come. However, to achieve this objective, it is necessary to upscale IT-industry, to increase a number of skilled professionals. At the moment, in this industry there are percent-wise half as many IT-specialists compared to mature economies even those that do not produce software for the world market.

At present, a trend to use free software has taken shape throughout the world. I think that for Russia moving along this avenue is a must. It is essential to build on a basis of free software a larger half of information systems that are being developed and employed.

Sergey G. Tikhomirov,
President of Consortium KODEKS,
Head of Information network TECHEXPERT

1.1. Introduction

Over the past year the situation on the world IT market and on the Russian IT market did not worsened too much for Russian software companies. In every sphere of consideration there are examples of both improved and deteriorated positions.

In the foreign mass media a share of publications with the negative tone concerning development and use of high technologies in Russia has increased. At the same time, an absolute number of articles positively influencing the engineering image of this country has also grown (a total number of articles with mixed attitudes has considerably increased). It is not worth overrating the negative influence of a big number of publications describing cyber-threats from Russia as the readers are weary of this subject.

The software domestic market in Russia in dollar terms drastically reduced but in ruble terms no disruption was felt. For Russian companies which pay wages in rubles, in most cases the turnover in rubles is more important. In addition, the biggest losses due to market contraction in dollar terms sustained primarily foreign vendors.

The representation of Russia in different ratings of the leading international high tech companies remained almost unchanged while positions of individual companies over the past year in many cases even improved.

In those ratings where the countries are ranked (in terms of development of innovations, IT and business environment), Russia much more often has improved its positions in 2015 than the other way around.

Arguably, the negative influence of economical depression, oil price downturn and anti-Russian sanctions was fully compensated by the positive effect of devaluation of national currency which has strongly contributed to the growth of competitiveness of the Russian software development industry on the world market.

1.2. Russian ICT market

The Russian IT market is still developing even in the context of a significant reduction in total sales amount. This seemingly paradoxical conclusion is based on the analysis of findings of numerous investigations in open resources over past period (RUSSOFT has not conducted its own studies of the IT market).

Experts analysts from analytical agencies even speak about a dramatic drop of the Russian IT market and, naturally, about crisis. We cannot agree with this estimate as the only reasonable conclusion. The point is not that such internationally reputed analytical agencies as IDC and Gartner are wrong and under delusion. The point is that the Russian IT market could and should be looked at from different perspectives without limitation to the estimate of total sales amount only.

Basically, the analysts look at the Russian IT market from the standpoint of foreign vendors. From this point of view crisis and dramatic drop are obvious: incomes in foreign currency of foreign companies (of vast majority though not of everyone) have curtailed drastically.

From the standpoint of domestic software developers the situation is not so catastrophic or even not catastrophic at all. They estimate the Russian market not in dollars or Euros but in rubles,

and in ruble terms the situation is not so bad. According to calculations based on information of IDC (the company itself provides estimates only in dollars), the IT market estimated in rubles in 2014 neither dropped nor grew (the value of change is within the measurement accuracy).

If we take into account the inflation that in 2014 amounted to 11.2%, one may talk of a considerable reduction of the IT market — about 10%. The Russian Ministry of Economic Development and Trade determined the growth of the IT market as 2.2% even in comparable prices (i.e. with account of inflation). In this occasion, the volume of the IT market calculated by this Ministry turned to be smaller than that of IDC approximately by 10 B RUR indicating different methodologies (and that's fair enough, in particular, in calculation of the volume of the IT market IDC accounts for sales of cellular phones which is not accounted for in calculations of the Ministry of Economic Development and Trade).

When there is such great difference in estimates of market volume and growth, the market actors confide independent analysts more than government agencies. However in this case it is quite possible that information of the Ministry of Economic Development and Trade more adequately reflects the current situation.

In respect to segments dominated by foreign vendors, the experts and the players of the Russian IT market (for example, major distributors) are confident of the correctness of estimates of sizes thereof made by the IDC analysts. But in respect to segments of the software market dominated by Russian developers, or the IT service market (where Russian companies also prevail), the experts often have doubts about the accuracy of foreign analysts' approaches. For instance, according to Uniscan GS1 Rus, the segment of business-to-business e-document flow is underestimated by IDC by a factor of 2 because these sectors and individual market players are not accounted for by the company.

At the same time, sometimes the cardinal inconsistencies in hardware sales also show themselves. Moreover, these inconsistencies are available in data of foreign analysts which have nothing to do with the Ministry of Economic Development and Trade. According to IDC, in 2014 in Russia 8.16 million pads were sold while according to J'son & Partners Consulting – 9.4 million (Gfk – 9.2 million). In assessment of a number of sold devices such a difference is quite normal as the approaches can differ very much. However the main disagreement between estimates concerns selling behavior. According to calculations of IDC, pads' sales reduced by 5% in pieces, and even more in dollars (due to dollar price abatement) — almost by 31%. J'son & Partners Consulting determined a perfectly good growth in pads' sales — by 37% in pieces. Even if one measures sales result in dollars, by all tokens the market growth is underway.

Therefore, it may well be that from the standpoint of domestic companies looking out for the turnover and profit in ruble terms, no catastrophic contraction of the market has taken place. It may well be that there has been even a slight growth, or - at the very outside - reduction in sales has been insignificant. Moreover, some companies had the opportunity to increase the turnover through takeover of the share of their foreign competitors.

In 2014, no effect of import substitution (at least, at the IT-market) in Russia was seen yet. We can do no more than assume that the Chinese companies have increased their market share at the expense of the US producers of electronic equipment. However the Russian IT companies count on this effect in the very next future and take certain actions for this purpose. Thus, it is safe to say that some kind of preparation for a change in market structure (positive from the standpoint of users and domestic developers) is taking place.

The consolidated revenues of the major Russian IT companies which entered Top-60 or Top-100 ratings have grown in 2014. According to the Tadviser ratings, the consolidated revenues of 100 major companies have increased by 8.6%. A similar increase is seen in the rating of the ExpertRA agency (+8%). According to CNews, the ruble revenues in comparable prices (with account for inflation) of Top-100 IT companies have increased just by 1%. That is, at all accounts, the reduction of revenues in rubles by several percentage points is underway. However these ratings do not account for the results of many buoyant players who had no drop in the turnover even in comparable prices. And these companies (including middle-sized) are not in short supply (for example, in the segment of provision of cloud services).

It may be noted that if one takes as a basis a list of the major IT companies from the 2013 ratings, it turns to be that they earned in 2014 much less than in 2013. As a whole, it may be assumed that the share of major companies in 2 years has reduced, and this confirms the assumption of a more significant growth among middle-sized companies out of the list of major ones.

However even in the Top-100 rating, let us say, a half of companies did not show any considerable reduction in ruble revenues in comparable prices. According to Tadviser, among 100 major companies only 19 showed a negative increment of revenues, another 17 companies closed the last year with the 5% growth and less. And the rest were growing much quicker. This fact evidences a fundamental change of the market structure and not only for technologies in use but also for companies shares.

Finally, at the situation on the Russian IT market can be looked at from the standpoint of Russian users of technology (both private and corporate), that is with regard to impact of information technologies upon life of people and of national economy. Do ordinary users feel the dramatics of reduction of PC market volume if they do not need to replace their desktops and notebooks? It may be assumed that the majority of them know nothing about it and this problem is of no concern. At the same time, from all appearances the computer fleet in the country is growing, or at least does not reduce even with a big reduction of volume of the Russian software market which has reached saturation point. With development of cloud technologies, transition to free software that became noticeable and large scale, in a manner of speaking, in the last 2 years, a replacement of computer ceases to be an urgent need. The same goes for server market which, nevertheless, has slightly grown in the last year due to construction of new and expansion of existing data processing centers. Much of it is owed to adoption of new legislation on personal data protection.

It can also be noted that against reduction of PC sales a number and a share of households connected to Internet is still growing (though not so quickly as in the previous years). These indicators are interconnected because new users first connect to Internet via PC and only after that via their smart phones and pads. However more important for assessment of the IT market is just a number of Internet users and households connected to Internet. If it grows with reduced sales of computers it means that for the growth of computer use no increase in PC sales is really needed.

From the point of view of parameters characterizing the IT use (primarily, Internet technologies), we observe a considerable growth for all market segments (B2C, B2B, B2G). Therefore, from the standpoint of technology utilization it is safe to say that the Russian IT market is developing in spite of its volume reduction in dollar terms. Such seemingly paradoxical development has been evident for three years already.

At the same time, the reduction of growth rate of some segments of the IT market in 2014 is worth mentioning. For example, according to TMT Consulting, the telecom market grew in 2013 by 5%, and only by 3% in 2014 with a higher inflation. The same goes for the broadband Internet access market as well as for pads and for some other devices. But in this sphere the inflation is just

very low — a cost of services of telecommunication companies has hardly grown. As a rule, the existing reduction is due to approaching or the market saturation. In addition, as a whole, the use of telecommunication technologies is widening just the same.

Basic figures characterizing the Russian ICT market in 2014

Indicator	Absolute value following the results of 2014	Drop (-) / Growth (+) following the results of 2014	Drop (-)/Growth (+) following the results of 2013	Source
Russian ICT market	698 B RUR ($18 B)	+2,2% (in comparable prices)	-11,3%*	Ministry of Economic Development and Trade
	$28 B (1,050 B RUR)	-16% (+0.25%)	-1%	IDC data
Total income of 60 major Russian IT companies	658.7 B RUR	+6%	-3%	rating of major Russian IT companies (RIA Rating)
Total income of 100 major Russian IT companies	876.3 B RUR ($23 B)	+8.6% (-9%)	-	TAdviser10 rating
Cumulative business volume of 100 major Russian IT companies	928 B RUR ($24,4 B)	+1.09% (-15.32%)		CNews100 rating
Cumulative business volume of major Russian IT companies (51 organizations) in Expert RA rating	404.8 B RUR	+8%	+2%	Expert RA
Provision of telecom services by enterprises of all activities	1,702.6 B RUR	+0.5% (in comparable prices)	-	Ministry of Economic Development and Trade
Telecommunication market (volume)	1,655 B RUR ($44 B)	+3% (-13%)	-	TMT Consulting

* Presumably, the Ministry of Economic Development and Trade has changed the methodology of calculations 2 years ago

The analysis of all IT-segments with due allowance for their interrelations makes it possible to see that in recent years some technologies (or solutions) have been intensively replaced by the others. In such a case this replacement from the standpoint of technology level can be confidently viewed as progress. Here are a few stray instances:

1. With a significant reduction in PC sales, the sales of tablet computers increased.
2. The slumping sales of servers and a decrease in the growth rate of software market takes place against the background of the cloud service market growth.
3. Smartphones squeeze out normal mobile phones.

4. Sales of printers and multifunctional devices are reduced with the mass transfer of companies and governmental structures to the e-document flow.

5. Reduction of the market of infrastructural video conferencing systems is compensated for increased sales of video conferencing software systems.

Therefore, a decrease in a certain segment is compensated by a growth of another (partially or fully alternative) segment. It is accompanied by the drop of turnover of certain companies that focus on diminishing segments and the sales growth of other companies (more often smaller ones currently not ranking among the leaders) which guessed the market tendency.

Inhibition factors

Nevertheless, the total IT budget of households, companies and government institutions ceased to grow anyway (slowdown in growth rate was also observed by the results of 2012-2013), and in 2015 it will be probably reduced not only in dollar but also in ruble terms. In such a case the IT development in Russia still has not come up to that of the most economically developed countries meaning that the growth of the IT market still has serious prospects and is clearly desirable for national economy in its entirety.

As a main reason of the Russian IT market standstill (from the standpoint of foreign vendors), or its recession (from the standpoint of users) the analysts most frequently cite the perturbed macroeconomic situation. The economy does not grow (at least, at a previous rate), so the IT market is at a stop too.

Indeed, economic climate influences the IT market. However if we do not consider other equally important factors, we can get to a somehow warped and simplified conception about what is going on at the Russian information technology market.

Factors influencing the Russian IT market (apart from low GDP growth rate):

1. Improvement of the effectiveness of investment in IT

After 2009 crisis, in expectation of new shocks, business is learning to use in an effective way the available IT budget. Selection of parties responsible for projects and decisions as well as service providers becomes more careful. It is not inconceivable that companies will improve the investment performance as regards information technologies. In order to solve an IT-problems they will not need to increase the IT budget even though there is room to do it. It may be assumed that retail buyers and business customers went for their expenses in a more down-to-earth manner. Now purchases of computer equipment and investments in information systems to a lesser extent are pegged to certain dates (New Year or yearly closure) but are made as and when necessary.

2. Emergence of new technologies

It should not go without mention that both cloud technologies and e-document flow allow for significantly saving expenditures on primary inputs in IT at least. Purchase of servers, workstations, printers and multifunctional devices could grow down not only by reason that there was not

sufficient money to buy them but also owing to the existing alternative which allowed getting the same or even greater functionality with reduced expenditures on IT. The transition to "free software" is bringing out, that results in reduction of the Russian software market since now there is no need to pay for licenses while expenses on software support are relatively similar.

3. Saturation in some segments

It is hard to deny the impact of such factor as market (certain segments) saturation upon the Russian IT market volume. For example, a vast majority of Russians have personal computers. From year to year notebooks and desktops are bought not for the first time but in order to replace old devices. Besides, in recent years they are themselves ousted from the market by tablet computers which have gone down in value far and away. On the enterprise IT market saturation is also felt. For example, according to Docflow, only 2% of companies do not use and do not plan to use IT solutions in the field of enterprise content management. In 2012 they were 23%. Introduction of e-document systems (EDS) by the middle of 2014 is completed already by 56% of companies that is by 15% more than in the last year. 40% of companies are under introduction of EDS. A similar situation is observed on the ERP market and in other segments of IT market.

4. Price-cutting

Price reduction of different devices is another factor slowing down the spending spree connected with information technologies on a nationwide scale. It is telling that, for instance, the Russian data storage system market in 2013 reduced in monetary terms by 5%, at the same time it increased in petabytes (total amount of delivered memory) by 11.4%. In all likelihood this tendency remained in 2014 as well.

5. Lack of sensational specialties

Finally, in recent years the Russian market did not face any essential novelties (devices, technologies or products) that could have driven demand. This factor is less significant compared to those above mentioned, anyway it is worth mentioning.

All these factors are mentioned by the experts and representatives of IT companies but far and away less often than aggravation of the macroeconomic situation.

Individual segments of the Russian IT market

Indicator	2014	Drop (-) / Growth (+) following the results of 2014	Source
Software	$4 B*	-20%	IDC
PC	$3.89 B (7.91 M pcs)	-32% (-22.7%)	IDC
Antivirus software	12 B RUR	almost unchanged	Eset
Earnings of large service providers on the basis of commercial DPC	7 B RUR	+43.5%	TAdviser Center
Services of commercial data centers	11.7 B RUR ($307 M)	+20.4% (+1%)	PMR
Total number of commercial DPC by the end of 2014	175	+6%	PMR

Indicator	2014	Drop (-) / Growth (+) following the results of 2014	Source
IT services	$6.57 B (250 B RUR)	-15% (+2.2%)	IDC
IaaS	2.6 B RUR ($68 M)	+26% (4.8%)	J'son & Partners Consulting
Server supplies to Russian market	143 thousand pcs ($926 M)	-5.6% (+2.4%)	IDC
Equipment and services in information security area	-	+13% (in ruble terms)	J'son & Partners Consulting
Subscription television	37.6 M households	+7.1%	J'son & Partners Consulting
Russian UPS market by three first quarters 2014		-20% (in dollar terms)	IDC
Reader market	870 thousand pcs	+8.8%	PocketBook

* - preliminary data announced in early 2015

Communications market

On the telecommunication service market the same processes are observable as on the IT market. The growth is evident only in rubles — by 3%. If the market size is calculated in dollars or if the inflation is accounted for, the growth indicator will be negative. However one must not speak about standstill in relation to telecommunication market too. New technologies are actively introduced, in different regions the LTE networks are put on stream, data rate speed is increased with stable tariffs.

Software market

According to IDC, the Russian software market reduced by 20% from $5 B to $4 B by the results of 2014. The situation is deteriorating year after year — in 2012 the 10% growth was observed, in 2013 it dropped to 4% and at the present time the growth has given way to slackening of market.

In reality, the software market reduction approximately by 20% is primarily governed by devaluation of ruble: the Russian national currency has dropped in round numbers by the same value. Therefore, in terms of rubles the capacity of market remains the same.

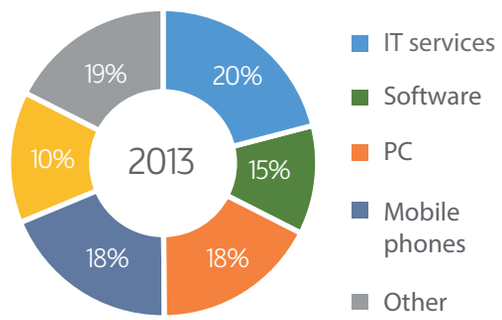
One of the factors influencing the capacity of software market is transition to the "free software". This process facilitates the Russian software market contraction since now there is no need to pay licenses for purchased software while expenses on its support are relatively similar.

Such big reduction above all hit foreign vendors in the pocket.

Structure of the Russian IT market

Complete data on the structure of the Russian IT market according to IDC at year-end 2014 are not available yet. In terms of some indicators it may be assumed that it has insignificantly changed in the last year. A share of PC has somehow reduced and that of IT services has increased. The IDC analysts noted an increase in the share of outsourcing services as the demand for them in 2014 dropped more slowly than in other segments.

Structure of the Russian IT market



Source: IDC

Use of Internet technologies

Development of the Russian Internet industry has slackened. It manifest itself in the reduction of the growth rate of some indicators (particularly, Internet audience). Nevertheless, this rate is still high.

In experts' opinion, the number of Russian Internet users will grow by 2020, but the growth rate will be slower. In Moscow, St. Petersburg and in other big Russian cities Internet penetration has already reached or come near the sky line (80-85%). The growth in Internet audience occurs at the expense of small towns and settlements.

The digital gap is almost redressed because Internet penetration in villages and small towns has exceeded 50%.

Use of Internet technologies in Russia

Indicator	Time	Absolute value	Indicator change	Penetration indicator	source
Runet audience (used at least once a month)	End of Q III 2014	79 M people	+4%	+64%	TNS Russia
Number of Russians filed in Unified Identification and Authentication System (UIAS)	Q1 2015	14.8 M people	+13.8%	-	Ministry of Communications and Mass Media
Number of people making online appointment at tax inspection	2014	1 M people	+38%	-	IAC Russian Pensioner
Runet audience (daily)	Autumn 2014	73.8 M people (60.8 M people)	+7.4%	62% (52%)	POF

Indicator	Time	Absolute value	Indicator change	Penetration indicator	source
Internet penetration in rural areas	Autumn 2014			over 50%	POF
Smart TV audience	Autumn 2014	7 M devices	+41%	-	RAEC
Share of people using G2C	2014 yearend	35.2%	+14.3%		Federal State Statistics Service
Internet penetration in over-16 population (in Moscow)	End of 2014	67.5% (81%)	+16.4 percentage points		GfK
Number of Internet users via smart phones	End of 2014	21 M people	-	17.6%	GfK
Number of Internet users via tablets	End of 2014	10 M people	+140%	8.4%	GfK
Total employment in Internet sector	2014 yearend	1.2 M people	+9%	-	RAEC and HSE
Volume of Russian Broadband Internet access market in household	2014 yearend	29.7 M households	+5%	53.6%	J'son & Partners Consulting
Number of subscribers of Broadband Internet access in private segment	End of 2014	28.7 M subscribers	+4%	51.5%	TMT Consulting
Broadband Internet access market size (ARPU)	2014 yearend	117 B RUR (346 rubles)	+5.5%	-	TMT Consulting
E-commerce market size	2014 yearend	683 B RUR	+42.5% (on average over last 5 years)	-	J'son & Partners Consulting
E-commerce market size	2014 yearend	713 B RUR	+31%	-	E-commerce Companies Association
M-banking payments	2014 yearend	15.2 B RUR	15.2 B RUR	-	J'son & Partners Consulting
Internet advertising market growth rate	2014 yearend	over 20%	-	-	J'son & Partners Consulting
E-payment market size	2014 yearend	$33-35 B	50-55%	-	PriceFree
Mobile advertising market size	2014 yearend	$111.8 M	+15%	-	J'son & Partners Consulting
Average share of mobile traffic	July 2014	20.8%	+7.3 percentage points per year	-	Kokoc.com (Kokoc Group)

Cellular communication and mobile phones

Russian market of cellular communication and mobile phones

Indicator	Time	Absolute value	Change	Source
SIP-phone sale	2014 year-end	216 thousand pcs	+16%	J'son & Partners Consulting
Market of hightech portable devices	2014 year-end	0.3 M pcs	Growth over 100%	J'son & Partners Consulting
Share of tenders for virtual video conference	in 2012-2014	9%	9-fold growth	J'son & Partners Consulting
Smart phone market	2014 year-end	26 M pcs (216 B RUR)	+50% (+20%)	J'son & Partners Consulting
Tablet market	2014 year-end	over 9 M pcs (81 B RUR)	+33% (0%)	
Tablet sale	2014 year-end	9.4 M pcs	+37%	J'son & Partners Consulting
Tablet market	2014 year-end	8,16 M pcs ($1.92 B)	-5% (-30.9%)	IDC
Tablet (smart phone) sale	2014 year-end	27 M pcs (9,2 M pcs)	-	GfK

ICT market in the nearest future

There is no question that at the year-end 2015 the IT market reduction in dollar terms will be greater than last year. This essential reduction is caused by the even greater reduction of the annual average ruble's rate to the dollar. It is not worth waiting for a considerable appreciation of the ruble by the end of the year as those who are able to pull ropes at the exchange market are uninterested in it. Thus it may be assumed that the market in dollar terms will reduce by the value of a decline of the exchange-value of the Russian national currency. If at year-end 2014 a drop of the annual average ruble's rate to the dollar was about 19%, at year-end 2015 it will be about 40% (most probably, a very little more). Preliminary data on situation on the IT market confirm these suspicions.

Indeed, an intricate economic situation in Russia also has an impact on the size of ICT market but in a lesser degree. According to one of the major Russian software companies - 1C, Russian enterprises are cutting even the ruble IT budgets. Top managers of other major national IT companies confirm this information and expect that by the results of the whole year we will see a reduction of IT market both in dollar and ruble terms. Nevertheless, 1C managed to increase the turnover in the first 5 months more than by 16%. Most probably, such growth paired with the reduction of volume of the whole IT market will be illustrative for the entire Russian software segment.

According to the IDC forecasts, the year 2015 will be very difficult for the majority of IT companies. The experts of this analytical company find it hard to assume what time may pass before the situation gets markedly better. At the same time, they believe that 2015 will become a year of serious changes in IT supply and in consumption patterns followed by new opportunities for development for individual players and business models.

It may be assumed that for most foreign vendors the year will be difficult, and for domestic suppliers – the year of new opportunities related to the law on State support for domestic manufacturers, and to the real need in import phase-out in critical fields of IT usage.

At the same time, certain segments of the Russian IT market will be growing as before. Primarily these are those related to cloud services, Internet and mobile technologies. For example, according to J'son & Partners Consulting, by the results of 2015 the market volume of IaaS in Russia will increase by 31% to 3.4 billion rubles. In dollar terms, there will occur a small recession, however it is more proper to measure the scope of these services in rubles, but in comparable prices.

1.3. Russia in World ratings

In 2014-2015, in the ratings which characterize business environment and the degree of development and application of information technologies Russia as a rule took higher places than in prior years. In the business environment rating it rose even by 30 positions. If and when there was a decline in a number of ratings, it happened within limit of fluctuations typical for last few years.

Such findings are somewhat unexpected since a place of Russia in the majority of other world ratings under consideration is determined by personal assessments which largely depend on an image generated by politicians and mass media. This image in 2014-2015 was worse than in several prior years. From all appearances, the media coverage already less impacts on rating compilers: they view Russia less according to publications and pieces in media than according to emerging positive information about the country. Such information is partly provided by the RF governmental structures, the Russian experts who foreigners begin to tune in to, and branch associations.

Throughout ten recent years Russia improved its positions in the majority of various global ratings. However, this upward movement was, as a rule, slow. Only in two cases there was observed a sharp upturn in 1-2 years. In 2012 in the world rating of the Electronic government development (EGovernment Survey 2012: E-Government for the People), having risen from the 59th to the 27th place. This rating was published by the United Nations; it reflects the readiness and the feasibility of the state agencies from 193 countries to use ICT to provide the state services.

In reality, Russia jumped from one category of the rating to another – from the countries with emerging economics to the economically developed countries – in a year. Moreover, in this rating the countries are ranged based on the weighted index of estimates on three main components (the scale and the quality of online services, the level of ICT-infrastructure development and the human capital) and it is hard to change them in a year to overtake about thirty countries.

Another breakthrough was found out this year. Based on the results of 2014 in the Doing business rating, created by the World Bank experts, Russia flew up 30 positions higher — from the

92nd to the 62nd place. In this context it would have been difficult to expect even maintaining the positions of the previous version of the rating as the places therein are influenced by personal assessments and the tone of media stories.

Apparently, these breakthroughs were caused by efforts on the E-government creation that were undertaken in Russia within several years, as well as the active work with the rating compilers.

There is a rule of thumb that the final place of one or another country in the international ratings generally depends on the availability of information which the analysts can trust. The movements of Russia and Russian cities up in the global ratings are associated not so much with real changes as with the active work of the Russian side to inform the rating's authors about a real situation in Russia.

In the summer of 2013, for the first time after many years of our research we did not find any global high-tech rating where Russian position took a turn for the worse. In 2014, there were observed several times when Russia descended but more often this country rose to slightly higher levels. It seems that in some cases the reasonableness of decline does not bear scrutiny.

This year the progress is more obvious than in 2014. However we still cannot always agree with the rating's authors.

Long-term observations of Russia's positions in various global ratings allow for bringing to light the following pattern: the better is the place the fewer is the impact of subjective expert judgments on country ranking.

Doing business

At the end of 2011, Vladimir Putin, the incumbent president of Russia (then, he held the position of the prime minister) demanded that by 2020, Russia should move up in the Doing Business rating from the 120th place to the 20th place. The ascension began straight away. In the next rating Russia turned to be by 8 places higher. A year after, Russia managed to outclass 19 countries more. As a result, Russia by the end of 2013 rose to the 92nd place among 189 countries.

It should be noted that the Doing Business rating is created by the World Bank experts that traditionally estimate the situation in Russia shade worse than other international organizations. In some instances its specialists held firm to pessimistic and not realistic forecasts concerning Russia's economic development. Therefore they labored under a mistake. Perhaps, this particular attitude toward Russia might be the reason of such low place in the Doing business rating.

However the upward movement is ongoing: following the results of 2014 a spurt is observed from the 92nd to the 62nd place. The World Bank experts positively estimated the ongoing reforms which are favorable for business environment in the country. Nowadays they analyze the situation not only in Moscow but in St. Petersburg as well. At the same time, it looks a regular oddity when Russia, Tunisia, Moldova and problem-plagued Greece are viewed along similar lines from the standpoint of business environment. Certain mistrust is also aroused by placement of several countries higher than Russia in this rating while business not so much gravitates to these countries in spite of the low-paid manpower.

As far back as three years ago, the RF Ministry of Economic Development and Trade on the basis of their data determined that Russia should have taken 44th place in this rating. This agency also can be under delusion but in this case its version is more realistic than that of the World Bank as in Russia a lot of leading world corporations work actively and successfully. It is worth noting that even the World Bank's experts acknowledge in the interview the serious drawbacks of their rating. First, it estimates business environment just in the chief seat of commerce (in Russia it is Moscow) and not country-wide. Secondly, it informs about a level of administrative control, but cannot serve as a direct indicator of business climate and quality of institutional environment. In essence, it presents only opinions of the World Bank's experts about the level of administrative control.

Anyway business environment must be improved regardless of the country's place in the Doing business rating. All the more so, that even the 44th place (according to the RF Ministry of Economic Development and Trade) is by no means high.

E-Government Survey 2014: E-Government for the People

The E-Government development rating, prepared by the UN experts, is updated every other year. After movement up from the 59th place in 2010 by 32 positions in 2012 the Russia's position has remained unchanged. In 2014, it retained the sufficiently high 27th place. The next update of the rating is anticipated in 2016.

The Global Competitiveness

In the Global Competitiveness rating created by the World Economic Forum experts who assess the performance of economy of 144 countries, Russia following the results of 2014-2015 rose by 11 positions bur still takes a very low — the 53rd place. The general rating in this case considers 12 criteria: Institutional environment, Infrastructure, Macroeconomic situation, Health and basic education, Business knowledge, Higher education, Efficiency of goods market, Labor market efficiency, Financial market maturity, Level of technological development, Size of market, Innovations. Each of them has its own individual rating. The worst positions of Russia are Financial market maturity (110th place), Efficiency of goods market (99th place), Institutional environment (97th place) and Business knowledge (86th place). The best positions are Size of market (7th place), Macroeconomic situation (31st place) and Infrastructure (39th place). It should be noted that the relatively high places are taken by Russia according to more objective indicators.

World Competitiveness Yearbook (IMD)

In another competitiveness rating, prepared by the International Institute for Management Development, Switzerland (IMD), Russia takes a similar to the World Economic Forum's rating place. However if The Global Competitiveness demonstrates the growth of the Russian rating, IMD considers that the positions became worse —in 2015 the country moved from the 38th to the 45th place (and not even among 144 countries but among 61). In the previous 5 years the Swiss institute regularly indicated that competitiveness of Russia was rising against other countries. Lowering of the rating in 2015, according to explanations by the IMD experts, stems from the Ukrainian conflict and market volatility due to the negative geopolitical factors.

Global Innovation Index (Bloomberg)

In 2015, in this rating Russia returned to the 14th place which it took in 2013 after dropping to the 18th place in 2014. Ranking covered only 33 countries, but at the same time the information of more than 200 countries was analyzed (most of them are not included in the basic rating).

The agency's analysts considered the following six factors: R&D intensity (Russia took 31st place), High-tech Companies (15th), Manufacturing (37th), Patents (6th), Education (2nd), Research Personnel (26th). The information was provided by the World Bank, the World Intellectual Property Organization, and the Conference Board organization, the Organization for Economic Cooperation and Development, and UNESCO.

Global Innovation Index (Cornell University)

Aside from Bloomberg, the Global Innovation Index rating is prepared by the Cornell University jointly with the INSEAD business school and the World Intellectual Property Organization. In 2014, Russia rose by 13 positions in this rating and took 49th place. In 2012, it dropped from the 51st to the 62nd place.

Between the 14th-18th places in the Bloomberg rating and the 50th-60th places in the Cornell University rating there is a whale of difference that may be explained by the fact that Bloomberg basically relies upon quantitative values whereas the Cornell University experts (and their partners) — for the most part, on judgmental estimates.

They valued at a very low rate the use of innovations in households and production facilities notwithstanding that the indicators of Internet penetration and computers in Russian society are high enough and almost all enterprises have introduced the basic corporate ERP systems.

IDI (ICT Development Index)

As per the 2011 results, Russia rose by 2 positions in the ICT Development Index of the International Telecommunication Union and took the 38th place, having closely approached to Portugal that occupies the row above. By the end of July 2015, there have been no updated versions of this index yet.

Networked Readiness Index

According to the World Economic Forum, Russia in 2015 rose from the 50th to the 41st place among countries all over the world in terms of networked readiness. Besides objective scoring (for example, by the number of Internet users), the place of a country in this rating is determined by such judgmental estimates as country's business climate, state policy in the IT area, practical regulation of IT industry as well as economical and social influence of information technologies on commonwealth .

The Web Index

The World Wide Web Foundation slightly improved the Russian position in their global rating of countries in terms of level of development and Internet usage "The Web Index". In the 2012 survey it took 31st place, then in 2013 – the 41st, and in the last version 2014 our country rose to the 35th place.

A drop by 10 places, most likely, is caused by very low scores that the country received for Freedom and openness – 26.5. In all appearances, the drumbeat of adopted laws regulating activity on the Internet came into play. If they are looked at objectively, it will turn out that Russian segment of the Internet is no less free from state regulation than American or German segment. Some restrictions are imposed in Russia with a longer delay than in the West. However, the US estimate for Freedom and openness in the Web Index is almost 50 points higher — 71.

The media frenzy over adopted laws reflected also on the positions in the rating of the international nongovernmental organization Freedom House. Russia got there the 41st place among 60 countries. Some Russian political leaders expressed their reasonable amazement at this case because among leaders of the rating there are countries (for example, the USA, Germany, France) where global Internet is cracked down much stronger than in Russia.

In 2014, the rating of Russia was risen owing to correction of the too low score for Freedom and openness (it increased from 26.5 to 39.6).

The A.T. Kearney Global Retail E-Commerce Index

In the A.T. Kearney global retail e-commerce rating Russia took the sufficiently high 8th place among 30 developed and developing countries (a year ago it took the 13th place). In their ranking the A.T. Kearney experts used generally objective indicators: market size and growth, condition of infrastructure, consumption in global Internet. The list is headed by China with the world biggest number of Internet users. But for instance India with more than 1.2 billion people was not included in the rating owing to infrastructure problems.

In opinion of rating's authors, the population of developing countries faster tune themselves to current changes than people from developed countries. The inhabitants of developing countries use telephones for search for goods, price comparison and information sharing with their friends in social networks.

Russia with 18% of forecasted annual average growth rate by 2018 and online business volume of $10 B is transformed in one of the e-retail markets appealing to both domestic and foreign retailers. Among all European countries, it enjoys the most numerous Internet users' community (70 million people). 33 million of Russian people buy goods online. At the same time, the experts forecast that Russian online business will grow at the average rate of 18% by 2018.

Internet data transmission (rating made by the company Akamai)

Russia went down from the 20th to 31st place in the world for the average data transmission speed although this indicator in the last year increased from 7.8 Mb/s to 9.4 Mb/s (some other countries did better). First three places are taken by South Korea (23.6 Mb/s), Ireland (17.4 Mb/s)

and Hong Kong (16.7 Mb/s). Though the superiority of the leaders looks strong enough, today there is no need to increase average Internet data transmission even if it may be none the less useful. An average value for all countries is 5 Mb/s.

Innovation Cities Global Index

In the rating of the world's most innovative cities in 2014, Moscow moved up from the 74th to the 63rd place, and St. Petersburg — from the 84-th to the 81st. The other Russian cities get far behind the two Russian capitals: Yekaterinburg (213th place), Kazan (222), Novosibirsk (253), Samara (266), Nizhny Novgorod (282), Krasnoyarsk (303), Kaliningrad (314), Rostov-on-Don (317), Tomsk (343), Perm (354), Saratov (355), Omsk (371), Volgograd (378), Vladivostok (381), Izhevsk (394), Barnaul (405), Orenburg (407), Togliatti (408). It is questionable that the rating compilers managed to collect objective information on all cities of the world. For instance, Minsk has the 435- th place alongside Kabul. Such adjacency is hardly justified.

The Top 100 Outsourcing Cities

For four consecutive years, the ranking of the cities with the best options for the software development outsourcing prepared by the Global Services company included four Russian metropolitan cities. From year to year, all of them change their positions insignificantly. As compared to the last year version, only Novosibirsk moved from the 91st to the 92nd place. St. Petersburg retained its 34th place. Moscow remained at the 56th, Nizhny Novgorod at the 59th. This rating is headed by Indian cities and cities of other Southeast Asian countries.

In this context it should be noted, however, that the rating's authors include in the concept of outsourcing both services for high tech software engineering and for simplest business processes (for example, window cleaning). Since companies from Russian metropolitan cities are exclusively specialized in high tech services, they would have got much higher places if ratings were made for narrower high tech service segments.

In various ratings where ranking is specified by such simple indices as a number of the Internet users and cellular network subscribers, Russia takes a place which roughly corresponds to its economy (8th place) and population size (9th place). As a rule, even a little higher.

1.4. Achievements of individual Russian companies in the world IT ratings

The large Russian software vendors actively participate in various ratings created by the globally authoritative analyst teams. However the overall Russian business presence in these ratings is still insignificant. The main reason is the requirement of the rating authors to disclose their turnover and profit data. A lot of Russian companies for a variety of reasons refrain from making such data public.

Moreover, software vendors frequently do not wish to demonstrate their Russian origin as they position themselves at the corresponding markets as local resident companies (in order to use the status of these countries' national manufacturers).

Due to these reasons and because of the information protection generally not alien to many Russian middle-aged businessmen (who embarked upon a career in the time of perestroika) the representation of Russian companies in a number of world software vendor ratings is much lower than it can be expected in the present context.

First of all, it concerns ratings which assume providing of financial statements verified by auditors as ranking is made by the turnover (or its growth) indicator. However, Russian companies are gradually becoming more open, and their representation is growing even in those ratings for which the turnover data has to be disclosed.

Russian service providing companies have a very different attitude towards the participation in the international ratings. Among the most well known ratings, we can note two versions of the Top-100 world's best IT-outsourcing companies: Global Services and IAOP (International Association of Outsourcing Professionals). In these ratings, which are mainly based on the quality of rendered services, rather than on the company size, a significant number of companies represent Russia (only India and the USA have more companies in the ratings). Currently, the number of Russiansoftware development service providers in the Global Services and IAOP ratings looks very close to the maximum extent possible, and it may be even more increased due to the progress in other Russian companies' information transparency and activity. Totally, 10 Russian service providers have been included at least once in the Top-100 outsourcing companies according to Global Services and IAOP.

In recent years, the share of Russian companies in these ratings has kept at the level of 5-8%. We also need to keep in mind that not only IT service providers but business process outsourcing service providers are also included into the rating of Top-100 outsourcing companies. Excluding such companies from the ratings above, the proportion of Russia will be much higher than 10%. And summing up all achievements of Russian, Ukrainian, and Belarusian companies in these ratings, the total share of service companies from the Russian-speaking industry of the former USSR among the top world's IT service companies will be over 15%.

The Global Services and IAOP analysts not only identify the global top-100 leading outsourcing service providers but also define the best ones in various categories that allows for judging the more important strengths of the Russian software developers. The companies with their main development centers in Russia are considered to be the leaders in the following areas: Product Engineering, Software/Hardware, Information and Communication Technology Services, Entertainment & Media, Automotive, Financial Services, Health Care, Government and IndustrySpecific Services.

The 2013 Global Services 100

This rating has been keeping up since 2013. In the last published version among the global 100 service providers there were 9 Russian companies: Auriga, DataArt, EPAM Systems, First Line Software, Luxoft, MERA, Reksoft and Return on Intelligence (before 2013 - Exigen Services). There are no first-timers. Some of them temporarily leave the list but afterwards return back. It depends on the major customers they had over the period under investigation by rating’s authors.

In the Global Services 100 rating, there were also companies from Ukraine and Belarus as well: IBA Group, SaM Solutions, SoftServe, Intetics. All three countries are culturally and economically close in spite of existing big and small conflicts between them. So we can quite reasonably mention the so-called "Russian-speaking community" of the IT-service providers. The strengths of the companies from these three states are approximately identical. First of all, they have high quality of education in the field of physical and mathematical sciences, creativity and experience in performing of complex projects.

The 2015 Global Outsourcing 100

The Russian representation in the IAOP rating in recent years changed insignificantly after the gradual increase for over a decade. In recent years it increased and stabilized. Good performance in this rating, in experts' opinion, testifies one important development - Russian companies added perception of market requirements and skills of doing business to the reputable highest technical level of Russian engineers . Some companies from time to time come out of the best 100 as well as from category leaders. However they are replaced by others. So the total number remains almost the same. In assessment of inclusion of Russian companies in the IAOP rating it should be remembered that this Association is interested in attraction of new members that may impact on the rating of companies which are not the IAOP members.

In 2015, five Russian service providers were in the Top-100 according to IAOP - Artezio, Auriga, Luxoft, MAYKOR and MERA. All these companies were in this rating a year before except Artezio which last year came out of the Top-100 and now returned again. For some obscure reason EPAM Systems left the Top-100 (this company is rapidly growing and for several years has been a leader in Eastern Europe among outsourcing software development service providers).

MAYKOR provides IT services. Last year the company was a fist timer in this rating largely owing to the vigorous activity in Russia and in IAOP Association. In the last 2 years experts distinguished amongst leaders two Russian companies more - Reksoft and First Line Software. Reksoft in a greater degree crossed over implementation of large public projects in Russia after joining Technoserv group and making away with business dimensions not related to IT services. As a result of such rigorous specialization the company's turnover kind of reduced, in compensation there were created conditions for strengthening positions within Russia on the basis of specialization in development of complex projects at the national level. First Line Software instead of the IAOP rating was marked in spring 2015 by the analytical agency Gartner through inclusion in the report Cool Vendors in Application Services 2015 for its expertise in the area of IT application development for Digital marketing.

In The Global Outsourcing 100, there are less Russian companies than in The Global Services 100. It is explained by the fact that IAOP covers with its rating a larger range of outsourcing directions (including the business process outsourcing sector, where Russian export companies are not represented abroad).

The IAOP experts selected the winners by a number of criteria, such as the turnover growth and the company staff size, the positive customers' feedback about their work with the outsourcing services provider, company's top management experience, and others.

Apart from Russia, neighboring Ukraine and Belarus are also represented in the global IAOP rating (in various years such companies as IBA Group, Intetics, Itransition, Oxagile, TEAM International, Miratech, SaM Softjourn, SoftServe).

PwC Global 100 Software Leaders

According to PwC, Kaspersky Lab advanced from the 57th place to the 54th place in the top-100 software companies due to growth of income by software sales (with the sales result of $628 M and the turnover of $750 M). The last PwC Global 100 Software Leaders rating was published in spring 2014 but prepared on the basis of the results of 2012. Contrary to the previous version, it has no separate rating for the EMEA region and the emerging markets. Kaspersky Lab took the 12th place by the results of 2011 in this region and the second place in the emerging markets (Emerging Markets 100), being slightly behind the Brazilian TOTVS. In the EMEA region the 1C also entered in the first hundred of major companies (30th place, software sales revenue was $360 M), and in the category Emerging Markets 100, besides Kaspersky Lab and 1C (8th place) there were three Russian companies more – Dr. Web (42th place, $38 M), ABBYY (51st place, $31 M), Positive Technologies (68th place, $25 M).

Deloitte Technology Fast 500 EMEA

According to Deloitte, among 500 most fast-growing high-technology companies in the EMEA region, as a rule, there are not big software exporters. Last version includes only one Russian company - CTI (459th place). Many other Russian software exporters promptly increased their income for the last 5 years, but they did not provide Deloitte analysts with the financial statements.

It must be pointed out that a number of companies with Russian origin traditionally participate in the Deloitte Technology Fast 500 ratings in other regions. In particular, EPAM Systems regularly ranks among 10 leaders of fast-growing technological companies in the North American region.

Software 500

In 2014, six Russian software developers were present in the rating of 500 world best software companies (a year before there were 5). Business volumes permit several tens Russian software development companies to be present in this rating however few of them provided their turnover information. By results of 2014 in the Software 500 Kaspersky Lab ranks 121st with turnover of $667 M, EPAM Systems — 131st ($558 M), CFT Group — 151st ($420 M), Prognoz – 237th ($149 M), Diasoft – 306th ($69 M) and Artezio — 416th ($16 M).

FinTech 100

In 2010 and 2011, only one Russian company (Luxoft) was included in the FinTech 100 (the rating of the global leading providers of technologies and services for the financial industry). In subsequent years it was added by Diasoft. In the last version Compared to 2012 Luxoft ranks 57th, and Diasoft —86th.

Magic Quadrants of Gartner

The Gartner Group ratings are one of the most prestigious ratings of product companies (software product vendors). This agency year over year publishes so-called Magic Quadrants of

Gartner, which include products and companies that are among the leaders in certain software segments. Since 2012, three new players were unexpectedly added to the Russian software leaders, which are traditionally present in their "quadrants" (Kaspersky Lab, ABBYY, Parallels, Acronis, and some others). These companies are PROGNOZ – in the Business Intellegence quadrant, Diasoft – in the Core Banking Software quadrant, and InfoWatch – in the new Data Loss Prevention quadrant.

In the summer 2013, Gartner included Kaspersky Lab in the new "magic quadrant", which is comprised of the global vendors of mobile device management solutions, Mobile Device Management (MDM).

Besides, according to the Gartner experts, a small Moscow company IntelTech with their products in the Big Data took the lead in the 2012 Cool Vendors list.

In 2015, Gartner included Positive Technologies specialized in the field of cyber security in the “magic quadrant” uniting 14 world producers of solutions for protection of web applications (2015 Magic Quadrant for Web Application Firewalls).

Some Other Achievements of Russian Software Developers:

According to the American INTERNET TELEPHONY periodical, VideoMost Space of SPIRIT became the Product of the Year 2012. SPIRIT software products are integrated in various telecommunication devices and are used by over 1 billion people in more than 100 countries.

In the summer 2014, their solutions TeamSpirit Voice and Video received the 2014 Unified Communications Product of the Year Award of INTERNET TELEPHONY magazine.

In April 2013, two Russian companies – Softkey and Next Media Group – were included in the top-100 innovative and technological Internet projects according to Red Herring, one of the largest media holdings.

The chat bot Eugene Goostman, developed by Vladimir Veselov team on the basis of artificial intelligence technology and promoted by Russian iFree company, became the world’s first program that successfully passed the famous Turing test: over 30% mistook “Eugene Goostman” for a human being.

The voice biometrics of the Speech Technology Center took the first place at the competition of NIST SRE 2014– unofficial Speaker Recognition Evaluation world championship. Over the 18-year period this biennial competition is held by National Institute of Standards and Technology by the order of the U.S. Government.

Parallels was included in the top-50 leading suppliers of cloud virtualization in 2014 according to the American CRN Magazine. This magazine selects the most successful suppliers of virtualization solutions aimed at channel sales.

Mac Management for Microsoft System Configuration Manager of Parallels took a prize Best of TechEd 2014.

The cloud platform of Parallels hit top 3 best solutions in its class according to Website Magazine.

In the spring 2014, InfoWatch entered the list of 20 most promising world vendors in the area of corporate information security according to the American CIO Review.

Acronis was included in the top-5 according to CRN Partner Program Guide 2014 among companies best stimulating and encouraging their partners by offering them the most favorable business terms and conditions.

In the summer 2015, Russian Yota Devices collected on website Indiegogo financial resources for launching a twin screen smart phone YotaPhone 2 in the USA 6.5 times more than it planned previously. The collected sum was as much as $279.4 thousand while the target figure amounted to $50 thousand.

In the end of 2014, mobile applications of ABBYY took several prizes at the 13th annual competition Mobile Star Awards held by the international resource MobileVillage.com.

PROMT in the end of 2014 took the third place in the international independent rating Top Ten Reviews for their translator PROMT Professional 10.

Kaspersky Lab with its solutions continuously is among the best companies by the independent test results. Eventually it became one of the leaders in number of certificates Advanced+, and received in 2015 the certificate Top Rated from the testing company AV-Comparatives.

Business solutions Kaspersky Internet Security and Kaspersky Security received certificates AVTEST Certified and AV-TEST Approved as a result of trials conducted by the research institute AV-TEST.

Hard Disk Manager 15 Professional of Paragon was awarded Editors Choice from PCMAG.COM. Diasoft joined the ranks of the world largest suppliers of financial technologies according to American Banker and BAI.

Software management product of the NAUMEN hit top 5 of the leaders of the world rating ITSM Tool Universe/ In particular it became the best among all solutions in the estimation of customers. The rating was prepared by the British industry portal The ITSM Review in 2014.

Intellij IDEA 14 of JetBrains took the prize Dr. Dobbs Jolt Productivity Award 2015 as the best integrated development environment for platform Java and JVM.

Return on Intelligence announced the inclusion of the company in the shortlist of the annual SAP Pinnacle Award in the category of Industry Cloud Partner. SAP Pinnacle Award is annually given to the leading SAP partners, which demonstrate the significant progress in the development of partnership relations and provide their customers with the highest quality services.

Veeam with its solution Backup & Replication v7 took the prize “the Product of 2013” in the categories "Backup and emergency recover software" and "Services" from Storage Magazine-SearchStorage.com.

It should be pointed out that year after year it becomes more difficult to compile the list of achievements (select the most important) because their number keeps growing.

1.5. Publications on High Technologies in Russia in Foreign Mass Media

It was reasonable to expect that the flare-up between Russia, on the one hand, and the USA and EU, on the other hand, would have a negative impact on the tone of publications mentioning Russian high tech economy sector. The number of publications that negatively influence the image of Russia, and therefore, the potentialities of the Russian software companies' sales of their products and services on the world market drastically increased (twice precisely). If over the period 01.05.2013-30.04.2014 there were 85 such articles, then from 01.05.2014 to 30.04.2015 the amount thereof increased to 170.

The analysis was only performed based on publications describing the hi-tech economy sector and, first of all, the software development industry. The search within a number of specialized editions and in the World most popular media resources was performed hunting for two keywords – Russia and Software. A number of indicators were compared for two periods — 01.05.2013-30.04.2014 and 01.05.2014-30.04.2015. In prior years the similar methods were used but with small modifications (for example, comparison was made for other timeframes).

The list of monitored mass media included the following 21 resources: Asia Times, BBC, BusinessWeek, CNET, Computerworld, eWeek (PC Week), Financial Times, Forbes, The Hindu, IT Europa, InfoWorld, Linux Magazine, MacWorld, Network World, The New York Times, PC World, REUTERS, TechNewsWorld, The Washington Post, The Wall Street Journal, and ZDnet.

Messages and reviews not directly related to the high technologies were peeled apart. Of primary concern were publications where information technologies were mentioned. However, if some publications were met which were related to other high-technology industries (such as space or aircraft manufacture) they were accounted for as well. All in all, almost 500 articles were analyzed published from May 1, 2013 to April 30, 2015.

Character of publications in foreign mass media (analysis results for two periods: 01.05.2013 - 30.04.2014 and 01.05.2014 - 30.04.2015)

Period	Amount of negative *	Amount of positive *	Amount of positive and ambiguous **	Total
01.05.2013-30.04.2014	85 (52%)	79 (48%)	117 (58%)	202
01.05.2014-30.04.2015	170 (65%)	90 (35%)	116 (41%)	286
For 2 years	255	169	233	488

* - within brackets a share of all publications exclusive of "ambiguous" publications
**- within brackets a share of all publications inclusive of "ambiguous" publications

A share of publications with a negative tone towards Russia has also significantly increased — from 52% to 65%. This value returned to the level observed some five years ago (till 2010 the rate of negative publications was always around 60-70%, while fluctuations were random or attributed to margin of error).

Following a long period of manifest bias and prejudice expressed in negative presentation of high technologies in Russia, in 2010-2011 the tide was turned for better. At that time a share of publications with positive information about Russian high-tech first exceeded 50% and reached 66% (the highest-ever in our investigations) with an upsurge in interest of foreign mass media to the high-tech sector of Russian economy. The revulsion of mood of foreign media to Russia was primarily connected with a more active PR politics of our companies in foreign mass media. The Russian export companies, government people and trade associations deserve some credit for this change.

After several years of positive attitude, an increase in a share of negative publications was found out last year immediately following the integration of the Crimea with Russia. Nevertheless, it does not pay to give a dramatic turn to the situation — a real regression to old times did not happen. First, it is worth mentioning that a total amount of publications continues to ascend. For PR the worst case scenario is the mass media silence, whereas, in contrast, the Russian high-tech sector can even benefit from the negative foreign press statements.

While analyzing negative publications it has emerged that 76% of the negative increase were provided by articles delving into information security. Generally, they touched on the themes of hacker attacks, spam, viruses and cyber-espionage mentioning Russia and Russians as a presumable threat source.

Noteworthy is that the doubled number of these articles coincided with the flare-up between the US and Russia. Foreign readers (particularly, well-educated) have already learned the trick of these “coincidences” and guess that not so much the threats have increased but the activity aimed to present Russia as an image of the enemy has enhanced. Not least because the criminal hacker groups are almost international. The issue here is not big-league politics but just a malicious software and breaking of a core banking system. Because of it, finding only Russia guilty in these cases is inappropriate and silly.

The information security experts know full well that there is no such thing as a special Russian cyber-threat that many western media inform about. And indeed, every now and again readers may find there information that Russia is far behind other countries when it comes to hacker attacks (for example, in the context of sources of DdoS attack where the leaders by miles are Americans).

Mention may be made of another factor of growing perception of hacker threat from Russia. As part of our study we came to know about the fact when one Russian company in a private conversation confessed that it deliberately had exaggerated in its materials the importance of Russian e-crime simply because they offered protective measures for sale.

It is important to note that on topic “Information security” fall not only the majority of negative but also 38% of all positive publications (the second place behind “Activity of Russian developers and scientists” that is reflected in 39% of positive publications). By all means, among all Russian developers the most reputed and world-known are the experts in information security. In this field the slogan «Made in Russia” can be perfectly used in advertising campaigns, though not everywhere and not in all economy sectors.

The second place in the number of negative publications took the subject "High-tech business environment in Russia" - 22%. Most publications here are primarily related to the lack of stability of Russian economy (particularly, the weakening ruble). However in this case the negative attitude is even more conditional than with regard to the "Information security". For instance, the devaluation of national currency affects adversely the sales of foreign vendors in Russia, at the same time it promotes the competitiveness of Russian software development industry Worldwide.

The US and EU sanctions against Russia are mentioned due to their impact on high-tech business in Russia but in very rare publications. At the same time, deterioration of business environment in Russia is associated with risks emerged from the conflict in Ukraine. For some reason these risks concern also Russian service companies engaged in outsourced software development. Supposedly, here risks of potential prohibition on purchase of software developed in Russia are meant. But in reality no examples of similar prohibition are known.

From the standpoint of impact on allocation of software development in Russia a piece of news that Google plans to close its Russian development center was negative. This foreign media linked this decision to the adoption of the law urging the storing of all personal data of Russian citizens in Russia. However other foreign companies having Russian R&D centers did not follow suit though they also worry about entering of this law into force since September 1, 2015.

Of particular note is the interest of foreign media to the appeal of Yandex to the Federal Antimonopoly Service of Russia against Google charged with breach of antimonopoly legislation. Similar proceedings began also in the EU. Noteworthy, this legal action was taken in the EU later than in Russia. As a general rule, the EU is ahead of Russia in struggling with breaches of antimonopoly legislation.

Although a share of publications with the positive tone decreased from 48% to 35%, their total number increased by 14%. It may be explained by two facts: the total number of publications on Russian high-tech has strongly increased, while strongly decreased the number of articles where the tone toward high-tech development in Russia is difficult to attribute to positive or negative.

Last year, this category largely covered messages about Edward Snowden. One part of western readers appreciated the fact that Russia had granted him temporary asylum as an unfriendly act towards the USA. Another part took Snowden as a hero and developed respect for the country that sheltered him and secured from persecution. Many did not come to a decision how to perceive granting of asylum to the fugitive NSA officer, but they cared for Russia to say the least of it. The interest of mass media to Mr.Snowden over the past year dropped markedly (or anyway the pressmen less frequently remind that he is still in Russia), though he is not, of course, forgotten.

It would be rash to assert that the change of tone of articles in foreign media over the past year had an unambiguous adverse impact on opportunities of Russian companies to sell their solutions and services on the world market. First, a lot of readers take a huge amount of chills about Russian threats in their stride and do not put much trust in them. Second, a total number of publications mentioning Russia have considerably grown. Third, a number of articles with the positive tone have also increased.

Publications by subject area, % of all publications for the period

	01.05.2013 - 30.04.2014	01.05.2014 - 30.04.2015	For 2 years
Investment attraction, merges and takeovers, cooperation	0.5%	1.4%	1.0%
Space	4.5%	2.1%	3.1%
Conditions for hi-tech business in Russia	19.8%	17.1%	18.2%
Activities of Russian developers and scientists	15.3%	12.2%	13.5%
Information security	39.1%	58.7%	50.6%
Edward Snowden	16.3%	6.6%	10.7%
Sanctions	1.5%	1.4%	1.4%
Other	3.0%	0.3%	1.4%

The publications we selected for investigation can be divided into two groups. The first group includes specialized print press dedicated to IT, the second — business and general political papers. More than 5 years ago there was a consistent pattern: positive publications favorable for Russian software companies' export appeared mainly in the specialized editions that were far from participation in political games, as well as in mass media of the countries that assumed, at least, a neutral political attitude to Russia.

Rating of editions by publication number for 2 last years (01.05.2013-30.04.2015)

		All publications
1	PC World	76
2	ZDnet	52
3	Network World	46
4	eWeek (PC Week)	42
5	Computerworld	36
6	BusinessWeek**	30
7	CNET	30
8	TechNewsWorld	28
9	The New York Times	37
10-11	InfoWorld	24
10-11	Financial Times	24
12	REUTERS	15
13-14	BCC*	13
13-14	The Washington Post	13
15	The Wall Street Journal	12

In 2010-2011, there are almost no differences between specialized press and general political papers in that sens. Analysis of press over the last 2 years since 01.05.2013 till 30.04.2015 shows that theattitude of specialized print press toward Russia became more negative than that of general political, judging by the tone of publications. In the first group negative publications reached 63%, while in the general mass media - only 53%. The reason is that the information war and creation of an image of enemy take shape mainly through news about hacker attacks and malicious software, and this subject is of prime interest for specialized press.

At the same time, we only evaluated publications on politics and economy if they did mention software (or its byword). Other publications which have no mention of IT and software largely contain much more negative than positive content. These articles are certainly not favorable for promotion of Russian software products and software development services in foreign markets. However, it is not worth overestimating the importance of the negative articles which are far apart from IT subject area. For example, in western mass media, China is presented as an even more nondemocratic state but it does not disturb successful promotion of Chinese goods in the US and European markets.

Top-6 most loyal editions for last 2 years (01.05.2013-30.04.2015)

		%	All positive publications
1	Forbes	100%	5
2	The Hindu	80%	6
3	MacWorld	71%	7
4	BCC*	60%	13
5	BusinessWeek**	57%	30
6	CNET	52%	30

* - Only editions with at least 5 publications per year are included in the table

Top-5 most loyal editions by number of positive publications for last 2 years (01.05.2013-30.04.2015)

		Number of positive	% of positive
1	ZDnet	23	49%
2	PC World	17	28%
3	eWeek (PC Week)	17	45%
4	BusinessWeek**	16	57%
5	CNET	14	52.00%

Top-10 most disloyal editions by number of negative publications for last 2 years (01.05.2013-30.04.2015)

1	The Washington Post	82%
2	InfoWorld	78%
3	Network World	76%
4	PC World	72%
5	The New York Times	70%
6	Computerworld	67%
7	TechNewsWorld	62%
8	Financial Times	62%
9	eWeek (PC Week)	55%
10	ZDnet	51%

Some Russian companies also take the leading positions in these markets irrespective of the content of western mass media publications about Russia. Kaspersky Lab manages to dominate not only in the US corporate market but even in the retail one. In Germany, the Russian antivirus developer steadily heads the list, having beaten the local G-Data to the second place.

Apparently, the western consumers are pragmatic and mostly evaluate quality and price instead of an exporting country's "democratic character" and "friendliness" in the mass media coverage. Judging by behavior of foreign clients of Russian companies the pragmatic nature in combination with disinterest in image of the enemy created by mass media even increased. In 2008 there were cases when foreign customers withdrew from projects with the Russian companies by reason of Russian-Georgian war conflict. Over the past 2 years there is almost no information about similar cases related to the civil war in Ukraine (which in foreign media is actually called the war between Russia and Ukraine). It is known that in foreign companies, which are or plan to become customers of software development in Russia, polemics are carried as to whether it is justified to cooperate with Russians in the current political circumstances. The existing cases of refusal to work with Russian software suppliers are mostly related to nascent anxieties as to come under sanctions due to possible relations of Russian suppliers to defense industry or with Crimean organizations and companies.

It is interesting to note that the most loyal to high-tech Russia edition for two consecutive years now is the American financial and economic review Forbes, and the Top-6 in these terms includes also Business Week and the Indian newspaper The Hindu.

However, in this case the presence of Forbes and The Hindu among leaders refers only to the share of positive articles while in terms of the total amount of publications they are far beyond of the Top- 5 where after all dominate specialized editions, particularly, as regards a total number of articles mentioning Russia and software. This Party of Five includes only one economic edition - Bloomberg BusinessWeek. Other reviewed US and British editions – such as Washington Post, New York Times, Financial Times — are the most disloyal to Russia mass media.

It is worth noting ZDnet which following the results of two years was placed in two ratings that allows to label it both as the most loyal and the most disloyal at the same time. It was included in Top-10 by the share of negative publications, and became a rating's leader by a total number of positive publications. It is a good illustrative example when a not very loyal to Russia edition can publish a lot of positive articles.

All in all, in the publications selected for analysis (for 2 years) 29 Russian companies and organizations are mentioned, but only 9 of them were mentioned more than twice. A year ago the number of such companies was approximately the same — 36. In spite of a certain reduction in a total number of mentioned companies, several software producers have appeared on pages of foreign print press for the first time.

For some years, Kaspersky Lab expectedly leads by far the rating of the most mentioned Russian companies. This company is the largest Russian software product exporter and dominates at the markets of many economically developed countries including the US and Germany. Besides, its managers established a permanent contact with many journalists of foreign print press. Such contacts, probably, have also been established by the PR department of Yandex which takes the second place in this rating. Several companies more can also boast of certain PR achievements but even they can learn from Kaspersky Lab how to work with foreign mass media. There is room for much better presentation of Russian software industry in foreign media, and it is well-placed to do it. Some Russian companies also take the leading positions in these markets irrespective of the content of western mass media publications about Russia. Kaspersky Lab manages to dominate not only in the US corporate market but even in the retail one. In Germany, the Russian antivirus developer steadily heads the list, having beaten the local G-Data to the second place.

Russian companies most mentioned in foreign mass media publications for 2 last years from 01.05.2013 to 30.04.2015 (the number of publications with reference)

1	Kaspersky Lab	40
2	Yandex	20
3	Yota	7
4	Group IB	6
5	Mail.ru	6
6	vKontakte	8
7	Elcomsoft	5
8	Luxoft	5
9	Skolkovo	3

Chapter 2

Volume and structure of Russian export of software and of software development services

The environment where millions of devices were previously working autonomously has changed dramatically. These devices are now integrated and functioning within completely new ecosystems. It is clear that the Internet of Things is a reality and impacting many more people, devices and systems than ever before.

Intellectual Integration takes the approach of the Internet of Things and expands system integration beyond improving the efficiency of business processes. By connecting disparate systems from different functions, new products and services are being created in the both the B2B and B2C sectors.

As an active participant in the Industrial Internet movement, First Line Software uses its deep expertise in Intellectual Integration and broad experience across multiple verticals and technologies to meet complex development requirements and enable innovation for its customers. First Line Software is an active member of the Industrial Internet Consortium and the Object Management Group.

Nick Puntikov,
the President First Line Software

2.1. Estimation of the total sales volume of Russian software development industry outside Russia

At year-end 2014, the cumulative sales volume of software development companies in the Russian market was roughly $6 billion. It is almost the same as a year before. Sales volume in 2013 was upward adjusted in the course of this survey. In terms of rubles, sales at domestic market increased even taking into account the inflation which was 11.2% in 2014.

Export in 2014 increased by 11% and reached $6 billion. It is slightly smaller than forecasted a year ago (respondents estimated growth to be 15% and sales volume - $6.3 billion, respectively).

Thus, the cumulative turnover of Russian software companies reached $12 billion in 2014 at least having increased by 5% per year. It may be noted that export brings to Russian companies almost the same income as sales at domestic market —$6 billion.

At the same time, according to IDC, Russian software market in 2014 reduced roughly by 20% to $4 billion. So sales of Russian software companies at domestic market are seemingly by $2 billion higher than the volume of the whole Russian software market. In addition, at least $2.5 billion is accounted for by foreign vendors (such as Microsoft, SAP, Oracle, IBM and many others).

A considerable mismatch of data is due to the fact that the cumulative result of software companies (Russian and foreign) from sales in Russia and the volume of the Russian software market determined by analysts of IDC and of other similar agencies are very different matters. As a general rule, in the volume of companies' software sales foreign analysts consider only sales of their own licenses. But we need to keep in mind that the revenue of software companies can also be gained by rendering various IT services and by selling of equipment manufactured on the basis of own software.

Besides, data on the cumulative result of Russian software companies from sales in Russia contain a double count. For example, some developers create their own solutions on the platform of a Russian or a foreign vendor (for instance, 1C or Microsoft) and sell them to the customer with account for required deductions to this vendor. These deductions enter into the calculation of earnings of both - vendors and their partners, i.e. are counted twice.

Taking the above mentioned into account, the reason of the existing disagreement with calculations of IDC and other analysts becomes clear. If we take into account also customized development and different services rendered by software companies in Russia, we obtain just about $6 billion of cumulative receipts at least.

In a few past years the income of Russian companies is growing especially fast from mobile application development — by tens of percentage points per year and sometimes by an order of magnitude. According to J'son & Partners Consulting's estimates, the number of mobile application developers in Russia increased in three years by a factor of 2.5, and in 2013 amounted to 4100 (by all tokens, there were considered not only companies but also individuals who operate without formation of legal entity).

Given that Russian companies operate in the ruble zone, it would be not exactly correct to measure their total revenue in dollars. From the very beginning our investigation was dedicated to the export potential of Russian software industry. Previously, we did not count the cumulative business volume of domestic software developers at all, whereas the export volume was logical to measure in dollars as notably dollars is a world currency which is still used in the majority of transactions in international trade.

When there was a small fluctuation of the ruble against the dollar, the choice of currency was not important when one had to measure in trend spotting.

The situation changed in 2014. It became difficult to top managers of many companies to answer questions about changes in their turnover. They just did not know in what currency it was better to quantify their total revenue to reveal growth or decline. If one does it only in dollars then the estimate of turnover behavior looks not always adequate. However, the same goes for the turnover expressed in rubles.

In this context we decided to present different economic indicators in three dimensions — in dollars, in rubles and in rubles adjusted for official inflation (i.e. at 2013 values).

Number of Russian software companies and staff size of professional developers

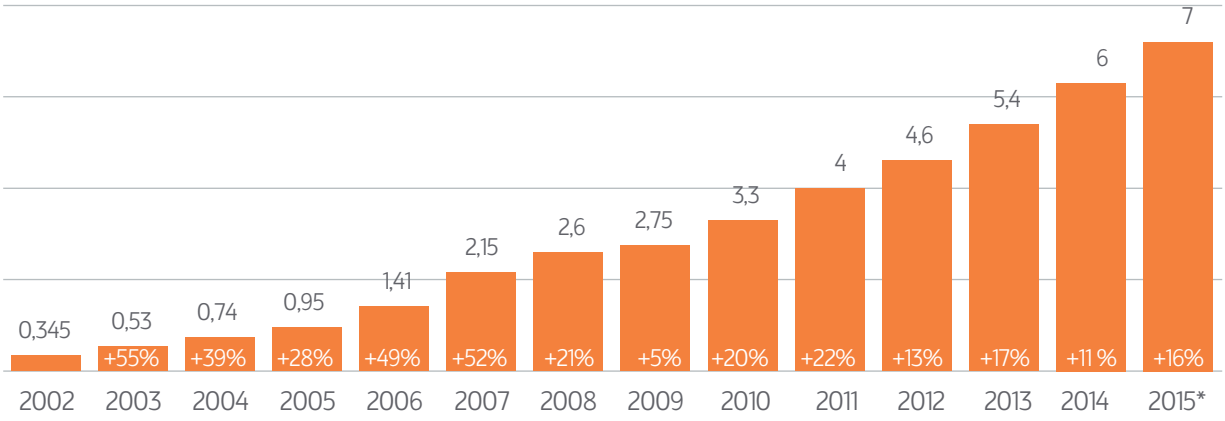
Number of stable Russian software companies	3200 at least
Number of companies with export receipts	2000 at least
Total number of software developers in Russia	430 thousand people at least
Staff size of export companies (export >1% of turnover)	140 thousand people at least
Staff size of Russian companies' software development centers in foreign countries	about 30 thousand people

Basic figures characterizing the Russian software industry (growth/decline compared to similar indicator in 2013)

	in dollars	in rubles	In inflation adjusted (at 2013 values)
Cumulative turnover of Russian software companies (including IT services and sales of vendors' licenses) in 2014	over $12B (+5%)	456B RUR (+25.5%)	410B RUR (+12.8%)
Software and software development services export in 2014	$6B (+11%)	228B RUR (+32.6%)	205B RUR (+19.3%)
Volume of sales of Russian software companies (products and services) in domestic market in 2014	$6B (0%)	228B RUR (+19.5%)	205B RUR (+7.5%)

If we attempt to forecast on the basis of expectations of respondent companies, then the annual growth of software export at year-end 2015 will be as much as 16%, and the growth of the turnover – 10%. However many factors can affect this figure either way. These factors for segments of software products and custom development sometimes coincide, sometimes differ. Their potential impact comes under review in the relevant sections of this chapter.

Software export volume in 2002-2015, $ billion



* — forecast by the result of polling

In the current conditions, return to the growth rates of 40–50%, which were observed at the low initial base, is improbable. Nevertheless, the industry still has a potential for growth in the next several years at the level of 15-20% (with a possible small acceleration in case the world economy will recover). Thus, an increase may be predicted by all export segments: software products, the software development services, but any growth higher 10% for R&D of development centers of foreign corporations in Russia is hardly expected.

However, it should be noted that the current achievements were gained without any significant state support of export in the IT sphere. All existing financial measures of the state support of export practically are not applicable to IT due to ill-preparedness of the state to assess the specific features of immaterial (virtual) software production. Any financial nor non-financial export supportive measures (primarily, subsidy assistance of international marketing) in Russia virtually are not used.

Although, as a whole, it is noteworthy that the state in recent years has been rendering support to the IT industry (first of all, concerning financing of startups and perspective scientific developments, construction of technology parks and clusters, incentives in social taxation). This support already promotes an increase in the export growth rates and can serve as a good engine of growth in the next years.

Another important reserve of the industry's export growth is the state support in the form of elimination of administrative barriers, first, in the customs and currency regulation, as well in supporting international marketing of software companies.

The effect of this support shall not be only considered from the point of view of tax collection and employment growth. The increase in the software export allows to diversify the Russian economy and to reduce its dependence on fluctuations of the world prices for raw materials. Software exporters gain the competences and knowledge abroad that will be used by them to work in the Russian market. Modernization of outdated sectors of traditional economy in Russia is impossible without Information Technologies. It is also necessary to consider that all modern enterprises of the hi-tech economy sector depend on software. More high quality developers with experience of the successful global competition are in Russia, the higher are the chances to create globally competitive solutions in any areas of innovative economy.

2.2. Results of granting social tax incentives to software companies

For three consecutive years now we can see an obvious effect gained as a result of granting incentives in social taxation to software companies (under the Federal law No. 212). Companies that take advantage of this privilege have increased their turnover by 23% and their export volume – by 25%. For the companies that did not use the privilege, the corresponding indicators were 9% and 3% (i.e., the turnover growth rates were approximately 2.5 times lower, and export growth rate more than 8 times lower).

If it is granted that the companies that take advantage of social tax incentives gained higher growth rate only thanks to social tax incentives, then the preferential tax treatment resulted in increase in cumulative business of the Russian software companies in 2012 by $830 million, in 2013 - by $1.16 billion, and in 2014 – by $640 million (the increase in export in these years was approximately $250 million, $500 million and $600 million, respectively). In three years the total effect was more than $2.6 billion turnover and about $1.35 billion by export.

Such assumption is not fully well-posed as the users of privileges could have grown not only thanks to the preferential tax treatment. However it allows for calculating the maximum possible effect in the circumstances where we cannot exactly find out all factors influencing the result of company work.

Impact of incentives in social taxation under the Federal Law No. 212 upon the basic economic indices of respondent companies

	With privileges	Without privileges
Number of staff	29.5 thousand people	5.4 thousand people
Accessions in 2014	20%	5%
Cumulative business volume by the results of 2014	$1.5B	$0.285B
Increment of cumulative business volume	$280M (+23%)	$23M (+9%)
Cumulative export income by the results of 2014	$1.28B	$102M
Increment of cumulative export income	$255M (+25%)	$3M (+3%)

After four years of operation of the preferential social tax treatment there is still no information as to how the social tax incentives have somehow impelled the software companies of Russian origin and with foreign registration to come within Russian jurisdiction or to change their mind about relocation to other countries. Transfer of business to Russia within so short period of operation of the preferential tax treatment could hardly have happened in the past three years. A longer time is needed for the companies to be certain that the situation would not change. Besides, the privileges operate so far only up to 2017. If companies begin to return their business to Russia en masse it may cause not only the faster development of the software industry but also an increase in revenue receipts and in social taxation.

However it requires not only improvement of the tax system but also correction of the evils of the Russia business environment as well as implementation of the flood of measures to support software developers and exporters. An important factor would be the termination of confrontation with the US and EU in regard to events involving Ukraine.

2.3. Software export distribution depending on the business model

Software export distribution according to export revenue sources

	2008	2009	2010	2011	2012	2013	2014	Absolute value in 2014 (growth per year)
Software development services provided by Development Centers of foreign corporations in Russia	15%	12%	11%	9.5%	11%	10.2%	8,6%	$520M (-5%)
Sale of software products and ready-to-use solutions	30%	37%	41%	40%	43.5%	43.4%	43.2%	$2.6B (+10%)
Software development services	55%	51%	48%	50.5%	45.5%	46.4%	48.2%	$2.9B (+16%)

It is worth noting that according to the Central Bank of Russia, the volume of provision of crossboundary services in the area of computer technologies (computing services) in 2014 amounted to $2.64 billion that is by 5% more than a year before. Evidently, the definitions "computing services" in terminology of the Central Bank of Russia and "software development services" in our survey in this case disagree (arguably, they do not agree 100%, and the methods of export calculation are quite different). The fact is that due to a serious barrier on the way of export from Russia in form of the customs regulation, the software development industry in Russia has long ago shifted to execution of software export in the form of rendering cross-boundary services, that is why in a great measure the cross-boundary computing services shall be understood to mean export from Russia of both software development services and software products.

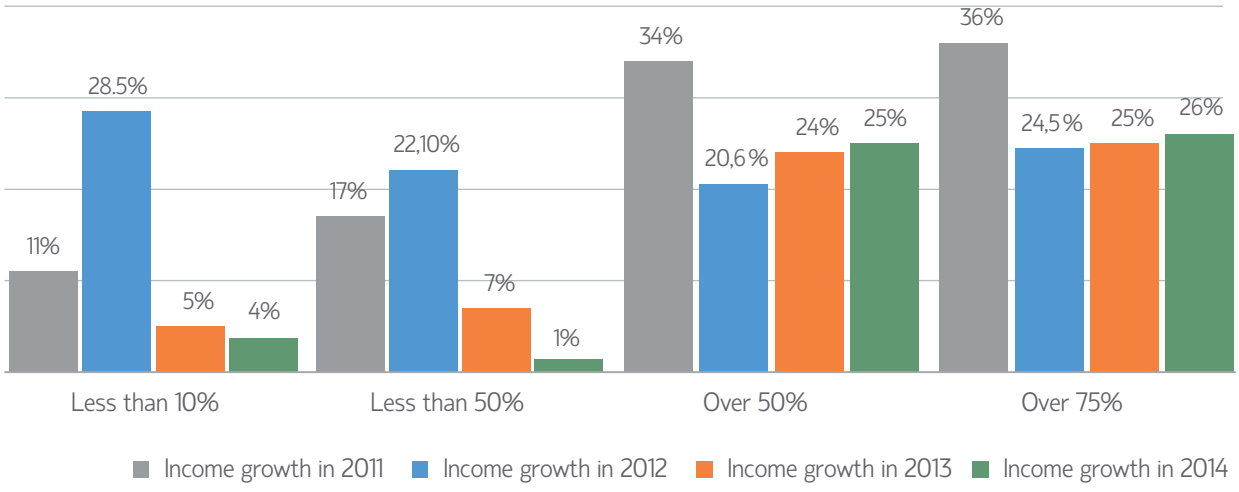
Nevertheless, data of the Central Bank of Russia on the volume of cross-boundary computing services provided by Russian companies ($2.64 billion) serve as a reference point for assessment of accuracy of the volume of Russian export of software development services and software products which we deduce on the basis of this survey ($6 billion).

The fact of the matter is that our export data include proceeding both from software export registered by customs (and reflected in the RF customs statistics), also from the transfer of partial intellectual property rights on software (selling licenses) abroad and from provision of cross-boundary software development and IT services (reflected in the Central Bank of Russia' statistics), as well as income from sales of software development services and software products in Russian companies' branches worldwide.

The data of the Central Bank of Russia on the volume of cross-boundary computing services in the R&D field was also useful for adjustment of information on volume of sales of foreign development centers in Russia. Their export in 2014 was $454 million (by 19% more than a year before). Taking into consideration that the statistics of the Central Bank of Russia concerns not only services in the IT area (by estimates of RUSSOFT experts this share is about 20% of total amount of cross-boundary R&D services), it is possible to assess the export volume of IT services generated by Russian scientific and educational establishments at a level of $80 million. In this case, with the total volume of R&D export services of $510 million the export volume of software development services generated by foreign development centers in Russia will make up $430 million.

The results of 2012 for the first time showed the departure from the rule that the more companies were focused on foreign markets, the higher the turnover growth indicators were. That might be a consequence of implementation of several large projects in Russia (in 2012 the total turnover of companies grew more than their export). Judging by the results of 2013-2014, this rule again turns to be fair. In the recession year 2014 it was even more obvious that companies with a high export share were much more resistant to the crisis than those which were more oriented toward domestic market. Random fluctuations of optimal ratio of export income and sales in the domestic market are quite possible however the evaluation over the past few years shows that if software development companies intend to provide the stable turnover growth, the export share in their consolidated revenues must be at least 50%. It is especially true with the existing contraction of Russian software market in dollar terms as well as state budget curtailment for information system development.

Income growth of the companies with different export shares



Traditionally, the main performance indicators of companies depend on their size. The bigger companies are the bigger is the growth of export and turnover. However, the indicators of large and small enterprises in the previous three years became more or less similar thanks largely to reduction of minimum staff number which allows for pretending to get incentives in social taxation (in 2010 that limit was diminished from 50 persons to 30 persons and since January 2014 - to 7 persons). Nowadays in many cases small enterprises enjoy a higher growth.

Since 2010, only large and medium-sized enterprises (with staff number 50 people at least) had enjoyed social tax incentives that gave them additional competitive advantages at the labor market. As a result, they demonstrated growth of turnover and export above all others.

At year-end 2013, the growth of exported products and replicated solutions to a large extent was provided just by small companies (primarily, startups with export receipts no more than $1 million), and not by large enterprises as it used to happen in previous years. Small software companies had a higher value of export and turnover growth. In addition, the number of small companies was also rapidly growing in recent years.

Perhaps, the position of small IT enterprises was influenced by the created state owned Development Institutes (RVC, Skolkovo, FRII) and improved by appearance of Technoparks in some Russian cities. Several such Technoparks provided preferential rent rates and services of business incubators and accelerators. Experience shows that good conditions of employment and correct organizational management can considerably raise labor productivity of software developers and, as a consequence, provide a certain increase of turnover without hiring new employees.

In 2014, better indicators of small software companies retained only partially. The indicator of growth of cumulative business volume of small companies engaged in development of software and replicated solutions was higher than that of 35 major companies (with the turnover of $20 million at least) of the same profile — 10% against 6%. However, small companies' export increased only by 4% and that of major companies — by 11%.

Volume of export and of turnover of software development service providing companies at year-end 2014 depending on size

Company size	Increase/decline of turnover	Increase/decline of export
Turnover less than $5 M	+9%	-6%
Turnover from $5 M to $20 M	+1%	+27%
Turnover more than $20 M	+29%	+27%

The export income of small software development service providing companies (with the turnover of less than $5 million) even reduced by 6%, but the total receipts increased by decent (for the year of crisis 2014) 9% in dollar terms. It means that the demand for services of small outsourcing companies in Russia even somewhat increased in the context of reduced IT budgets. However, the stability of service company development and accumulation of competences by staff to a large extent provide export orders. It is also important for small software companies to approach foreign markets and increase export income (preferably by tens of percentage points per year, and not by 4%).

Thus, it seems that the state should support export (primarily – international marketing activity) of small software companies, whereas today such support is almost zero. A rule of thumb states that small enterprises lack the marketing budget not only for increasing export at a fast race but also for preserving previous achievements in this area.

Once upon a time all current leaders of the world software market were small companies and in due time received the state support in one form or another. According to the Stanford University professor Henry Etzkowitz, well-known by his concept of the innovation development of society Triple Helix, the cornerstone of all high-tech companies of Silicon Valley was the results of governmental research projects many of which were implemented by orders of Pentagon. It is also known about a lot of tools for supporting exporters (including tools of marketing support of small companies), which are widely used in many countries with developed or rapidly developing economy.

The share of Russian software and software development services sales abroad in the total export income of Russian enterprises and organizations keeps on growing. At year-end 2014, this indicator was 1.2% (in 2013 - 1%, in 2012 – 0.88%, and in 2011 – 0.8%). Last year the growth of the share was provided not only by increased foreign sales of software, but also by decreased Russian total export receipts by 5% from $523.2 billion to $498 billion.

The share of Russian software is not great yet, and most likely, it will be growing in years to come. In Moscow and St. Petersburg, the software export share in the volume of regional export is higher than the average Russia-wide value — about 2% and 5%, respectively. Thus, it is necessary to consider that the exporters of energy products, wood and other natural resources are registered in the both Russian capitals, but resource extraction and processing is generally conducted in other regions. If we ignore these oddities, the share of software and of development services from these cities will be quite significant.

Now, the software industry is quite important for the Russian export. For comparison: the share of foodstuff is 3.8% of the total Russian export (including cereals – 1.4%), that of chemical industry – 5.9%, that of machinery and equipment is 5.3%, the share of nonferrous metals and articles made there from is 3.2%, that of arms – 3.1%, that of timber and pulp and paper products – 2.3%. The indicators of these industries can serve as close and quite achievable target for the Russian software industry. Software foreign sales can reach the crops export volume already at year-end 2015.

It is important to note that when the software export volume is determined, we do not consider the income of the Internet companies – even knowing that the commercial success of which is mainly assured by software developers. Earlier, they were mostly oriented towards the Russian market and on a second-priority basis – towards the former Soviet Union market. However, for the last 3 years, after successful IPO at NYS, Yandex and Mail.ru Group (Russian Internet giants) began their expansion in the foreign markets. Aside from them, there are a great number of others that are also oriented towards the foreign audience.

If, following the results of 2014, the cumulative turnover of Yandex and Mail.Ru Group amounted to $2 billion, the size of the entire Russian Internet economy is about $26 billion (according to the data of the Russian Association for Electronic Communications) with the annual growth of 10-20%. In addition, we should consider that the boom of Internet companies' startups began in Russia, and many of these companies are initially oriented towards the global market. Therefore, the export income of Russian companies from Internet services will grow.

It is not groundless to consider Internet companies as software ones, but their successful promotion in the global market is mainly possible thanks to the new software solutions that are created by them independently. Therefore, their export income shall be considered in the future.

As these companies can be considered neither as standard software developers nor as customized software developers, their export revenue shall be accounted separately. There are serious problems concerning determination of this value. First of all, it is difficult to identify the

export revenue in the cumulative income if an Internet company mainly earns on advertizing. Such advertizing may be oriented towards both the Russian audience and the audience of Internet users in the near- and far-abroad countries. Besides, it is incorrect to sum up the revenues (such as the export ones) from advertizing and e-commerce. It is more correct to identify as an online store income not an entire turnover but only the margin which is not as great for e-commerce as for offline commerce. It is essential to decide whether we can consider the revenues that were gained by Mail.Ru Group from purchase and sale of foreign hi-tech companies' shares as the export revenue. In 2012-2013, these revenues were $1.85 billion

There are a lot of methodical difficulties but some estimates still can be made if more complete information about Internet companies is available. For example, the export share can be calculated taking into account the proportion of the Russians and foreigners in its audience. Presently, about a half of Russian-speaking Internet users are citizens of other states.

Based on the available data, we can assume that the export volume of the Internet companies that use their own software and therefore can be accounted for in investigation of software development export industry exceeds $1.5 billion. Taking into account this addition it would be possible to assess the total Russian IT export in 2013 at the level of $7.5 billion (however in this survey we do not consider the export income of Internet companies). This figure is only 1.5% of the entire Russian export.

2.4. Software development services

	in dollars	in rubles	in rubles inflation adjusted
Turnover	over $5B	190B RUR	171B RUR
Turnover growth	+6%	+27%	+14%
Export volume	$2.9 B	-	-
Export growth	about 16%	-	-

The main increment of the Russian export of software development services over few last years has been provided by large companies. Before 2012 the inclusive foreign sales of service companies with the turnover less than $4 million did not grow at all. At year-end 2013, these companies increased export by 8%. However, in 2014 small companies (this category now includes those with the turnover of less than $5 million) decreased export by 6%. At the same time, export of companies with the turnover over $5 million increased by 27-29%.

The large service enterprises can obtain more profitable orders and therefore pay to their employees more than small businesses. This has been and still is the reason of transition of developers from small competitors to large companies at the labor market.

Large companies have another advantage: availability of sales offices' network and development centers worldwide. As a result, they can offset the issues of anti-Russian propaganda and sanctions as well as increase their staff up by establishment of remote development centers in different Russian cities and abroad, or by acquisition of foreign and Russian companies.

Large companies have another advantage: availability of sales offices' network and development centers worldwide. As a result, they can offset the issues of anti-Russian propaganda and sanctions as well as increase their staff up by establishment of remote development centers in different Russian cities and abroad, or by acquisition of foreign and Russian companies.

Small outsourcing service providers and even private developers who operate with no corporate status also have a chance to sign up foreign orders for software development as major companies often ignore customers with a small budget. However, having restricted resources they find it difficult to look for new foreign customers. Some of them manage to maintain the turnover of 1-3 million dollars, but an average figure of export growth among small companies in recent years is either insignificant or negative.

The lion's share of the increase in software services export (as a year before) was provided by Luxoft and EPAM Systems which are leaders in their sphere not only in Russia but also in the whole Central and Eastern Europe. EPAM Systems, though being a Belarussian company, is viewed historically in our survey as a Russian software company since from the very beginning it was developing largely by acquisition of development centers and creation of own such centers in Russia. Following in steps of first Russian companies of IT sector, such as Mail.ru and Yandex, EPAM Systems successfully held the initial public offering at the New-York stock exchange. EPAM Systems has retained the high rate of growth over all previous 4 years. Systems' preparation for the IPO forced the company to increase the turnover in 2011 that contributed to an additional hundred million dollars into the service industry's total export volume. The company retains high growth rates over consecutive three years. At year-end 2014, its turnover increased by 31% and amounted to $730 million. At the beginning of 2012, EPAM Systems capitalization during IPO at NYSE was $490 million. And in June 2014 it was already evaluated at $2.14 billion

In June 2013 Luxoft held a successful initial public offering at the New York stock exchange. During the last years, Luxoft's growth rates exceeded 20% a year that was quite sufficient for increasing its capitalization thanks to the IPO up to $555 million. By the time of IPO holding, Luxoft already had the extended geography of its development centers location worldwide with the main development centers in Ukraine (almost 3,000 employees), in Russia (1,000 people in Moscow and Omsk), as well as in Bulgaria, Romania, Vietnam, and even in the UK (altogether 18 remote development centers). The Ukrainian events posed before both leaders the issue of resource relocation to the countries adjacent to Ukraine. And this was urgently done.

Almost all largest service companies were formed before 2000, and their number almost did not change during the last decade. Among new market players that recently came into the world elite (in the Global Services and IAOP ratings), we can mention Artezio from Moscow, which showed persistently high growth rates over the years, specializing mainly in such vertical market segments as telecommunications and health care, as well as ReturnOnIntelligence, FirstLine Software and Reksoft (all three from St. Petersburg) that successfully operate at the Russian and global market.

It is also worth noting DataArt , which considerably increased its staff through the contracts in the USA in 2012-2013, and Auriga, which regularly appears in the global rating of the leading service companies for about 10 years. In the rating of the leading world engineering companies (Data Monitor, 2011) Auriga, which accommodates the main development resources in Moscow and in Nizhniy Novgorod, took the absolute first place in the category of "software engineering", having outstripped such giants as IBM, Dell, HP, HCL, Wipro and Siemens.

Russian service companies for almost 10 years have a strong lead in the list of leading IT outsourcing service providers in Eastern and Central Europe, and together with the companies of Belarus and Ukraine they make a so-called IT outsourcing Russian-speaking cluster, which is the largest provider of IT services (software development services mostly) in Europe.

In the both leading IT outsourcing world ratings (Global Services and IAOP) the Russian companies retain their presence. Last year in the Global Services rating Russia was represented by 9 companies: Auriga, DataArt, EPAM Systems, First Line Software, Luxoft, MERA, Reksoft and ReturnOnIntelligence (before 2013 - Exigen Services). No new similar rating has been prepared yet by the end of June.

The 2015 Global Outsourcing 100 (IAOP) rating includes 5 Russian companies. A year ago there were 6, but such fluctuations are normal and do not bear evidence of any tendency. From Top-100 according to IAOP dropped out Reksoft which survived business division after having been acquired by Technoserve, as well as EPAM Systems (this particular case can be explained only by an inner problem of IAOP). Instead of these two companies there reappeared Artezio, w hile Auriga, Luxoft, MAYKOR, MERA retained their presence in the rating.

As the listed ratings estimate service companies by a number of parameters (including clients' assessment of the quality of the delivered IT services) rather than by their turnover absolute data, we can safely state that Russian IT outsourcing industry has gained a significant world recognition both as a hi-tech resource for effective development of state-of-the-art technical solutions and as an experienced and reliable provider of the services that add value to the client's business.

In the recent years we almost did not observe any new Russian companies specialized in development of custom software development. As a rule, they appeared only in few cases as a result of demerger of the exporters that were established more than 10-15 years ago. Due to shortage of manpower and to relatively high labor costs in Russia, at the present time it is no sense to create startups in the field of custom software development. The existing growing requirements can be met by those service companies which have been operating at the world market for long (not only by big companies but also by small and medium-sized enterprises that are oriented towards implementation of small project in narrow niches of vertical markets).

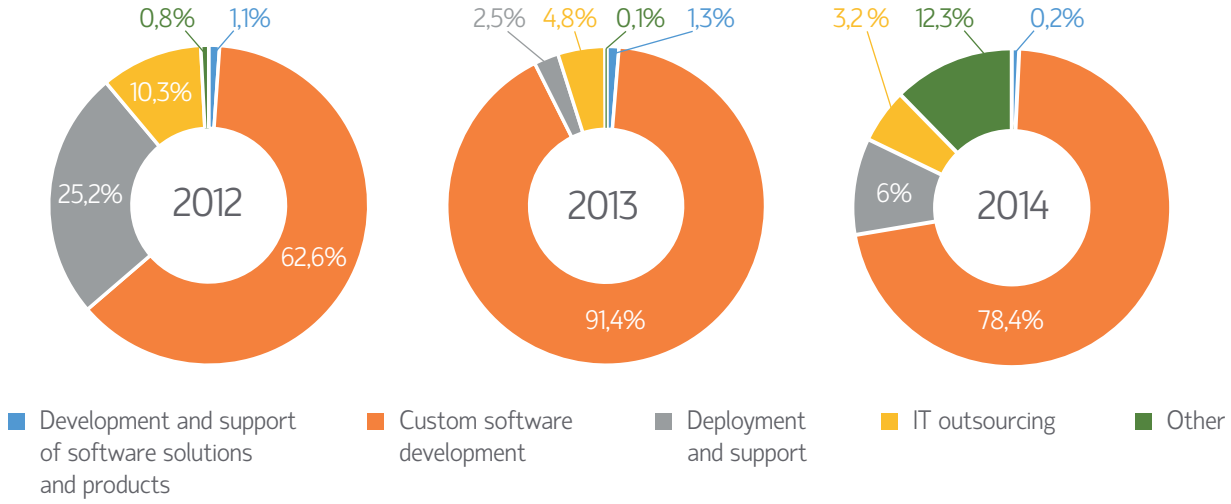
Yet, new large service exporters can emerge in the future from among those service companies still focusing on the domestic market. A company called Russia GDC belonging within ICL KME holding (located in Kazan, the capital of Tatarstan where good conditions for establishment and development of IT companies are created) held a course for foreign markets. . In 2013, it left Fujitsu Group and started operations in Russia under brand ICL Services. Russia GDC has already over 50 global customers, and its staff exceeds 1 thousand people.

On the contrary, some service companies that have gained or are still currently gaining the better part of income from export are increasing the share of sales in Russia. In particular, it is associated with participation in major public projects. For example, Reksoft is developing a nation-wide information system for the Federal Migration Service of Russia; Luxoft in the end of 2013 announced successful completion of a project where it had developed commercial software for the satellite based navigation information platform ERA-GLONASS; while Lanit-Tercom had successfully developed a project of the municipal billing system “Tenant” that calculates payment for housing rent and utilities services for 70% of St. Petersburg residential areas.

Software exporters gain competences and knowledge abroad and transfer them to the Russian market. On the other hand, implementation of unique projects of federal importance allows for obtaining funding as well as new competences and experience to compete abroad. All this may come useful for successful participation on complicated foreign tenders. The experience gained in recent years shows that for securing sustained growth and development it is essential to have customers in different countries and to consider risks connected with particular factors proper to one or another region. If in one part of the planet sales are reduced due to circumstances beyond company's control (as a result of economical crisis or aggravation of political relations), the wide business geography makes it possible to quickly cross over to other major markets.

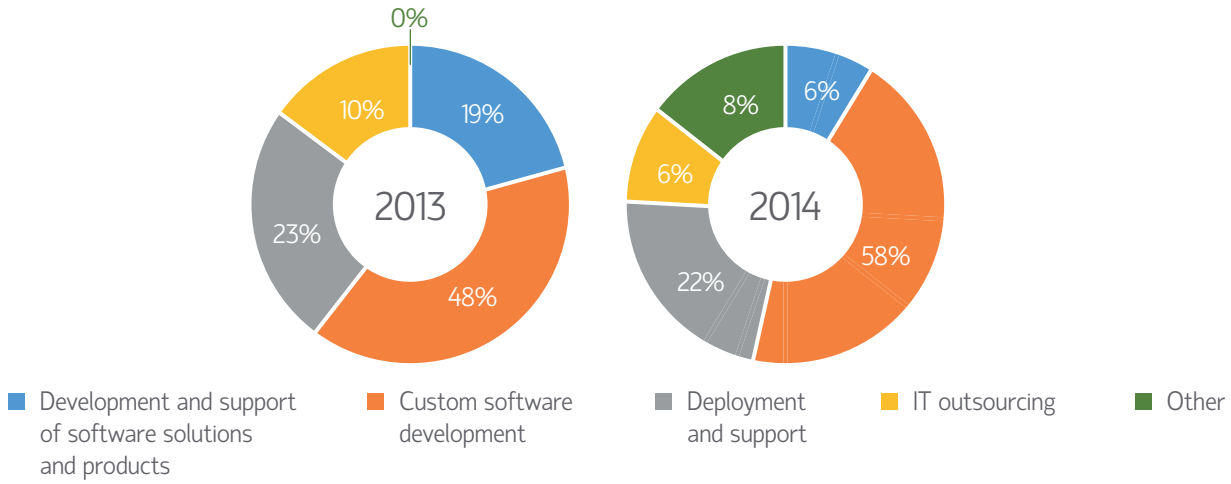
The structure of service companies' total export in recent 3 years has been changed within the range of random fluctuations.

Structure of respondent service companies' total export in 2012 - 2014



If Russian service companies abroad always gain 85-95% of income from sales of software development services (including deployment and support), in Russia this proportion is much smaller — about 70-80%. In the Russian market they successfully sell and support their own software products that provided 19% of income by the results of 2013, and 6% in 2014. There is almost no relevant export income.

Structure of cumulative sales of respondent service companies in the domestic market in 2013 - 2014



Services on creation of remote development centers are provided (using the engagement model "Offshore development center") by 2% of respondent companies. This figure has been decreasing during three last years – since the corresponding question appeared in the questionnaire. A year ago it reduced from 9% to 7%. A share of companies using the alternative model "Development to customer's requirement" also decreased – from 80% to 56%. Currently, more companies did not indicate any of these two models.

There also increased a number of companies that did not refer either of offered at choice contract types. As in recent years, and even more popular is "Payment on fixed price".

Contract types used, % of respondent companies

	2013	2014
Payment on time consumed	44%	27%
Payment on fixed price	50%	40%
Both types	9%	5%

Type of offered services, % of respondent companies

	Software development	testing	Technical support of IT systems	IT consulting	other
2013	80%	57%	49%	27%	6%
2014	60%	44%	49%	40%	11%

Among other types of services there were mentioned: information system integration, digital strategy development, migration and reengineering, efficiency upgrading and perfection of software development processes, porting, code refactoring.

End-users are the main clients of the Russian service companies (85% of respondents in 2015). 27% of companies are engaged in activities under subcontracts, and only 20% of respondents render services to system integrators. It is worth noting that the service companies employ different models of business operations demonstrating their flexibility and providing customers with the required services. At the same time, year after year, a number of companies which render services of all or several types are decreasing. Service companies become more and more specialized working either with end-users, system integrators or under subcontracts.

Major customers, % of respondent companies

	System integrator	End-user	Sub-contracting	Other
2012	29%	88%	36%	1%
2013	24%	72%	33%	1%
2014	20%	55%	27%	2%

A year ago, it was very difficult to forecast whether export of software development services will grow or drop in the next 2 years due to the existing (primarily, political) uncertainty. The forecast made turned to be largely fair – export increased within 10-20% (by 16). However, without 2-3 major companies with development centers in different countries the growth would have been half as much (about 7-8%).

The political situation implies the uncertainty of predictions this year too. However, it is fair to say that it is not worth expecting any substantial decline of export growth notwithstanding that a number of companies not relying on rapid growth in 2015 are bigger than those which plan to grow quicker than in 2014. According to our survey, a higher rate of growth is foreseen by 38% of respondents, keeping growth at the previous level — 15%, deceleration (or even export reduction) — 47%.

On the one hand, the competitiveness of Russian outsourcing companies in the world market has substantially increased owing to the significant ruble's decline against the dollar and other world currencies (it is expected that against the dollar the official rate will decline by 40% at least, and programmer labor costs in dollar terms will decrease by 20-30%). On the other hand, business is impeded by the ongoing political tension and a very negative tone toward Russia of foreign media.

The armed conflict in Ukraine has already seriously affected the composition of market of IT outsourcing providers in the Eastern Europe.

Before the Ukrainian crisis started, the staff of development centers of Russian service companies there amounted to several thousand people. It was thought that by some criteria Ukraine was a better place for development of custom software than Russia (lesser tax burden and labor costs).

In 2014, the situation changed fundamentally. On the one hand, business environment in Russia somehow improved. On the other hand, Ukraine fell into profound economical and political crisis, the country will hardly find escape from it in the next years, and in these circumstances almost any business will entail risk.

By the middle of 2015 the civil war in the Donbass area was fought not so actively as before. However, new flash point appear in other regions of Ukraine including western ones which before were relatively peaceful.

Many Ukrainian software developers have expatriated to other countries (not only to Russia). It's most likely that under war-fighting conditions and political uncertainty in Ukraine, large Russian companies (the same as companies of Ukraine, and any other countries) will play for safety and will not staff up their development centers in that country. Nevertheless, already in 2014 many shifted a part of their developers to the neighboring countries (primarily, Poland).

The most important negative factor that can influence export incomes of Russian companies is the growing animosity between Russia and the USA and EU where most customers of Russian service companies are located. The late changes make someone sit up and take notice as regards building relationships with the US companies, primarily with new clients. Perhaps, for this purpose Russian companies will have to re-register in other countries or even transfer members of staff to the foreign development centers.

For example, Luxoft's customers already in May 2014 were passed about growing animosity between Russia and Ukraine and demanded that the company would take measures to protect them against political risks. The matter was that at that time out of 7 thousand employees of Luxoft 2.75 thousand were working in Ukraine. Under coercion of customers already in the spring 2014 Luxoft stated that formally it was no longer a Russian company and re-registered its main office in Switzerland. Besides, it was announced that the management would go from Moscow to Switzerland, Germany, UK and US, and also 500 programmers from Russia and Ukraine would come over to the company's development centers in other countries. In the wake of risk rising for business operations in Ukraine, Luxoft had urgently to move its development division from Ukraine to the adjacent Eastern European countries.

At the same time, the tumultuous events in Ukraine may influence Russian export of software development services not only adversely but positively as well. Primarily thanks to transfer of Ukrainian programmers to Russia. The accession of Crimea to Russia provided potential increase of the total number of programmers by 1,5-2 thousand people. After accession, the Ukrainian software companies due to political pressure had to close their development centers in Crimea. On the basis of such center of SoftServe (one of the major software development outsourcing service provider in Ukraine) in Sevastopol a new company Alvion Europe was founded. In the past it operated till 2002, but as a result of merger became a part of SoftServe. Unfortunately, the development companies in Crimea cannot independently operate at the world market owing to sanctions imposed by the US and EU on Russia.

It will be very difficult to increase sales of software development services in dollar terms in Russia. First, due to the weakening (by 40%) ruble (service price increase can hardly compensate such big drop), second, due to the reduction of customers' IT budgets even in ruble terms. Nevertheless, according to expectations of respondent companies, at year-end 2015 it will be possible not only to retain the growth of cumulative business volume of service companies but to increase this figure from 6% to 11%. One can count on this only on the assumption of successful operation in foreign markets.

2.5. Products and ready-to-use solutions

	in dollars	in rubles	in rubles inflation adjusted
Turnover	$6.5B	247B RUR	222B RUR
Turnover growth	+5%	+25.5%	+12.8%
Export volume	$2.6B	-	-
Export growth	10%	-	-

Last year turned to be not the most successful for software vendors. If in previous years growth rate of their export and turnover were higher than those of service companies, in 2014 it became worse. There are some apparent causes of growth slowdown. First, for the largest companies it is already difficult to increase sales in the world market due to physical restrictions of volumes of the

relevant market segments. For example Kaspersky Lab already ranks among leaders taking the 4th place by the market share in its segment. Seemingly, it has used up all the possibilities to increase the turnover by tens of percentage points as it was a few years ago. Besides, taking into account the type of company (information security), foreign customers abandon its products from a political motive. And not only in the USA. In China a law was adopted forbidding any foreign software that provides information security in government institutions.

The bigger is a company, the bigger is its market share -more difficult is to keep growth alive. At one sweep, several Russian companies of this type have reached the level where rapidly increasing business volume becomes much more difficult.

Second, small companies which a year ago provided a significant increment of export and turnover have been seemingly adversely affected by the reduction of the Russian software market as well as by issues associated with aggravation of relations between Russia and Western countries.

In one of previous surveys we noted certain repeatability in development of software industry. New software vendors were most actively created in certain time periods (for 3-4 years) during economic crises or just after them. A number of successful software vendors appeared during the Soviet economy collapse. The next startup boom took place in the late 1990s and early 2000s (in 1998 there was a default and economic crisis in Russia). The third wave is connected with the world crisis of 2008, which also affected Russian economy.

Development of product companies also has certain cycles. For few years (probably, decades), they can increase export by 30-50% per year. In occasional years, the growth even may exceed 50%. However, deceleration inevitably takes place when product companies reach a certain size and their market segment saturation. In the last 2-3 years, the leading Russian software product exporters reached this size, and fast-growing younger companies still have not achieved such large turnovers to compensate the reduction of leaders' growth rates.

Things were changed in 2013: the startups already were capable by their number and by the growth rate to significantly affect the increase of the cumulative Russian software export. In this case, some large and medium-sized companies that ceased to grow in the recent years are trying to move to a new level (investing in marketing and/or launching new products).

In that time we assumed that a new cycle had begun which might have led to enhancing growth of software export in 2014 and 2015. However, we were apprehensive about the negative media coverage of Russia in some countries owing to aggravation of political situation that could stop the start of that cycle. Unfortunately, these fears were not unfounded.

A lot of Russian software companies were oriented primarily toward the North American and West European markets. Undeservedly little attention to other large rapidly developing markets did not allow them to reorient early on. At present, to a large extent thanks to a vector plotted by the country's top leadership, the interest of our software companies in South-East Asia, Arab states, Latin America and Africa is growing. Prospects of coming to these markets are quite real, but according to information of experts themselves, the way thereto takes 3-4 years.

At present, Russian development of mobile applications (including computer games for mobile devices) is rapidly growing. Companies that specialize in such development are still very young and, as a rule, are not widely known in the market. Nevertheless, their quantity is already so great (about 2300 companies in 2012 according to J'son & Partners Consulting, 2013) that it makes

possible holding of large-scale conferences on mobile applications and games in Russia.

Such companies are practically not covered by the surveys that are carried out on demand of the RUSSOFT Association. This may be due to the fact that many of them are startups, which are included in the Association's database of software companies with a delay of several years. Besides, developers of Internet computer games and applications often do not position themselves as software companies and, therefore, are not included in the above base neither.

The sphere of mobile application development is still under-explored. We can only assume that export of such applications in 2013 most likely exceeds $300 million. According to the J'son & Partners Consulting experts' forecast, in 2016 Russian market of mobile applications will reach $1.3 billion that is 8 times greater than the similar figure of 2012. As developers of such solutions are mostly oriented towards the global market, we can assume that their export growth rates will remain approximately the same (the average figure is 60-70% per year) and, probably, will even speed up. Thus, mobile applications can ensure the annual gain of software product sales abroad in the amount of at least $100-200 million.

Certain hopes are still pinned on development of the Global Navigation Satellite System GLONASS (it is worth mentioning that the similar functioning system is only available in the USA). Thanks to the availability of the system, Russian companies exporting terminals and applications that ensure monitoring of moving targets on Earth and processing of relevant information have gained some advantage over foreign competitors. For example, NIS GLONASS plans to occupy about 20% of the Indian professional navigation equipment market within 5 years; and in the long term, the company intends to capture 20–30% of the global market in this segment with the estimated current capacity of $60–90 billion.

In 2013, the GLONASS navigation satellite system for the first time is being considered as the one capable to pay back the huge investments and to bring a notable economic effect. However, the failures to launch rockets with communication satellites that would have allowed the system to be in full use in the near future create some uncertainty concerning the perspectives of the system commercial use. Most likely, an increase in the volume of services involving traffic and cargo tracking based on the GLONASS system will remain, but it will be not as high as it could be on condition of planned implementation of the global project on GLONASS satellite group in the redundant operation mode.

Some companies involved in development of systems and applications for satellite navigation also undergo difficulties. For example, after explosive growth and successful initial public offering in 2010 JSC Russian Navigation Technologies took a bad knock in 2012. As a result, the company was recognized as a bankrupt. It has not gone into liquidation, but however the external management is being imposed and the turnover has drastically declined.

But other companies successfully work in the fields related to GLONASS. In particular, TRANSAS intends to become a system integrator in the pilot project on installation of monitoring and correcting stations GLONASS/BeiDou/GPS in China.

In order to realize the available potential in the satellite navigation area JSC GLONASS is being created with 100% state participation. Its main objectives are provision of reliable operation and competitive development of the ERA-GLONASS system. It will allow for unlocking the high commercial potential of the existing high-tech infrastructure, securing investment in its development, decreasing burden on the state budget.

An additional gain of export may be ensured by sufficiently large Russian software companies that were previously oriented towards the Russian and CIS market. Many of them plan to work more actively in other countries. Among them, there is to be mentioned 1C with the turnover of about $1 billion (including the income from software distribution and franchising). Apart from the weakening ruble and crisis, its consolidated revenues at year-end 2014 would reach this figure. Such turnover allows for investing not only in improvement of existing solutions but also in localization and promotion of these solutions in various countries. Besides, 1C has extremely successful experience of sales organization involving partners (franchising) that can help it to move ahead successfully at foreign markets.

There are a few other smaller companies that hold promises of promoting their successful Russian products in foreign countries. This promotion is, in particular, supported by their inclusion in so-called Magic Quadrants of Gartner. Last year, the following companies appeared in the Quadrants: Diasoft (Core Banking Software Quadrant), PROGNOZ (Business Intellegence), and InfoWatch (Data Loss Prevention). Last year the list was added by such companies as Diasoft (CoreBankingSoftware), PROGNOZ (Business Intellegence) and InfoWatch (Data Loss Prevention). In 2012, the IntelTech Moscow based company headed the Gartner's Cool Vendors list of the most progressive product companies. 2015 was marked by the appearance of another Russian company in Magic Quadrants of Gartner. Positive Technologies was included in the quadrant uniting 14 world producers of solutions for web application protection (2015 Magic Quadrant for Web Application Firewalls).

Diasoft, which until recently has mainly produced solutions for Russian banks, created good international prospects thanks to the agreement for global cooperation with the IBM (Global Alliance Attachment) signed in 2011. This agreement provides joint development and promotion in the global markets of the Russian company's banking solutions based on the Service Oriented Architecture (SOA). As part of this agreement, IBM will provide its Russian partner with technological expertise, support of Diasoft projects on optimization and introduction of banking systems, will assist with implementation of marketing initiatives and worldwide promotion of the Diasoft products. The management of Russian company expects that by 2015 about 30% of the company's income will be connected with the operation at international markets.

In 2014 ABBYY yielded first products for search and data acquisition on the basis of their new technology Compreno (for text understanding, analysis and translation). R&D in this field have been performed by ABBYY for 19 years, their own investment in this technology for the whole period of work amounted to over $80 million. The company does not disclose the revenue target but considering such serious investments it must count on tens of millions per year if not by the results of 2014 or 2015 then on a mid-term horizon.

PROGNOZ strives to join the ranks of world leaders in its BI area using new versions of the own software Prognoz Platform.

The state support of international marketing activity could significantly facilitate faster promotion of young companies' development at offshore markets, but this support is so insignificant that cannot exert noticeable influence on the volume of software product export.

2.6. Foreign corporations' software development centers

Export of outsourcing services — $520 million (19.8 billion rubles)

Decline of export — 5%.

For the first time in our investigation the export of services provided by international software development centers has reduced. If in previous years the export of these services steadily increased by 8-12% a year at year-end 2014 it decreased roughly by 5%.

Such reduction was conditioned by several factors at once. First, most of these centers belong to the companies of the US and Western Europe the relations therewith were deteriorated recently. Thanks to this, even if the top managers of foreign corporations did not make decisions on reduction of investment into Russian branches, at any rate they did not decide to expand them, though the weakening ruble made such expansion economically sound.

Second, western companies were alert to the law on personal data protection. This law will come into force since 1 September 2015. For foreigners it is difficult to understand how it will work. In some cases they categorically do not want to transfer servers to Russia for storage of processed personal data of Russian citizens. Thus, Google announced intention to close their Russian development center.

Another reason is a difficult situation with income and profit of the major global corporations. Thereby they reduce headcount worldwide, in some cases in Russia too (even if they do not reduce staff of their Russian R&D centers, they also do not enlarge it).

In 2012, some international companies started implementing the earlier declared plans for creation of new R&D centers in Russia. Generally, these centers appeared thanks to the Skolkovo Foundation and to its innovation center being built, the residents of which already receive certain tax privileges. A possibility of obtaining privileges (first of all, tax ones) supported an increase in the volume of foreign corporations' investment into R&D in the territory of the Russian Federation.

Such powerful corporations as IBM, Cisco Systems, Microsoft, and SAP were among active investors in implementation of R&D in the territory of Russia in the last 3 years. By 2015 SAP planned to bring its research division staff up to 250 people, and its R&D investment volume – up to 45 million euro. Microsoft in Skolkovo plans to develop software for face and speech recognition in video, as well as software for multimedia data broadcasting.

The R&D centers of EMC and of Samsung have been operating for a long time in St. Petersburg and Moscow respectively, but both companies established additional centers at Skolkovo in 2012.

T-Systems, Deutsche Telekom' subsidiary, while expanding the number of developers in its St. Petersburg office, entered the labor market of Voronezh, where the company has already begun to requite programmers and to cooperate with Voronezh State University within the staff training program. The T-Systems office in Voronezh was opened in the autumn of 2012.

Chinese Huawei Technologies declared its plans to increase investments into R&D in the territory of the Russian Federation. Qualcomm, a US mobile microelectronics vendor, last year started sourcing a team that can form the basis of its Russian development center. The company is interested in the experts who have experience in application programming and digital signal processing.

Facebook is considering a possibility to establish its R&D at the Skolkovo center.

In August 2013, Cisco stated that it was going to put into effect a long-term research program aimed at introduction of innovations in the R&D in Russia. This initiative will allow Russian educational and research establishments to participate in the Cisco Research international program. The project envisages financial support of Cisco and will be implemented by the company for new technology development, promotion of innovations and involvement of ambitious engineers in mutual R&D activities.

In August 2014 R&D Center of EMC in St. Petersburg signed an agreement with the Academic Institute of the Russian Academy of Sciences aimed at joining efforts to develop a simple and easy-to-use cloud platform for genomic analysis in clinical medicine. It will be helpful in revealing so called “hybrid genes” that often are sources of malignant neoplasm.

In April 2014, the R&D division of Microsoft Research announced the conclusion of 3-year cooperation agreement with the Moscow State University in the area of the newest IT solutions including opening of a joint research center. The cooperation will cover joint research projects on Big Data processing and visualization as well as on computer vision. It also envisages organization of scientific and practical incentives for students.

Symantec in the end of 2013 began to contemplate possible opening of its development center in Russia.

However, such activity in the second half of 2014 drastically reduced, and in 2015 it was not seen at all. So one should not expect a significant increase in investment into such centers at year-end 2015. Perhaps, Chinese and South Korean companies will be more active. But they are even more closed in information terms (they almost never disclose any figures of the enlargement of their Russian R&D centers).

The primary and unsolved issue for international R&D centers is serious administrative barriers for import to Russia of hi-tech equipment required for software development and testing. Thus, the customs duties and VAT are applied when importing the equipment. One has also to post bail and wait indefinitely for permits.

Foreign companies that have their own R&D centers in Russia

Alcatel-Lucent, Allied Testing, AVIcode, Cadence, Design Systems, Chrysler, Cisco Systems, Columbus IT, Dell, Deutsche Bank, Digia, EGAR Technology, EMC, EMS, Ericsson, Google, Hewlett-Packard, Huawei, IBM, Intel, InterSystems, Jensen Technologies, LG Softlab, Motorola, NEC, NetCracker, Nival Interactive, Microsoft, Nokia, Nokia Siemens, Quest Software, RD-Software, Samsung Research Center, SAP, Scala CIS, SmartPhoneLabs, Oracle (Sun Microsystems), Tagrem Studio, Teleca, T-Systems.

2.7. RUSSOFT rating of largest Russian software companies

In the course of this investigation for the first time we ranked the Russian software development companies. Essentially, it is a list of the major software companies divided into categories (divisions) depending on size and on growth rate (including predicted indicators at year-end 2015-2016). No similar complete ratings of Russian software developers have ever been made. Our objective was rather not ranking by size but covering all Russian largest software companies. Perhaps, we do not have yet information of some companies worth looking at to be included in our rating. However, it is arguable that there are only a very few such companies, and they have the turnover no more than $50 million.

Certain mass media made ratings of IT companies where software development companies were ranked separately. But these ratings were obviously incomplete (at most, they covered 50% of major software companies) and included also system integrators, hardware manufacturers as well as foreign software companies which had sales in the Russian market.

The main reason of the inexistence of a reliable rating of software companies is a lack of any verifiable information about consolidated revenues of participating companies. We intrinsically withdrew from such ranking, although we had collected information on the turnover of all largest Russian software companies. The point is that a substantial part of this information was obtained as a result of annual polling of software developers on non-disclosure terms, and we keep this rule inviolate. But we also used data of other ratings (CNews, Tadviser100, RIA Rating and Expert RA subject to strong verification).

Furthermore, we think unacceptable comparing the indicators taken from audited financial statements of some companies with the past year results presented by companies in the course of polling, or obtained by expert judgment.

It would be exactly neither correct to rank companies with different business models.

Nevertheless, we compiled our own rating with a focus on a company size. For fear of disclosing confidential information and avoiding rigorous ranking we divided all big companies into 4 divisions. All participants were grouped out according to these divisions without disclosing information about their revenues and profits.

For each division a sufficiently wide range of consolidated revenues was defined. However the companies were grouped out not only by existing volumes but also with consideration for their development trends. First of all, we focused on the turnover at year-end 2014, but in some cases a company was shifted upward if it had high development trends and growth rate (i.e. it was able to reach the turnover required for a higher division at year-end 2015 or 2016).

The Top division consists of companies which already have capitalization in billions of dollars. Any Russian software company has gained such high revenue so far,

Top division (Division A)

1	1C	Moscow
2	Cognitive Technologies	Moscow
3	EPAM Systems	Minsk
4	Kaspersky Lab	Moscow
5	Financial Technology Center	Novosibirsk
6	Luxoft	Moscow

Division B

1	ABBYY	Moscow
2	Acronis	Moscow
3	CBOSS	Moscow
4	Parallels	Novosibirsk
5	SKB Kontur	Yekaterinburg
6	Prognoz	Perm
7	TRANSAS	St. Petersburg
8	Veeam	St. Petersburg

Division C

1	Diasoft	Moscow
2	JetBrains	St. Petersburg
3	Peter-Service	St. Petersburg
4	Parus	Moscow
5	BSS	Moscow
6	Positive Technologies	Moscow
7	Dr. Web	Moscow
8	DataArt	St. Petersburg
9	GDC Services (ICL-Services)	Kazan
10	RTSoft	Moscow
11	Mera	Nizhniy Novgorod

Division D

1	Arcadia	St. Petersburg
2	Artezio	Moscow
3	ASCON	St. Petersburg
4	Auriga	Moscow
5	B2B-Center (Economy Development Center)	Moscow
6	BARS Group	Kazan
7	Bercut	St. Petersburg
8	BIS (Bank Information Systems)	Moscow
9	Devexperts (Expert-System)	St. Petersburg
10	Digital Design	St. Petersburg
11	First Line Software	St. Petersburg
12	Galaktika	Moscow
13	Garant	St. Petersburg
14	Group-IB	Moscow
15	InfoWatch	Moscow
16	Kodeks	St. Petersburg
17	Lanit-Tercom	St. Petersburg
18	Naumen	Yekaterinburg
19	Scientific and Engineering Center SPb ETU – JSC NIC SPb ETU	St. Petersburg
20	Omnicomm	Moscow
21	Paragon	Moscow
22	PROMT	St. Petersburg
23	SCANEX	Moscow
24	SIGMA	St. Petersburg
25	Soft Expert	Tula
26	SpeechPRO (Speech Technology Center)	St. Petersburg
27	SPIRIT	Moscow
28	RDTex	Moscow
29	Reksoft	St. Petersburg
30	Return on Intelligence	St. Petersburg
31	Zecurion	Moscow

but at least 5 companies have the billion value (capitalization). Most likely, 1C might reach a billion turnover if one takes into account the income not only from sale of own solutions but earnings from software distributorship as well. However, the economic crisis (primarily, the weakening ruble) had an extremely unfavorable impact on its turnover in dollar terms as the company's main income is drawn in Russia.

The Division B also includes sufficiently large companies with the turnover from $100 million to $500 million. Among them we see only one company which in the next years can move to the Top division — Veeam.

In the Division C ($50-100 million) there are two contenders for rise, judging from their turnover close to $100 million. However, in recent years their growth rate had not been very high.

In the Division D almost all participants have the turnover from $20 million to $50 million. Still it includes 3 companies with the turnover of just $14-16 million, but they are able in the next two years to increase income substantially.

All in all, our rating contains 56 software companies with consolidated revenues over $7 billion

Chapter 3

Major Trends in Development of the Russian Software Development Industry

3.1. General analysis

Judging from the survey results, the number of main companies' strategy development directions and revealed trends in the industry per respondent were drastically reduced in 2014. Besides, respondents believe that this figure will go on decreasing in 2015. The decrease in companies strategic development directions gives evidence of intensive specialization of business along the lines where they have highest competences and a more stable selling power. The decrease in the amount of revealed trends in the industry may count in favor of reduced certainty in what is going on in the market and what will come in the future in the minds of top managers of Russian software companies. Almost all respondents after all determined just one direction of strategic development and just one basic trend specific for the industry. Nonetheless, a certain growing of uncertainty as compared to the last year is obvious. In a politically volatile environment and during the crisis in Russia it is quite explicable.

Number of referred strategy development directions and trends in the industry per respondent company

Year of survey	2010	2011	2012	2013	2014	2015
Directions	-	-	1.9	2.06	1.84	1.6
Trends	3.19	2.73	2.96	3.23	3.42	2.28

Generally, the importance of companies' strategy development directions has not greatly changed. As before, most frequently respondents indicated as their main objective “More active work at the domestic market" and further “Work for export” and “Growth of online sales”.

An only fundamental change is that such area of activity as “Establishment of regional development centers” is mentioned even less often than a not very currently important “Certification of software development processes”.

Though most companies are waiting for a growth in sales and plan to enlarge the staff, just a few intend to establish new remote development centers. The investment in such centers is related to a greater risk than investments in staffing in the already operating branches. When uncertainty is building up companies naturally try to mitigate risks. It is critical to underscore that previously one of the basic regions for establishing remote development centers was Ukraine. Nowadays this country is not a best place for new offices of Russian companies. By the same token, an opportunity has appeared to recruit employees in head offices among citizens of Ukraine, Belarus and Kazakhstan wishing to remove to Russia (migration from Ukraine is particularly high).

A company size and a location markedly affect the importance of areas of activity for our respondents.

Certification of quality assurance systems as a main area of activity was mentioned only by companies with the turnover less than $5 million. For larger companies it is no more important (they either are already certified or do not need it at all).

Growth of online sales more often is vitally important for small companies. This area was chosen as basic by 34% of respondent companies with the turnover less than $5 million, and only by 18% of companies with the turnover more than $5 million.

Creation of remote development centers in the regions is mentioned by 9% of companies with the turnover over $5 million and only by 2% of small enterprises. Particularly, for these 2% companies with the turnover less than $5 million this is not just one of the basic lines but a priority contrary to all large companies. Establishment of new remote development centers for large companies became an almost routine.

“Expansion of the marketing network abroad” is more accessible for large companies. That is why it is logical that this area was chosen as one of basic ones by 64% companies with the turnover more than $5 million and by 46% of those with the turnover less than $5 million.

Generally, 63% of companies consider as important “More active work at the domestic market" and exactly a half of respondents consider as important “Expansion of the marketing network abroad”. The advantage of domestic market is achieved to a large extent by predominance of small companies. However, in this case it is more important that 86% of respondents mentioned the growth (no matter, in Russia or abroad) as a primary target of development in the next two years. Moreover, for 27% of respondent companies the activities both in Russia and abroad are equally important. A year ago these figures were higher (93% and 27%, respectively), but their decrease is insignificant. For 42% of companies with the turnover more than $5 million both Russian market and foreign markets are important.

Of one looks at differences in responses depending on location, it will be found out that none of Moscow respondents indicated certification as one of main strategy development even though a lot of small Moscow companies participated in the polling. This area is important for 13% of St. Petersburg companies, for 22% of Siberian companies and for 17% from Ural. Among “Other cities”, the same as in Moscow, none of respondent companies indicated certification as one of main areas.

Growth of online sales is traditionally more important for Siberia (39%) and for “Other cities” — 38%. Remoteness forces to work more via Internet.

“Establishment of regional development centers” was indicated as the main area of activity by 3% of Moscow companies and by 6% of companies of St. Petersburg and Siberia. In Ural nobody answered in favor of this direction. But it should be pointed out that percentage points in this case weakly reflect the actual state of things. One might as well say that the drive for establishment of remote development centers currently is much less urgent.

Expansion of sales abroad is the main direction of activity in 2014 for 50-60% regional companies. For Moscow and St. Petersburg this figure is lower — 44% and 45%, respectively. At the same time, St. Petersburg companies traditionally have a high average share of income from export in total revenues. Usually their figure is the highest. This year St. Petersburg shows 68%, and Moscow — 81%. Therefore, companies of two capitals give an eye to export expansion, but for some of them it is already a usual routine task or the work of a moment not deserving.

Moscow takes the first place by importance of domestic market for their companies (for 72% of respondent Moscow companies) running circles around St. Petersburg with 55%. A national average of this indicator was 63%.

It appears that the growth of the number of companies that since 2009 specified their main objective as "Growth of online sales" was stopped. Many developers, even newcomers, begin to realize that these sales are not such simple as seemed before. The fact that the application placed

in the Web is theoretically accessible to every user worldwide does not mean that anybody will make advantage of it. The vast majority of these applications were never downloaded. Nevertheless, the desire for increasing sales via Internet is still mentioned by respondents almost in 50% of cases. In the B2C area Internet will remain the main sales channel, and the trend of growth of sales via Internet will steadily take place among three first leading market trends.

Other main areas of development most frequently (4-5 times) indicated by respondents in the last 2 years are launching of new projects and development of new products. One company is going to launch projects with a goal of attracting investments in mind. Besides, there mentioned the following lines: end product market launch, improvement of software development quality, preservation of the market share, business process adjustment, Russian R&D competitive recovery (in comparison with similar centers in other countries), recruitment, receipt of investments into innovative solutions, diversification, direct sales share gain.

In the recent years, such phenomenon as purchase of foreign companies by large Russian software enterprises has become distinct. Judging by media, these transactions are more frequent than before. This trend is still more typical for the largest companies. Such purchases pursue different objectives. On the basis of the purchased company, remote development centers may be created (but by no means always). However, acquisition of a new asset is mostly aimed at getting access to a new market and new regional customers. Later in this chapter, in the section dealing with investments, this aspect is addressed in more detail.

Main directions of companies development *

Year of survey/area	2009	2010	2011	2012	2013	2014	2015
More active work at the domestic market	66%	68%	77%	73%	81%	73%	63%
Growth of online sales	22%	31%	28%	29%	36%	27%	30%
Work for export/expansion of the marketing network abroad	-	-	47%	52%	59%	56%	50%
Certification of software development processes	8%	13%	12%	13%	10%	5%	7%
Establishment of regional development centers	7%	12%	13%	15%	15%	15%	4%
Other			8%	8%	5%	8%	6%

* - Respondents could choose more than one area

Priority areas of companies development in 2016 (2015 survey)

More active work at the domestic market	45%
Growth of online sales	17%
Work for export/expansion of the marketing network abroad	30%
Certification of software development processes	1%
Establishment of regional development centers	2%
Other	5%

* - Respondents could choose more than one area

Modern trends in the Russian software development industry in opinion of respondents

Year of survey/trend	2008	2009	2010	2011	2012	2013	2014	2015
Domestic market growth	71%	41%	49%	54%	51%	58%	59%	35%
Export growth	56%	19%	35%	35%	23%	37%	33%	32%
IT outsourcing growth (IT infrastructure support)	30%	34%	32%	28%	35%	32%	33%	20%
Growth of direct sales via Internet	31%	27%	39%	38%	39%	47%	48%	37%
Market consolidation (mergers, takeovers, creation of holdings)	61%	21%	35%	30%	25%	31%	33%	23%
Increase in product developments (Box/Licensed Software)	61%	21%	26%	19%	26%	27%	33%	28%
Growth in development and adoption of software solutions (Services & Solutions)	50%	18%	35%	24%	37%	32%	35%	18%
Increase in custom software development	38%	14%	35%	29%	30%	31%	41%	19%
Adoption of quality management systems	38%	10%	21%	12%	20%	24%	24%	14%
Other	-	-	12%	4%	10%	4%	3%	2%

3.2. Quality management system certification

The interest in the issue of quality management system certification decreased in the previous years. The share of the companies that mentioned obtaining the Certificate of Compliance with the international standards (ISO, CMM, and CMMI) as one of the main objectives decreased first from 13% to 10% in 2013, and in 2014 from 10% to 5%. In 2015 this value increased to 7%, however it hardly implies any tendency. Most likely, the share of companies setting task of certification has been stabilized.

One of explanations of the decrease in interest in certification is the fact that all large service companies were certified in the year 2000 of certificates on compliance with the CMMi standard highest levels (4 and 5).

Also is significantly lower the share of companies that plan to obtain certificates in the next 2 years. If in 2012 among respondents without certificates there were 46% of those who mentioned obtaining it, in 2013 there were 27%, and in 2014 - 19%. In 2015 this value lowered even more – to 15%.

It is obvious that companies (especially small ones) are more realistically estimating their chances to go through expensive certification and the benefits of certificate issuance.

According to the interviewed experts, the issue of establishing a quality management system in the software development companies in Russia lost its urgency approximately in the middle of 2000s because to a varying degree practically all companies have their own quality management systems. For those service companies, which participate in the international tenders with formal requirements for availability of CMMI certificates, this problem is resolved by the regulatory certification. All product companies and small service providers content themselves with ISO and implement their own quality management systems based on ISO and CMMI, but not requiring expensive procedure of certification and its confirmation.

Share of companies certified to international standards

	2009	2010	2011	2012	2013	2014	2015
Not certified	65%	61%	69%	64%	74%	71%	61%
ISO	31%	31%	29%	35%	24%	24%	33%
CMM*	0%	7%	3%	3%	1%	-	-
CMMI	4%	7%	2%	6%	6%	5%	4%

* - the CMM was not included in the 2014 questionnaire as it was recognized as obsolete and completely replaced by CMMI

As the problem of availability of certificates becomes less pressing, respondents don't take care whether there is the state support of certification (though essentially such support is almost zero). Most of respondent companies are not even aware that in the competing countries the state is interested in the quality management system certification of domestic companies.

In 2007, the first authorized (and later – certified) CMMI Expert appeared in Russia and in 2009 – the first Russian-speaking Lead Appraiser (that still remains the only one). This fact only led to a short-term and small increase in the number of certified companies as the share of the Russian experts' services cost in the total assessment and certification cost is not great enough to have a serious bearing on the certification cost.

In 2014, we for the first time included the question about use of SCRUM or another kind of Agile Programming in our questionnaire. It was found out that 50% of respondent companies answered affirmatively. In 2015 this indicator amounted to 13%. So big decrease can be explained by a significant change in composition of respondents. Let us wait for the next year results to make any valid conclusion.

Top division (Division A)

	Low	Satisfactory	Good
2010	56%	40%	4%
2011	78%	21%	2%
2012	57%	41%	1%
2013	57%	39%	4%
2014	46%	44%	9%
2015	38%	59%	4%

3.3. Investment attraction

Share of companies that attracted (or plan to attract) investments

Year of survey	Last year	This year	Next year
2011	9%	16%	18%
2012	9%	24%	26%
2013	12%	25%	25%
2014	7%	18%	27%
2015	7%	22%	24%

The share of the respondent companies that attracted investments in 2014 was 7% (the same as a year before). This is less than in 2012, in all appearances reflecting general changes in the area of venture investment in Russia. The volume of these investments merely did not increase but according to different surveys even decreased in the last 2 years. At the same time, the number of transactions is retained (with a substantial reduction in the average transaction value) but the growth slips (from 50-100% to 20-30%). At year-end 2014 it disappears at all.

Our results should rather precisely correlate to the number of transactions, and not to investment volume. However the respondents represent only a part of IT industry. In addition, in their number with a 2-3-year lag come freshly established companies which more often attract investments. Besides, our polling covers only exporters and not all Russian software developers. A significant part of investment recipients are oriented exclusively towards the Russian market.

Since 2011, when the question about investments was included in the questionnaire for the first time, in the next 2 years the challenges of attracting investment were not met by companies in roughly half the cases. As a rule, expectations were met of no more than one third of companies which counted upon attraction of investments. Therefore, the needs of software companies in external financing are satisfied only in part. This is not to say that these needs always comply with companies' capabilities to return money invested. A lot of applications to venture funds are known to look lame.

Venture funds begin their operation in the Russian market mainly in Moscow. Though they have begun to express an active interest in investment in the regions (the Russian Venture Company even arranges the tours across the country to put the investors in touch with regional high-tech businessmen), still it is much easier to find investments in the capital. Such is the opinion of promoters of building bridges between startups and venture capitalists.

The results of our polling in the last 2 years show that there is no any significant difference between Moscow and regions by the share of companies that attracted investments. At year-end 2013, 10% of Moscow companies obtained outside financing. In regions this indicator is quite comparable with allowances made for operational margin — 6%. In 2014, Moscow has lost any advantage in this sense: in regions (it does not apply to St. Petersburg) investments were attracted by 13% of respondent companies, whereas in the capital – the same 6%, as a year before. However, this data does not counter argument that it is easier to find investments in Moscow, because many

regional companies find them just in the capital. The accessibility of resources of the metropolitan venture funds for regions in recent years has grown to a large extent thanks to above mentioned different regional events arranged by funds.

A declared need in investments does not depend on location of head offices of companies. In recent years the need of investment is expressed by 20-30% of companies (sometimes a little bit higher than 30%). Taking into account that Moscow has nothing going for itself on that score, an assumption that Moscow companies are less interested in investments due to availability of internal funds is groundless.

In St. Petersburg, for two consecutive years now, none of respondent companies reported having attracted investments. A sample of St. Petersburg companies is very decent. So it makes no sense to refer to any random factors. St. Petersburg software companies are known to be very keen in attracting investments. However, a share of such companies in our survey is very insignificant. One can presume that they obtain investments on conditions of registration of intellectual property rights in foreign countries and of transfer of main developers thereto. The results of our polling make someone sit up and take notice of investment appeal of St. Petersburg (and Russia as a whole) in the area of software development.

There are solid grounds for supposing that the attempts to create the investment climate favorable for activities of venture investors in St. Petersburg have failed in comparison not even with Finland or American Silicon Valley, but with other Russian cities. It should be noted that in St. Petersburg the training in the IT area is tuned, a lot of international high-tech conferences and forums are held here.

Judging from the number of software companies and technical higher education institutions with a very high degree of training, the second Russian capital should be among the leaders in attraction of investments in IT. It is essential to turn attention to other factors that prevent using the available potential in attraction of investments. It is hardly surprising that the St. Petersburg respondent companies have indicators of growth export and aggregate income lower than national averages at year-end 2013. In St. Petersburg aggregate income increased by 10%, and export — by 7%. For Russia the similar indicators were 16% and 23%, respectively. At year-end 2014, the situation changed – St. Petersburg respondent companies increased cumulative business volume and export by 18%. Still as before it is smaller than the corresponding figure of all respondent companies, but the difference now is only 1-3%. Does this change result from consequences of politics of the City Administration or from the modified composition of St. Petersburg respondents? That remains to be seen.

For two consecutive years now a leader by the share of companies that have attracted investments is Ural (17% in 2013 and 2014). This region is represented by not so many respondents, and in the case of small sample the random facts may dominate. That is why last year we assumed that it was a small size of sample that brought leadership to Ural. However, the recurrence of a high indicator in 2014 suggests that Ural region does have a sufficiently high indicator of investment appeal.

In Siberia (the same as in St. Petersburg) for two consecutive years no one company has attracted investments (and this despite the big share of respondents who mentioned the relevant plans (up to 33%)). Therefore, Siberia also has problems having impact on investment appeal of local companies.

Nonetheless, in spite of low Siberian indicators, as a whole the investment attractiveness there is at a good level (against Moscow and especially against St. Petersburg). The figures of growth of business volume and of export of companies from "other cities" are still lower than in two biggest Russian cities. We assumed that relatively low growth rates to a greater extent could be associated with the short delivery of investments in the previous 10 years. Probably, this problem has got off the ground, and in the next years regions will be able to gather themselves up depending on the speed at which their companies increase business volume and export.

Small companies more often need external financing and they also more often manage to attract investments (in 2014, it was achieved by 6% of companies with the turnover less than $5 million, and by 8% - with the turnover more than $5 million). We have not found (similarly as in previous years) any great difference in successful investment promotion as a function of company size. Among small companies there are many startups that cannot develop at all without external investments. As to young companies, established after 2009, a share of those planning to attract investments in the next 2 years is particularly big (47% if such companies rely upon external financing in 2015, and 53% - in 2016). In this context 13% of these startups managed to attract investment in 2013. This figure against a background of other companies is high, at the same time they have much higher back-log of needs in external financing than more adult and as a rule larger companies. In this case it should be noted that startups established in the recent 2-3 years almost were not covered by our survey.

None of companies with the turnover over $20 million attracted investments in 2014. Besides, such companies with the turnover over $100 million don't count upon external financing in 2015-2016. As a rule, they do need investments, and the amounts in question are interesting for serious venture and investment funds (tens of millions of US dollars). However large companies not always want to declare publicly their activities for attraction of investments, considering this to be a private matter however they do not hide facts of receiving funds in the previous period.

In 2012 and 2013, companies that are mainly oriented to the Russian market have managed to attract investments more often than those that gain the most part of their income from export (in 2012 the there were 13% and 10%, in 2013 - 8% and 3%, respectively). Probably, it is related to the assumption that the prospects of further development in the Russian market are for them more obvious than possibilities of strengthening in foreign markets. The last survey showed that situation was changing: in 2014, 11% of respondent companies with no less than 50% earnings derived from export proved to be able to attract investments. For companies that are mainly oriented to the Russian market this figure is just 6%. It seems that the policy of venture funds (other development institutions) which implies encouraging startups to operate at the world market and not only in Russia, yields fruit. When external financing is provided to a company that is fundamentally oriented toward foreign markets, the investment efficiency can be far greater than if a similar amount is given to developers interested only in the domestic market.

In 2014, product companies managed to attract investments more often than service ones (11% versus 5%). A year ago it was the other way around (5% and 8%). In 2012, software vendors attracted investments more often than service companies (12% and 9%, respectively). Anyway, following the results of three years we may conclude that for product companies attracting investments is somewhat easier. Besides, their number is growing faster.

According to J'son & Partners Consulting, the volume of the Russian venture market continues to decrease for two consecutive years now and has reached at year-end 2014 $447.5 million covering 319 transactions. The amount of financing has dropped by 26% in comparison with 2013,

up to $258.2 million; while a number of investors' exits increased 5-fold and amounted to $189.3 million. Altogether, in 2013 there were 9 exits (sale of equity investments) totaling $1.62 billion.

As before, a leader in the number of transactions is the Internet Initiatives' Development Foundation — in 2014 the foundation financed 104 projects and carried out 3 syndications. Last year, the extension of influence of the state investors in the venture capital market remained.

J'son & Partners Consulting analysts detected that the number of cash-in transactions decreased by 5% while the number of exits transactions increased 13-fold (exclusively of IPO in 2013).

According to the annual report "MoneyTree: Venture Market Navigator" prepared by PWC jointly with RVC, at year-end 2014 the scope of venture market in Russia decreased by 26% and amounted to $480.9 million (exclusively of two single transactions to the amount of more than $100 million). It is almost the same figure that was found out by the J'son & Partners Consulting analysts. Similar data were given by PWC regarding exits. The MoneyTree report mentions 30 such transactions (by 43% more than in 2013). As a result, the proceeds of investors were as much as $731.5 million (by 51% more). As in the previous years, a leader was IT sector with roughly 90% of both total number of transactions and the total amount of investments. In 2014, the number of venture transactions therein compared to the previous year decreased by 31% —133 transactions totaling $440.6 million. In IT sector investments are mainly made into Internet projects.

In opinion of the J'son & Partners Consulting, PWC and RVC analysts, the decrease of venture market and increase of exits was caused by the deterioration of macroeconomic and foreign-policy situation in Russia and also by a natural completion of venture funds' investment cycles. Most of venture investors are oriented toward income in dollars although a share of foreign investments is not big and does not exceed 20%. The majority of projects suggest earnings in rubles; with instability at currency market the uncertainty of calculations of investment performance in dollars has grown. At the same time, venture market in dollar terms has decreased modestly. Perhaps, the quality of project selection process has been enhanced. Thus, the contraction of venture market by no means is a catastrophe, though needs in investments remain to a large extent unsatisfied.

A lot of investors, who entered upon a career three-four years ago, have passed the first investment cycle and turned on preparation of portfolio companies for sale and for assisting development of their business. The interest of investors in new projects lowered. It also became one of the reasons of contraction of Russian venture market.

PwC and RVC are comfortable with it, they even look at the future with optimism as this reduction primarily is indicative of coming-of-age — the average transaction volume is aligned with similar indicators of mature markets of other countries. Investors gain more experience (particularly by investing with western partners into foreign companies) adopting practices that allow them to take correct view of domestic projects. They begin to look more conservatively at employers' business plans and present transactions in a structured fashion such as not investing all the amount at one stroke but breaking it into individual installments (and in essence, into individual transactions).

Although some business owners complain that they cannot find financing for their projects or ideas, the majority of venture investment experts consider that in Russia there is more money than high-quality projects. For example, according to the Russian Venture Company (RVC), the relation between the volume of available funds and the annual volume of investment is 7:1. However, experience of investment fund operation has proven that the optimum ratio is 4:1 (5:1 at most).

The reason is that there are still many projects that are good from the standpoint of technology development but are poorly "packed" from the viewpoint of business plan and marketing. It is understandable considering that the opportunity to attract investments with the wide range of startups appeared actually 3-4 years ago. The Russian market of venture investments has sprung up recently (in many respects thanks to such state development institutions as the Skolkovo Foundation and RVC) and it is natural that not all but just a few first-time entrepreneurs know how to attract these investments. Therewith, there are not enough those who can share their successful experience.

A sharp decline also took place in the business angel market. According to the annual survey of the National Association of Business Angels (NABA), the volume of transactions with participation of seed investors in 10 months of 2014 was $25.3 million that was by 34% less than over the similar period of 2013, and as a whole in 2014 – $34.2 million (provisional estimate). A number of transactions was reduced almost two-fold – from 86 to 47 (from the comparable period of 2013). Such reduction is partly explained by transition of some most active business angels to other investor categories. According to the RVC and All-Russian Public Opinion Research Center research, there are about one thousand active business angels in Russia. However, there is not enough information on their work. As a rule, they do not desire to provide publicly available information on transactions made. In this regard, RVC suggests continuing the system work directed on an increase in the number of practicing business angels, as well as on an increase in transparency of this venture investment market segment.

At the same time, Russian companies as a rule are not eager to provide publicly available information on transactions made (particularly, regarding invest promotion). Because of it, a substantial part of venture market remains uninvestigated and unevaluated by analysts who generally focus on public transactions.

At present, the global venture market is rebounding, available funds are growing. It could have played in favor of investments in Russia. However, experts predicted that the year 2015 in Russia would be difficult — venture market would undergo another rouse due to recession, uncertain economic and geopolitical situation. But these forecasts were made in the beginning of the year whereas in the midsummer the situation in economy stabilized. In addition, a hope emerged that the relations between Russia and Western Governments would improve due to a certain stabilization in Ukraine. Perhaps, the adopted focus on deoffshorization of economy will result in decrease in scope of venture investments because it will take time for investors to get accustomed to new rules of game. Nevertheless, at year-end 2015 it will be hardly possible to avoid contraction of Russian venture market in dollar terms.

According to forecast by J'Son & Partners Consulting, the main venture capital market remains the USA (investment volume is $30 billion, that approximately 10 times higher than in Russia. At the same time, account must be taken that in the US venture market the resources are looked for by all world companies, not only American ones). J'Son&Partners analysts think that the greatest growth will be demonstrated by Chinese venture market ($8.3 billion). Taking into account the advantages of population and industry size, India has not very high figures versus Russia - $2.1 billion. The same has Israel that is very significant for such small country. Europe is still ahead of Russia in terms of extent of financing per capita, but at arm's end in foreseeable future (of course provided that the crisis in Ukraine will be successfully resolved).

Compared to Russia, a share of venture capital versus GDP in US is 13% or 4.25 times higher in absolute terms. By this relative ratio Russia is at the same level with China and Europe.

Whereas the US market of venture investments is one of the most promising, the number of venture funds there has been substantially reduced in the last 10 years. It is worth noting that the similar trend is observed also in Western European countries – in the last 12 years the number of funds decreased by 63%. The experts even sometimes speak about Silicon Valley as a large footprint on the sands of time long gone by.

The shares of almost all Russian ICT companies, quoted on the stock exchange, lost in value within a year (from March 2014 to March 2015). An exception to this is software companies Epam Systems and Luxoft. Depreciation of quite successful companies can either repel or attract the investors. On the one hand, they focus on the value appreciation. On the other hand, Russian companies became even more undervalued.

Dynamics of share price of ICT companies in March 2015

Issuer/Index	Change per year, %	Capitalization, $ million
Mail.ru	-44.06	4198
Luxoft	47.53	1689
Epam Systems	86.29	2769
MTS	-8.42	15912
Vympelcom	-41.97	8486
Yandex	-49.75	4987
Megaphon	-6.98	17712
Armada	-74.07	15
Rostelecom	-7.33	2207

Source: Finam

Some most important events at venture market in 2014, according to J'son & Partners Consulting experts

1. The RF President endorsed law "On amendments being made to Part 2 of the Tax Code of the Russian Federation" aimed at support for small businesses. Taxpayers can use 0% tax rate within 2 periods. Also in November, Vladimir Putin endorsed law on deoffshorization binding taxpayers to inform about participation in foreign companies.

2. The Luxembourg foundation Mangrove Capital Partners ceased operating activities within the territory of Russia.

3. 3 new Technology Parks were opened in Russia: "University" in Sverdlovsk region, "Rameev" in Penza, "Zhiguli Valley" in Togliatti.

4. 4 startups from the Internet Initiatives' Development Foundation's accelerator ceased development: HotReader, Mommy's school, Bustourpro, OnlineDealer.

5. 1 December 2014 the business incubator Smart Park in Ufa was officially opened. It includes workspace, business accelerator and communication venue.

6. Alexander Borodich got status of"The business angel of the year" according to IV NABA Annual Award.

7. In November 2014, the Skolkovo foundation and ENERGOPROM Group signed the partner agreement envisaging creation of a R&D center within the territory of Innovation center Skolkovo.

8. In December 2014 business angel Arcady Moreinis launched an "anti-accelerator" for startups

9. Sberbank and Silicon Valley Bank commissioned a subsidiary to provide innovation companies with debt financing.

10. New University Innopolis in Tatarstan became a partner of Singapore National University.

11. In June 2014, Yandex purchased the company Auto.ru.

12. Innovation Synergy opened the International Center of advance research in education and training in Shenzhen on the basis of the Tzinghua University.

13. Microsoft opened in Moscow the second technology center estimated at $15 million.

Besides, J'son & PartnersConsulting experts informed on launching in 2014 of the following venture funds: Ocean Ventures; Starta Capital Accessor Fund I; Run Capital; FinSight Ventures; DST Global V; RVC and R-Farm Joint Fund; New Venture Fund Life.Sreda; Seconf fund Runa Capital; Gagarin Capital; Ingate Ventures; Restart Capital.

Some most important events related to invest attraction by Russian companies and to establishment of new investment funds

- In early 2015 it got public that Cubic Robotics had attracted investment for the mass production of voice assistance devices (Power Badge and Home Cube). Both devices are equipped with an application called Cubic which company considers as a "personal artificial intelligence".

- In 2015 a group of American funds called Capital Group consolidated 5.9% of shares of the Russian payment system Qiwi. The market cost of this part of shares at the time of purchase was $71.5 million. Also, more shares of Qiwi were acquired also ed by funds: Waddell & Reed and Platinum Investments.

- In January 2015 the Austrian IT provider S&T announced intention to purchase shares of Russian IT companies to the amount of several tens of million Euros. However in March this company's experts announced obvious overevaluation of assets and disinclination to compromise the presented business plans.

- In the spring of 2015 Net Element from the US purchased the Russian processing system PayOnline. A transaction amount will be up to $8.48 million from which assets of PayOnline (which are currently frozen in a Cyprus bank) will be subtracted.

- BlackRock Foundation from the US collected by the middle of spring 2015 over 6% of Luxoft shares. A cost of this holding of shares is $130 million.

- In February 2015, one of the oldest American investment companies - JPMorgan - purchased 4.5% of Luxof shares. At the same time a French fund of BNP Paribas, which last summer purchased 4% of Luxoft shares, halved its share.

- In March 2015, Pennant Capital Fund from the US, which last year purchased 5% of Epam Systems shares, fully exits from the company. The sold holding of shares cost at that time $145 million judging by stock-exchange quotation.

- In February 2015, it got about that the Russian startup SmartProgress engaged in the development of a Web platform for setting and implementing personal goals would receive primary financing to the amount of 20 million peso (roughly $32.5 thousand) from the Chilean accelerator Startup Chile and take part in a 6-month educational program in Santiago (Chile) consisting of presentation of the project to investors and of business training with participation of outstanding experts in this field.

- Nginx obtained in 2014 $20 million of new investments. Runa Capital again became one of investors in that company at the second round of investments. Total amount of investment with account for a new tranche was as much as $33 million.

- In February 2015, RoboCV, a developer of intellectual auto-piloting systems for transportation completed a new round of venture investments totaling $3 million. A lead investor was a fund controlled by I2BF Global Ventures and VTB Capital Investment Management. Other participants were international venture market players — Columbus Nova, Almaz Capital as well as Leta Capital which had already invested in the company.

- The originators of Runa Capital fund reported in the summer of 2014 that the resources of this fund were almost depleted, and because of it they would establish the second similar fund. It is planned to be bigger and aimed at investments into startups of a later stage. A volume of the new venture fund Runa Capital II must amount to $200 million. A half of capital should be formed by the first fund's investors, a second half is planned to be attracted from new investors. Runa Capital II will invest into high-tech companies. The expected volume of one separate investment will be from $3 million to $5 million.

- In October 2012, Acumatica, a supplier of cloud ERP solutions for medium-sized and small business, announced the attraction of $10 million in the third financing round performed by venture funds Runa Capital and Almaz Capital.

- In the spring of 2014, the state fund Rosinfokominvest obtained 12 partners from among large IT companies and venture funds. Through join efforts they will invest into IT startups. The fund plans to invest into IT projects up to 1.45 billion rubles.

- In early 2014 an American investment company Waddel & Reed purchased shares of some Russian high-tech companies. It became the owner of about 5% of Qiwi shares and about 3% of Luxoft shares. A total cost of these blocks of shares is about $150 million.

- Established in 2010, Russian musical service ecosystem Zvooq in August 2014 completed invest round to the amount of $20 million.

Overseas investments of Russian companies and funds

In several recent years, there was also a growth of investments of Russian individuals, Russian companies and funds in the hi-tech sector of foreign economies. According to J'son & Partners Consulting, in H1 2014 the number of investments into foreign projects with participation of Russian investors increased both in quantitative and monetary terms. At the same time, the share of syndications changed insignificantly: the number of transactions with participation of Russian business increased from 28% to 35%, in monetary terms it decreased from 53% to 48%. Compared to H1 2013, the number of Russian deals with capital increased from 18 to 23.

At year-end 2014, investments of Russian investors into foreign projects (exclusive of syndications) in monetary terms decreased by 1.4% amounting to $92.2 million. At the same time, the number of transactions keeps growing (increasing in comparison with 2013 by 7.5%).

Russian investors can pursue different purposes when investing abroad (establishment of their remote development centers, access to new significant clients in the markets concerned, receipt of profit from subsequent resale, as well as getting an opportunity to exert influence upon decision-making process as the company's shareholders).

Foreign investments allow particular individuals or companies to enjoy their profit. However, they are also important from the viewpoint of Russian economy integration into the world economy. Acquisition of large shares in successful foreign companies is a way to adopt executive experience and to find opportunities for cooperation between these enterprises and Russian IT companies, as well as to provide Russian companies' entrance into new markets. In certain cases, the Russians obtain ready-to-use technologies that may be elaborated and used in their own business in Russia. In this regard, in the spring 2014 the US FBI warned high-tech companies and research institutes in Boston and its neighborhood about ulterior motives of Russian venture investors showing interest in the US startups. According to FBI experts, the true motive of Russian investors' interest to American solutions is to gain access to new promising technologies and to stealing them.

Besides, the money earned from purchase and sale of shares may return to the Russian IT sector. Judging by the successful transactions, this process is already in progress.

First, it should be mentioned that after the Facebook's IPO, the Russian shareholders of this company (Mail.ru Group, Alisher Usmanov, Yury Milner, Mikhail Frolkin, and others) became owners of big packages of of shares worth a total of several billion dollars.

In late 2013, DST (group of funds DST of Yuri Milner and Alisher Usmanov) began actively unloading stock in foreign Internet projects: Facebook, Groupon and Zynga. For the sold shares they gained about $300 million.

In early 2014, a Russian venture Fund called "Life.Environment" made its first exit as a consequence of sale of the US mobile bank Simple to a Spanish bank group BBVA for $117 million. According to this fund, by way of transaction it earned 180% per annum out of investments.

Some examples of Russian investments in foreign high-tech companies in the last 2-3 years:

- In the summer of 2015, it got about that Russian Group "Otkritie" (Discovery) would become the largest shareholder of Italian provider Tiscali after its merger with a WiMAX operator Aria belonging to Russian owners. Shares of the company are listed on Italian stock exchange; in the summer of 2015 its capitalization amounted to 104 million Euros.

- In early 2015, Parallels widened its product portfolio by including there solutions of the purchased company 2X Software. These products are intended for calling up Windows on devices with arbitrary OS and for in-house controlling mobile devices.

- In the summer of 2015, Epam Systems purchased an American company NavigationArts working in the digital strategy area with the staff of 70 persons. It is already the third Epam Systems's purchase in this segment: previously were purchased also American companies Empathy Lab and Great Fridays.

- In the autumn of 2014, Acronis purchased nScaled (American solution developer for data recovery in clouds). Thanks to the purchase, the users of Acronis products will have an opportunity to promptly restart systems even in the event of equipment malfunction or failure.

- In the spring of 2014, Runa Capital fund co-invested $2.69 million into the US medical IT startup Drchrono. It is already the third fund's investment into companies from the medical care area.

- The international venture fund QWave Capital established by CEO of Acronis and the chairman of the board of Parallels Sergey Belousov reported in the autumn 2013 about investment of $5.6 million into the Swiss company ID Quantique. Direct investment into the company was equal $4.5 million, and $1.1 million was spent of acquisition of another shareholder's stock. As a result, QWave Capital became an owner of "substantial however minority interest". ID Quantique is operating in the communication encryption market and is developing commercial quantum encryption systems. This communication security method is based on quantum physics principles.

- In early 2014, Yandex purchased an Israeli startup KitLocate which develops geo-data acquisition mobile technology. The full team of the purchased company joined Yandex. KitLocate technology may be used in applications aimed at obtaining information about user's movement in order to to render them services in the right place at the right time.

- In the spring of 2014, the Israeli startup SalesPredict that developed solutions allowing for forecasting the sales in B2B sector announced the receipt of $4.1 million of investments in the round A. Main investors became Yandex and KGC Capital fund.

- in the spring of 2014 a US company Weaved obtained investments from the Russian venture fund Maxfield Capital on further development of integral unit technology for Internet of things that they had developed. The company's solution is already employed by various equipment developers such as Philips and Astak. The volume of attracted investments is not disclosed.

- In the spring of 2014, the GS Group Holding spent 5 million EUR on acquisition of companies – members of the Portuguese group Novabase. Thanks to this transaction, the Russian holding that produces TV receivers and software for cameramen is going to enter Western European and African markets. Around the same time, GS Group invested at the seeding stage 200 thousand EUR into Finnish startup Tellyo that has developed and elaborated solutions for the confluence of TV and social networks.

- In the summer of 2014 Luxoft purchased from the Swedish company Mecel the right to the solution simplifying development of embedded software interfaces for motorcars. The transaction amount was $3 million.

3.4. The global software market and the ways to increase sales of Russian suppliers

According to Gartner, the global IT market increased in 2014 by 1.6%. Most of all were grown expenditures on enterprise software — 5.7%. Altogether they amounted to $314 billion. There was also a certain growth in other software segments but much fewer. At year-end 2015, the Gartner analysts predict contraction of IT budgets. Most likely, for the first time in many years, expenditures on enterprise software will not increase.

Global IT budgets in 2015

	Sales volume ($ trillion), 2014	Growth (%), 2014	Sales volume ($ trillion), 2015*	Growth (%), 2015*
Terminal equipment	0.693	2.4	0.654	-5.7
DPC	0.142	1.8	0.136	-3.8
Business software	0.314	5.7	0.310	-1.2
IT services	0.955	1.9	0.914	-4.3
Telecom services	1.607	0.2	1.492	-7.2
Total	3.711	1.6	3.507	-5.5

Note: * - forecast
Source: Gartner, June 2015

Gartner and IDC in 2013-2014 often reviewed their forecasts towards decrease. Nevertheless, they kept on believing in growth recovery. Gartner experts in the middle of 2014 even thought that the holiday of IT market is near at hand: from 2015 to 2018 the market will return to the "normal growth" stage as formation of prices and purchasing operations will get into equilibrium again. The IT market will come to the third phase of development when the focus will shift from technologies and processes to new business models. In April they still anticipated growth at year-end 2015, though reviewed the rate towards decrease. But in the end of June they saw that not only there is no point to wait for increase of expenses with the third phase of development but, most likely, there will occur a substantial reduction of the cumulative global IT budget (according to the new forecast - by 5.5%). Among other things, the expenditures on corporate software will reduce - by 1.2%.

The Gartner analysts emphasize that the anticipated drop does not mean a collapse of the market. The predicted contraction is caused, in their opinion, by the dollar rate increase against most of other leading world currencies. They express the world IT budget in dollars. Even though the receipts in dollars of software vendors are often decreased due to currency fluctuations, the extensive use of the SaaS (Software as a service) model prevents an increase in software prices. For all intents and purposes the Gartner analysts recognized that determination of IT market size (both and of individual countries) is currently more than meets the eye due to the lack of adequate units of measurement.

According to the research company IHS, cloud technologies more and more actively establish a reputation of not only innovative but also fast-developing and money-making segment. By 2017, the expenditures of companies on cloud computations will hit the target of $235.1 billion, 3-fold more than in 2011 ($78.2 billion).

Some other segments of the world IT market will also keep on growing. According to J'son & Partners Consulting, the world mobile data transfer traffic will grow by 2019 at the annual average growth rate 57%.

According to outlook of the IDC analysts, published in 2014, throughout the next five years the world market of technologies and Big Data services will grow on the average by 26.4% per year, and in 2018 will reach $41.5 billion.

If we cannot talk about collapse of IT market yet, we may mention the serious shakeout and sweeping changes associated not only with a new phase of technology development but also with political scandals. According to the report of the research company Forrester Research, the scandal with NSA will cost American cloud providers and IT service suppliers $47 billion of lost profit for three years — between 2014 and 2016. It may happen that this scandal will adversely affect business of the world largest American software vendors.

According to all indications, in the world IT market things are drawing to the age of serious shocks with substantial redistribution of spheres of influence. Such distribution may result both in collapse of specific companies and in tremendous growth. Russian software companies have chances of both growth and threat. It will be important to find the right way or direction which not necessarily is straightforward. Most probably, the majority of companies will have to continuously adjust the route to get ahead in foreign markets.

In the previous 10-15 years even small contractions of major world markets (or slowdown of growth rate) had a negative impact on the scope of software export from Russia. For example, if in the USA or Europe, toward which Russian software exporters are mostly oriented, the market contraction took place or the growth rate decreased by 1-2% or less, Russian export could drop by several percentage points.

At present, one may not notice the predicted contraction of the world market of enterprise software since other factors are much more important. The weakening ruble adds to higher competitiveness of Russian companies engaged in customized software development. Their salary costs in dollar terms decreased in the middle of 2015 (on the previous year) by 20-30%. Therefore Russian developers got additional advantages to secure bulk orders. However, according to information of some companies, by the middle of 2015 this factor was offset by the cautious attitude of European and the US customers toward Russian developers due to stepping up of PR war against Russia and emerged global political tension.

Software vendors to a lesser degree benefit from their own cost reduction in dollar terms. More important for them are marketing expenditures on promotion in foreign markets which have not contracted yet.

The spying scandal produced by Snowden's disclosures gives Russian software companies a certain chance to win back a market share from the US competitors. However, this chance is merely theoretical if the name of the game is not the Russian or the CIS markets. Russian and the US software companies in rare occasions are direct competitors outside Russia. It is difficult to believe

that due to a spying scandal the ERP systems of 1C, for instance, will be adopted in the USA or Europe. Chances are also slim for Kaspersky Lab to put competitive pressure on Symantec or Eset at western markets. Most likely, this scandal will remake markets of some big countries in favor of local developers, even if the quality of their solutions is apparently worse than American or Russian counterparts. Besides, transfer to free software will speed up. However, Russian companies have a chance to occupy the loose niches, but to a greater degree in emerging markets than in the USA and Europe.

The conditions of operation in the US and European markets for Russian software companies not only became anything better, but new threats have emerged. A good many time Kaspersky Lab had to fight against accusations in western media. For example, in early 2015 Bloomberg published an article impeaching the head of the company Eugeny Kasperky for relations with Russian security service. In addition, all sources of information in the article were anonymous. According to Kaspersky Lab, this article was published as a response to the company's investigation of activities of the cybergroup Equation, which in opinion of some experts was related to the NSA. As for accusations of relations with security service, Eugeny Kasperky answered that the company cooperated not only with the Russian FSB but also with similar bodies of other countries including the USA. The struggle against cyber crime without such cooperation is impossible. However, similar retraction may escape observation. Even if Kaspersky Lab does not decrease income in American market in years to come, it will not be able to increase it substantially. That's for sure.

Another case is related to Diasoft that is still beginning to develop foreign markets with solutions for banks with which it has took over the leadership of foreign competitors in Russia. In the autumn of 2014, a large US company refused to conclude contract with Diasoft in spite of very good indicators shown in testing following the results of the year. The refusal is explained by the existing political tension between Russia and the United States.

Such cases bring Russian software companies to pay greater attention to non-conventional markets— Southeast Asia, Latin America, Africa and the Middle East. Some of these markets have volumes comparable to those of European countries and enjoy high growth rate. Some developers have already built their business there (for example, Kaspersky Lab, TRANSAS and SPB TV in China, Naumen in Indonesia, InfoWatch in Arab states, SpeechPRO in Latin America, PROGNOZ in Africa) and are ready to share their knowledge and experience. RUSSOFT regularly holds events (including webinars) to spread knowledge about markets which are not generally known among Russian software developers.

The entrance to Asian markets is not fast. It takes 3-4 years. Needless to say that Russian software companies will be able in the shortest time to cross over to the East, anyway it must be done.

Russian developers are able to work successfully in all high-growth segments of the world software market. They enjoy well-deserved recognition especially in the field of information security. However, the politically motivated decision to go back from Russian software may have a major negative impact on the sale of respective solutions in the Western (and not exclusively) countries.

Besides, Russian companies and programmers are good at developing and selling abroad mobile applications, and this segment is one of the backbone directions of the global IT industry development. According to the analysts, "cloud services", social networks, and systems for the Big Data analysis belong to the same line. Mobile applications can be developed and successfully sold abroad by even very small Russian companies, as well as by individuals.

Availability of the GLONASS system can provide certain advantages to Russian developers in the field of creating geo-information systems. But contrary to expectation, its full-size commercial use in 2013 did not start yet. In the summer of 2014, the Russian Government approved "the Road Map" for creation of a company intended to commercialize the GLONASS and for development of the state automatic information system ERA-GLONASS and for its use in the interests of other information navigation complexes and systems established by federal executive authorities and organizations. According to the Road Map, with budgetary allocations on system operation to the amount of 590 million rubles, the income of JSC GLONASS in 2015 should amount to 1 billion rubles. By 2018, the state expenditures must be lowered to zero while the income of the company will alternatively increase to 5 billion rubles.

According to Gartner's estimations, no more than 2.7% of the global software market (including customized development services) is accounted for by Russian software companies. However, for many years, this share has been increasing by approximately 0.1% per year irrespective of the global market growth deceleration or acceleration.

Russia is far behind India (more than 10 times) by software export volumes in monetary terms. However, the gap is gradually narrowing (10 years ago, it was 20 times difference). Russian developers should not look up to the Indian IT export volume figures. The difference in population and in living standards is too great. At the same time, the Russian industry is on firm ground in the most expensive hi-tech development segments, where it is worth increasing Russian developers' competence and presence.

According to the Russian IT industry development strategy, which was formulated by the Association of Computer and Information Technology Companies (APKIT) in collaboration with McKinsey, Russian software export revenues are expected to reach $27 billion in 2020. To reach such level of export income, it is enough to increase the export approximately by 20% per year. Such export growth rates have been already observing for four years (before the crisis, the growth rates were 40%-50% per year). By the results of 2014 software sales abroad grew slowly and increased by 11% that is primarily associated with geopolitical situation. With the state support of IT export and with the stabilization of geopolitical situation, the export growth may be even higher. There are all opportunities for acceleration.

Chapter 4

Geographic reach main vertical markets in the Russian software development industry

4.1. Main Geographical Markets

As per results of the survey 2015, each of respondent companies on average was present on 3.5 foreign regional markets out of which 1.39 were thought to be key markets (a year ago there were 3.4 and 1.35, respectively). It is of importance that these figures, if we take into account a margin of error and changes in a line-op of respondents, remained at the 2012 level that was much lower than in previous years owing to the fact that the companies to a greater extent began to focus on specified geographic markets.

Looking at the picture of changes in shares of one or another geographic market since 2007 we can see that the share of the non-CIS countries in some years decreased, in other years increased but as a whole we may deduce that a certain reduction of the world market share has taken place compared to that of neighboring markets. It reflects the actual refocusing of Russian companies on the markets of Russia and CIS countries which attractiveness greatly improved over recent years. But it is true only to a certain degree.

The fact is that over recent years has greatly increased a number of new software (mainly product) companies that in majority started their activities at the markets of Russia and CIS countries. Therefore, a total number of Russian software companies present at the markets of the non-CIS countries has not even lowered but on the contrary has increased.

Similar to the period after the 2009 crisis with contraction of domestic market and the factor of devaluation of ruble, in 2014 the companies increased efforts on the markets of non-CIS countries — in the USA and Western Europe.

Since 2007 till 2012, the share of respondent companies staying on the North America market was lowering. Mainly it concerns small-sized companies (though large companies to a lesser degree also reduced their performance in the USA). Over the last 2 years the interest in the American market keeps coming back. 46% of companies with the turnover less than $5 million indicate that they are in this market. In terms of sales result in this region (which our survey does not allow to measure), the US market most likely steadily remains the second (after Russia) during the whole period of our investigation. It is well-known that the share of sales in the USA in the consolidated revenues of the major Russian exporters is often measured in tens of percentage points and sometimes is as much as 50% and even 80%. Service companies are leaders in activities on the developed markets (the USA, the EU), almost two times ahead of product companies in terms of the share of companies of a relevant segment staying in these markets.

At the same time, according to media, a wide range of companies (generally major ones — with the turnover over $10 million) actively develop new for the Russian software industry geographic markets. They open their offices and implement projects in countries that were almost of no interest to software developers just 5-10 years ago (see the selection of related messages below). Russian developers became interested in the markets of Latin America, Vietnam, Mongolia, Philippines, Zimbabwe, Nigeria, South Africa, India, China, Nepal and other countries. Unfortunately, only in 2013 such region as “the Middle East” was included in the questionnaire. It turned to be that it should be done a little bit earlier as this market was more important than those that were included in the questionnaires long ago. Up to date, approximately one tenth of Russian software developers are on the Middle East market.

Some 7 years ago, we advised Russian companies to look at the prospects in the markets which were new for them. Even if they are smaller than the North American and European markets, they

are big enough and fast growing. The interest in these markets we also associated with the fact that in the developing countries competition is not so strong, and there is an opportunity to overtake a bigger market share than in the USA and Western Europe.

If the heads of a number of software companies did not listen to this advice in those times, as time goes by, they themselves have come to an understanding of the importance of developing those new for Russia markets. The importance of this issue greatly increased after aggravation of the global political situation. Some Russian software companies by the end of summer of 2014 were faced with problems in promotion of their software (or development services) in the USA. The political tension even reflected on operation at the Chinese market where the local government decided to omit all foreign antivirus software in the governmental institutions. The prohibition also concerned the Russian company Kaspersky Lab with excellent indicators of activities at the Chinese markets. The point is that these problems add to the well-known difficulties of entrance to the Asiatic markets which is a rather slow process requiring deep insight into local specifics. Usually it takes 3-4 years.

Our findings do not show yet any clear growth of the share of companies which work in Asia, Africa and Latin America. More than likely, there is still a few of sufficiently large and prominent companies staying there. However as time goes by they can bring about other Russian companies. Association RUSSOFT contributes greatly to this by arranging together with RVC the road shows at new markets and holding webinars where managers share experiences of the work in yet poorly known markets for Russian software developers.

Presence of Russian companies in the world markets, % of respondent companies

	2007	2008	2009	2010	2011	2012	2013	2014
Russia	55%	87%	89%	99%	93%	89%	93%	94%
USA and Canada	55%	52%	38%	40%	45%	31%	41%	48%
Ukraine	17%	35%	41%	57%	35%	34%	39%	30%
Other countries of Western Europe	35%	30%	33%	35%	40%	25%	34%	37%
Other countries of the former USSR	39%	26%	34%	51%	50%	36%	31%	45%
Belarus	32%	23%	31%	45%	29%	31%	33%	27%
Germany	25%	24%	28%	33%	34%	26%	22%	24%
Scandinavia (with Finland)	28%	18%	18%	20%	27%	19%	17%	17%
South East Asia	19%	14%	19%	19%	23%	15%	8%	12%
Australia, Africa, South America	25%	7%	12%	19%	15%	15%	14%	12%
Middle East	-	-	-	-	-	10%	8%	6%

Reach of Russian product and service companies on world markets, % of respondent companies

	product	service
Russia	96%	94%
USA and Canada	31%	60%
Ukraine	44%	20%
Other countries of Western Europe	27%	48%
Other countries of the former USSR	58%	35%
Belarus	44%	14%
Germany	15%	32%
Scandinavia (with Finland)	5%	26%
South East Asia	11%	14%
Australia, Africa, South America	11%	14%
Middle East	5%	6%

Key markets, % of respondent companies

	2007	2008	2009	2010	2011	2012	2013	2014
Russia	42%	71%	72%	86%	79%	24%	69%	62%
USA and Canada	43%	28%	26%	15%	30%	14%	10%	18%
Ukraine	12%	15%	10%	12%	17%	13%	15%	14%
Other countries of Western Europe	6%	13%	11%	10%	9%	22%	8%	5%
Other countries of the former USSR	12%	7%	11%	6%	11%	24%	7%	8%
Belarus	24%	9%	8%	12%	8%	20%	6%	6%
Germany	11%	10%	12%	12%	14%	18%	8%	7%
Scandinavia (with Finland)	13%	8%	6%	6%	8%	8%	8%	7%
South East Asia	6%	6%	3%	3%	7%	6%	1%	4%
Australia, Africa, South America	9%	3%	2%	1%	4%	3%	3%	6%
Middle East	-	-	-	-	-	3%	1%	3%

Moscow kept long-standing leadership in the share of exporters present in the markets of the former Soviet republics including Russia. St. Petersburg in comparison with Moscow has many more companies present in the markets outside the former USSR. By this figure the second Russian capital was always the first during the whole period of investigation, but by the results of 2013 it turned to be that the relevant share of "other Russian cities" is slightly higher. At the same time, St. Petersburg companies, as before, were better represented in Scandinavia due to geographic proximity, however in 2014 there were almost the same number of Moscow companies in that market .

The product developers compared to the custom software developers to a greater extent are oriented toward markets of Russia and CIS countries. Not all of them have a required marketing budget to operate in the non-CIS countries. If the state lent support to IT companies in the foreign marketing it would be possible to increase export of Russian companies far and away. This is particularly so with emerging markets which are loyal enough to Russia but almost lack information about Russian software companies. It should be noted that in the Western European and US markets there also is room for expansion of Russian software export.

In the last three-five years, opening of sales and local customer technical support offices was declared by several Russian companies: Group-IB in the USA, Softline in Peru, ABBYY in Kazakhstan and UAE, Yandex in Switzerland and Belarus, Kaspersky Lab and Parallels in the Republic of South Africa, Acronis in Singapur, InfoWatch in the Middle East, DataArt in Germany and Poland.

The news connected with expansion of the Russian companies in the foreign markets for the last 3-5 years:

1. A Russian company, ABBYY, acquired 100% of the Connective Language Services American shares for the solutions localization and implementation in the US market.

2. In June 2010, Playnatic Entertainment announced the agreement with Sina Data Coin, the first Russian-Iranian agreement in the IT sphere.

3. The NIS GLONASS company has registered the NIS GLONASS Pvt Ltd subsidiary in India, which will be engaged in the large projects requiring system integration and in creation of the distribution network for its solutions in the consumer market. It is supposed that the subsidiary creation will help to promote the GLONASS navigation technologies in the Indian market.

4. In April 2013, the i-Free company and China Telecom, a Chinese mobile network operator represented by the Dazzle Interactive Network Technologies subsidiary, signed the agreement on strategic cooperation in the field of mobile games.

5. In April 2013, the integrated automated security management system (KASUB) developed by the RTEC company was presented at LAAD-2013, the leading armament exhibition in Latin America.

6. At the beginning of 2013, the Mail.Ru company launched the Spanish version of its mail service interface. According to the Internet World Stats, Spanish is one of the top-3 languages spoken by Internet users globally.

7. In March 2013, the Naumen company from Yekaterinburg reported that Magellan Solutions, a Philippine outsourcing call center, began operations based on the company's software. Naumen expects to start expansion in the region with automation of 100 workplaces of this center. According to developers, the size of the Philippine call-center service market is considerably larger than the similar Indian market and is measured in billions of dollars.

8. Epam Systems in the spring of 2014 acquired the company Jointech, the Chinese developer of software for global investment banks and organizations dealing with administration of assets. By this merger the company is going to expand its presence in Asia.

9. The commissioning center Domino Soft automated the largest Mongolian network of drugstores and pharmaceutical wholesale centers Asia-Pharma. (The solution "1C: Commerce management 8" was introduced in the main office, wholesale stores and retail outlets of the network).

10. In May 2014, NAUMEN completed the project of automation of the outsourcing contact center Positive-Contact in the capital of the Kyrgyz Republic.

11. JSC NIS concluded in 2013 the cooperation agreement on implementation of the project “Safe tracker - India” with NII C-DAC (the department of the Indian Ministry of Communications responsible for development of IT solutions.

12. The Omnicomm company – one of the leading domestic manufacturers of traffic monitoring and control systems based on satellite technologies GLONASS/GPS, presented their solutions on fuel control and traffic monitoring at the conference Telematics Brazil & LATAM 2013 in September in San Paulo (Brazil). This company has been solidifying at the Latin American market for several years.

13. JSC Kazakhtelecom (Kazakhstan) in summer of 2014 switched to the system of management accounting formation based on the BI platform Prognoz Platform developed by the Russian company PROGNOZ.

14. Kaspersky Lab in September 2014 announced relocation of its Western European head quarters to Paddington, London. Previously its Western European office was located in Ingolstadt, Germany.

15. Macroscop, the Russian developer of software and hardware for IP video surveillance systems, declared June 2014 on the entry to the Middle East market.

16. The Russian company PROGNOZ, developer of solutions in the Business Intelligence area, in the end of 2013 completed deployment of solutions for statistical services under the initiative “African Development Bank” (AfDB).

17. In February 2014, InfoWatch reported about acquisition of the department of the German company Secude that develops a full disk encryption technology. It is already the third acquisition in Germany. Similar actions help to expand the presence at the German market.

18. In the end of 2013, the partner relationship was established between the Turkish integrator NGN and the Russian company Krok. The partnership is intended for increasing technical expertise

of the Turkish party in development of comprehensive IT solutions and joint implementation of large IT infrastructural projects within the territory of Turkey.

19. The Nepalese police in 2013 purchased the package for forensic processing of speech phonograms ICAR LAB of the Russian company Speech Technology Center for their crime investigation department.

20. Speech Pro at the partner conference in June 2014 stated that promotion in the American market became their priority.

21. TRANZAS declared in July 2014 that the company would become a system integrator of the pilot project on installation of monitoring and correcting stations GLONASS/BeiDou/GPS in China.

22. In July 2014, the main office of TRANZAS in St. Petersburg was visited by representatives of the companies-members of GIFAS (The Groupement des Industries Françaises Aéronautiques et Spatiales) to familiarize themselves with the state-of-the-art solutions and products for aircraft industry.

The foreign colleagues got acquainted with the newest solutions and stock-produced items of the TRANZAS Group in the area of aviation electronics, training simulators and systems, unmanned aerial vehicles and other modern high-tech solutions for aviation. The delegation consisted of the representatives of European companies – leaders in the market of modern solutions for aircraft industry – Thales, Elvia, IFAERO, Dassault Systems, Cassidian, Airbus Defense and Space.

23. In August 2013, the Russian company BPC Bank Technologies won the tender for development of a processing center for interbank payment transfer between 15 financial organizations in Palestine.

24. In October 2013, at the 2nd Russian-Dutch IT Conference in the International Trade Center in the Hague, the RUSSOFT Association announced the start of their activities within the territory of the Netherlands where their office was opened. In October 2014, on the basis of its office in the Hague and with the support of the Agency of investment promotion in West Holland (WFIA), RUSSOFT organized a visit of Russian IT companies to the major technology forum - The Hague Tech.

25. Bell Integrator, specializing in telecom and bank projects, opened in the spring of 2014 their office in California. The company is going to carry out their principal activities in the USA.

26. A young Russian company VOCORD (developer and manufacturer of intelligent video surveillance and audio registration systems) and the Indian company TAL Secure Systems specialized in deployment of IT solutions in the public security field, in summer of 2014 entered into the cooperation agreement. The Russian management expects that this agreement will assist promotion of their solutions in international market. The active promotion outside Russia is a part of a new strategy of the company adopted in early 2014.

27. In the spring of 2015, Yota Devices commenced sales of YotaPhone 2 in China and Latin America. According to the Yota Devices's plan, 50% of total sales of smart phone will fall on China. By the end of the year, the company plans to come also to the markets of Indonesia, Turkey, India, South America and the USA. Yota Devices is regarded as a producer of user equipment. But the core of equipment is complicated and unique in-house software.

28. Ascon in early 2015 undertook beta testing as a part of preparation for launching a new design package of civil and architectural CAD oriented toward primary activities not with drawings but with 3D building models. The company plans to place a price on the new solution lower than on Autodesk Revit and Graphisoft ArchiCAD. The domestic CAD-developer Ascon has a good mind in March 2015 to produce an "absolutely new civil and architectural engineering system" which, as the company states, will meet the competition with foreign solutions Autodesk Revit and Graphisoft ArchiCAD at a lower price. Possible customers of the new building CAD among others will be foreign companies. Presently, the product supports two languages (Russian and English), eventually the list will widen. In the spring of 2015, Ascon, the developer of Compass-3D software, presented its core to the Swedish IT company to use in a product intended for wooden stairs design.

29. In the end of 2014, an American corporation R. Christopher Goodwin & Associates introduced the Russian product TrueConf Server for holding video conferences between their offices in the USA. The project did not cause any sanction problems.

30. In the end of 2014, Omnicomm – the Russian producer of traffic and fuel flow monitor systems, at the international conference Smart Mobility World transferred its equipment for test integration with the solution Web Fleet of the Italian division of Tom Tom Telematics, the world biggest supplier of cartographic services and devices for vehicle and personal GPS navigation. At the first stage of cooperation, the Omnicomm equipment in the test mode will be integrated in B2B solution of TomTom that will provide not only vehicle tracking but also fuel rate control. The active promotion of Omnicomm in the Italian market is contingent on a growing demand for equipment allowing for efficient monitoring of fuel rate and optimizing the car fleet operation.

31. In May 2015, a growth company DataArt announced opening of offices in Munich (Germany) and Wroclaw (Poland). Now the company is presented in 15 cities worldwide.

32. In April 2015, ABBYY declared the market presentation in the Middle East. It opened an office in Dubai (UAE) to provide consulting and marketing support to partners and customers of ABBYY in that region.

33. The Skolkovo Foundation, judging by their statements in early 2015, considers as one of priorities the support of projects implying promotion of solutions in the markets of Asia-Pacific region.

According to Skolkovo experts, the Russian innovation companies under development must from the very beginning be oriented to the global market. At the same time, collaboration with Asia-Pacific region has always been essential, and nowadays when geopolitics makes allowances in plans of foundations and investors, Asia should become a partner number one. Notwithstanding that negotiations go slowly as is usual with Orient people, the Skolkovo startups strengthen their presence, find investors and get better and better in Asian markets.

34. The company 1C has been trying to enter markets of the rapidly developing economies, but what is at issue here is not the global expansion yet because with ERP systems it is difficult to compete with local developers who know better operating peculiarities in their countries.

35. In the autumn 2014, PROGNOZ concluded a contract with the Statistical center of the Cooperation Counsel for the Arab States of the Gulf (GCC Stat). Under this project the Russian company implements for the benefit of Arab states a large-scale project on development of data

portals and statistics acquisition, processing and management systems. As a whole, this project will allow to create a consolidated information area for six countries: the United Arab Emirates, Bahrain, Saudi Arabia, Oman, Qatar, and Kuwait.

36. In January 2015, InfoWatch began the active development of a new international market – Latin America. By that time, InfoWatch had over 10 partners and systems integrators in this region, cooperation with the ministries of communications of several Latin American countries, pilot projects in the companies of financial sector in Colombia and Peru.

37. In April 2014, Mango Telecom opened an office in Germany intended for sales of their cloud products for European business clients. The company received financial resources for international expansion from Intel Capital.

38. In autumn of 2014, six out of 38 agreements, signed as a result of the meeting of Russian and Chinese heads of governments, directly concern IT and telecommunication technologies. A half of agreements pertain to supply of Huawei equipment to Russia. However, there are also decisions on joint developments. For example, one agreement contemplates development of civil technologies based on GLONASS and BeiDou systems. The first project will be co-developing of a navigation chipset GLONASS /BeiDou in 40 nm topology. On the basis of this chipset there will be developed an equipment line GLONASS /BeiDou for various civil applications. The users of equipment including this chipset will also need programming applications.

39. PROGNOZ in the end of 2014 introduced its mobile solution in the European Central Bank. The project was preceded by a restricted tender the year before.

40. The T-platforms company in the spring of 2015 announced an agreement for supplying its own supercomputer to the German Julich computer center. A sum of transaction will amount to 17 million Euro.

41. In May 2015, the Deputy Minister of Communications and Mass Media Alexey Volin held a working meeting with the Minister of Information and IT of Uganda Nyombi Tembo. In the course of the talks the parties agreed to intensify cooperation in the area of IT, e-government, communications and information.

42. In June 2015, the Minister of Communications and Mass Media of the Russian Federation Nikolai Nikifirov held a meeting with the Ambassador Extraordinary and Plenipotentiary of the Republic of Iraq in the RF Ismail Muhsin. The parties agreed to conduct more active relations in the sphere of telecommunications, mass communications, postal service and information technology.

4.2 Geographic distribution of marketing and trade offices of Russian companies

The regional trade offices abroad or in Russia were operated in 2014 by 44% respondent companies. This figure is growing: in 2012 the share of these companies amounted to 33%, in 2013 – to 40%.

The sales offices only in one region (country) were operated by 26% of respondents (in 2012 - 12.5%, in 2013 - 21%), in two and more - 18% (21% and 19%, respectively), in three and more —8% (12.5% and 12%, respectively).

Judging from the survey of the last year, in 2013-2014 about 25% respondents declared about their plans to open new regional trade offices. In the last few years similar intentions were demonstrated by 10-15% respondents at least. However, no significant increase in the share of respondents having at least one trade office happened. This indicator ranged from 30 to 40%. Having observed that in 2013 it increased from 33% (a year before) to 40%, last year we did not jump to final conclusion and assumed that the results of survey reflected real processes, though the growth was probably not so big. Recent data when the value has increased to 44% speaks to the truth of our assumption.

Various sources of information give evidence that Russian software companies (both the largest and relatively small ones) in recent years have been more and more intensively opening new offices abroad. Judging from the 2015 results, in the next years there will be opened a great amount of new trade offices abroad: 37% respondents reported about plans to open them in 2015-2016 (a year ago there were 15%), out of which 24% were going to do it in the non-CIS countries.

New trade offices were essentially opened by large companies that already had offices outside the cities where their head quarters were. In the previous years, small companies planned to expand their presence in other regions, but more often than not they could not afford to do it. The survey in the last two years showed that their positions were improved. According to the last survey, offices are in possession of 61% respondents with the turnover more than $5 million, and 38% respondents with the turnover less than $5 million (in the non-CIS countries 31% and 18%, respectively).

A share of companies with offices in Russia in 2014 decreased, and abroad — increased. It complies with the previously stated priorities (companies planned to open more trade offices abroad than in Russian cities).

An importance of the Ukrainian market drastically reduced owing to its contraction and deterioration of political relations between countries. However, 3% respondents plan to open trade offices in Ukraine in the next two years. A year ago none of companies had similar plans. It seems that the Ukrainian market even under contraction looks attractive, while the conflict between countries has come into stabilization phase that allows for doing business. Russian and Ukrainian IT industries cooperate as before. Though the scope of cooperation has considerably decreased, historical and economical connections are so strong that the existing problems are well-placed to be overcome.

Among respondent service companies the share of those with trade offices is much less than among software developers — 47% and 18%, respectively. At the same time, service companies more often plan to open new trade offices — 42% versus 28%.

Availability of sales agencies
(the share of the respondents who specified a country or a region)

	2011	2012	2013	2014	In 2014 planned to open at least one commercial agency in 2014-2015	Plan to open at least one commercial agency din 2015-2016
in Russia	19%	21%	34%	27%	6%	20%
abroad (non-CIS countries)	27%	26% (17%)	29% (19%)	24%	11% (10%)	26% (22%)
in Belarus	2%	6%	11%	5%	0%	2%
in Ukraine	3%	6%	14%	5%	0%	3%
in other CIS countries	6%	6%	13%	7%	2%	7%
in Western European countries	16%	5%	10%	14%	5%	13%
in Central and Eastern European countries	3%	2%	2%	3%	0%	4%
in USA and Canada	19%	15%	14%	16%	6%	11%
in South East Asia	6%	3%	3%	2%	2%	2%
in Africa	2%	0%	2%	2%	1%	2%
in South America	3%	2%	0%	1%	0%	2%
in the Middle East	3%	1%	1%	2%	0%	2%
in all countries and regions	34%	33%	40%	44%	15%	36%

4.3. Geographic distribution of software development centers

41% of respondents (in 2013, there were 50%, in 2012 – 31% and in 2011 - 35%) informed about one own software development remote center in 2014. The share of these companies varied within 25–40% during the recent years.

In this case, the margin of error was rather high, but the fact that this figure exceeded 40% for two consecutive years now suggests that, more than likely, a growing number of Russian software companies now possess their software development remote centers. Availability of foreign software development centers in 2014 was declared by 21% respondent companies.

20% of respondents (a year ago there were 22%, earlier - 16-17%) have two and more development centers, and 7% of companies (previously 14% and 7-10%, respectively) have at least three.

Among the large- and middle-sized companies these figures turn to be much higher. 64% of respondents with the turnover over $5 million inform about at least one own software development remote center, two and more — 27%, three and more — 21% of respondents.

According to 2014 data, most of Russian companies' foreign development centers were located in Ukraine before the beginning of the Maidan revolution. It can be surely assumed that this country is significantly ahead of other countries and regions by the total number of the employees working for Russian companies outside Russia.

Many Russian companies' remote development centers also operate in Belarus and other CIS countries. However, Ukraine has a special place as it is the second largest post-Soviet state (after Russia). According to Luxoft, there are about 38 thousand qualified programmers in Ukraine. Every year, the Ukrainian higher education institutions produce 18 thousand IT professionals who know English generally better than Russians.

In 2014 the situation in Ukraine has drastically changed. Though the Ukrainian legislation regulating the software company activities has not changed and the value of labor power is still much lower than in Russia, business environment as a whole in the civil war-affected country, where young men can be mobilized for active services, has become so bad that probably it will be necessary to think about translocation of developers to other countries.

Nevertheless, no case of complete closure of development centers of Russian companies in Ukraine has come to our notice. Moreover, as a year ago, 2% of respondent companies planned to open new development centers in Ukraine in the next two years (2015-2016). The majority of the Ukrainian software development centers of Russian companies are located in Kiev. The following Ukrainian cities are also mentioned: Kharkov, Dnepropetrovsk, Odessa, Kherson, Lvov, Vinnytsa, Cherkassy, and Anthracite (Luhansk region).

In Belarus, the majority of software development centers are also located in the capital city of Minsk. There are also development centers in Gomel, Vitebsk, Mogilev, Alekseyevka, and Brest.

Among other CIS countries, Kazakhstan is an attractive place for creation of remote development centers. The Baltic countries (the cities of Riga, Vilnius, Liepaja) are also mentioned.

2-3 years ago we concluded that the South European countries could be of interest to Russian software companies in terms of opening there not only trade offices but production departments as well. Average wages of programmers in these countries already are comparable with the Russian ones. Moreover, the South European countries possess idle resources, and in-house development within the EU territory allows to be located closer to customers in Western and Central Europe. In August 2015, an outsourcing company Lanit-Tercom opened a development center in the technology park of Bari (Italy). According to representatives of the company, in Bari their attention was gained by human assets provided by the local polytechnic university. If the activities of this center are successful, other Russian software companies may follow the lead of Lanit-Tercom and go to South Europe. Noteworthy is that 8% of respondent companies plan in the next two years (in 2015-2016) to open development centers in Western European countries. This value has significantly grown: a year ago similar plans had 4% of companies.

Availability of remote development centers (the share of the respondents who specified a country or a region)

	2011	2012	2013	2014	In 2014 planned to ope at least one new commercial agency in 2014-2015	Plan to open a development center in 2015-2016
in Russia	28%	24%	34%	32%	8%	16%
in Belarus	7%	8%	11%	7%	2%	4%
in Ukraine	7%	10%	14%	9%	2%	2%
in other CIS countries	3%	6%	12%	4%	3%	4%
in Western Europea countries	5%	5%	10%	7%	4%	8%
in Central and Eastern European countries	3%	1%	2%	3%	2%	5%
in USA and Canada	3%	3,5%	14%	9%	4%	7%
in South East Asia	5%	1%	3%	3%	1%	2%
in Africa	0%	0%	2%	1%	1%	2%
in South America	0%	0%	0%	2%	1%	0%
in the Middle East	0%	1%	1%	0%	1%	0%

Share of export companies that have remote development centers in 2014

	somewhere	in Russia	plan to open a development center in 2015-2016
Turnover less than $0.5 million	14%	7%	21%
Turnover from $0.5 million to $5 million.	36%	25%	29%
Turnover from $5 million to $20 million	60%	50%	20%
Turnover from $20 million to $100 million	64%	64%	18%
Turnover higher than $100 million	100%	100%	50%*

* - not 100%, because most likely specific plans have not been determined, or are not disclosed

Respondent companies have head offices and remote development centers in 50 Russian cities at least. In questionnaires in different years from 30 to almost 50 cities were mentioned but every year their composition is somewhat changed. Judging from the number of mentioned head offices or remote development centers in the surveys in the last 3 years (summing was made to lessen influence of random factors), the distribution of leading cities turned to be quite logical and generally met the rating of cities on the basis of the number of IT companies in these cities accredited at the RF Ministry of Communications.

Anyway, there must be a certain discrepancy as in our survey participate those software companies which have export earnings whereas the RF Ministry of Communications can be applied for accreditation by all Russian IT companies (not only software ones and not only exporters). However correlation with distribution of these companies by cities does exist. So the difference cannot be too big.

In the rating made on the basis of 3-year survey the first two places are naturally taken by Moscow and St. Petersburg. The same places two cities have in the rating by the number of IT companies accredited at the RF Ministry of Communications. However, the third place in the rating of software exporters took Novosibirsk, and in the rating of all IT companies — Yekaterinburg which by the number of exporters took a not so high 7th-9th place (which it shares with Omsk and small Taganrog). Such difference is quite understandable: Yekaterinburg companies are historically oriented toward Russian market whereas Novosibirsk for a long time has been promoting products and services abroad.

In the Top-10 of cities with the greatest number of software exporters almost all are million-plus cities. However there is also a relatively small Taganrog with population of about 250 thousand people (in the metropolitan area with neighboring settlements - 325 thousand people.). The second city in the exporters rating not being a million-plus city is Izhevsk. Its population is 640 thousand people and in the Izhevsk metropolitan area — 950 thousand people. In other cities townspeople are estimated at 1 million people at least. It appears that Taganrog has a favorable business environment and community encouraging creation and development of software companies — world market players.

Among cities in which missed the Top-10 of cities with the greatest number of software exporters the following cities may be mentioned: Samara, Penza, Ulyanovsk, Belgorod, Perm, Vladimir, Rostov-on-Don, Saratov and Yaroslavl. Noteworthy is that this group of twenty does not include such big Russian educational center as Tomsk which is well-known by its universities. Tomsk neither ranks among leaders in a total number of software developers.

Top-10 of Russian cities most frequently mentioned by Russian companies as location of a head office or a remote development center

	city	frequency of mention
1	Moscow	135
2	St. Petersburg	112
3	Novosibirsk	34
4	Nizhny Novgorod	16
5	Kazan	13
6	Voronezh	12
7-9	Yekaterinburg	11
7-9	Taganrog	11
7-9	Omsk	11
10	Izhevsk	10

Distribution of companies accredited in the RF Ministry of Communications by city

	city	Number of accredited	Share of city by number of accredited
1	Moscow	1754	35.0%
2	St. Petersburg	629	12.0%
3	Yekaterinburg	171	3.4%

* - the CMM was not included in the 2014 questionnaire as it was recognized as obsolete and completely replaced by CMMI

4	Novosibirsk	158	3.1%
5	Kazan	128	2.5%
6	Nizhny Novgorod	95	1.9%
7	Perm	79	1.6%
8	Izhevsk	69	1.4%
9	Rostov-on-Don	71	1.4%
10	Tomsk	56	1.1%
11	Omsk	56	1.1%
12	Saratov	51	1.0%
13	Voronezh	44	0.9%

Source: calculated according to the RF Ministry of Communications

In Moscow and in economically developed countries with a high programmers' salary level, development centers are opened purposely either to access the sources of high competence or to support customers' project by efforts of local engineers. Western companies are acquired for this purpose. For example, in April 2013, Luxoft declared its acquisition of Freedom OSS, a US developer of corporate open source software using the RedHat products. The acquisition was made in order to obtain new customers from the US financial sector.

Earlier, in the spring of 2012, EPAM Systems expanded its presence in the market of North America, having acquired for $17.4 million Thoughtcorp, a Canadian software developer with customers in retail, telecommunications, and finance. At the beginning of 2013, one more bargain with EPAM participation was concluded: the company purchased Empathy Lab, an American consulting company specializing in development of digital strategies and UX design.

30% respondent companies plan to expand the network of remote development centers or establish the first such center in the next 2 years (in 2014 there were 23%, in 2013 – 12%). Most probably, the growth of this figure is related to the upbeat mood of small ones.

4.4. Vertical markets

Over the whole period of investigations, no regular change in the importance of separate vertical markets for Russian software developers was revealed. The majority of the figure fluctuations are random or temporary. As a whole, it can be concluded that Russian export companies' industry priorities have not changed essentially for the decade.

The only clearly revealed regularity connected with vertical markets is a sharp reduction of their frequency of mention during period of crisis. In 2009-2010, software developers were forced to focus their efforts on the areas in which they were most competitive or which were least affected by the world crisis. The same significant reduction of this figure took place in 2015.

Frequency of vertical market references in 2006-2014 (% of all respondents)

Year of survey/vertical markets	2007	2008	2009	2010	2011	2012	2013	2014	2015
Infomation Technology	89%	88%	69%	71%	74%	70%	74%	75%	68%
Banking*	35%	36%	36%	28%	23%	36%	26%	27%	34%
Telecom	34%	44%	33%	29%	26%	38%	31%	35%	27%
Industries	31%	40%	31%	34%	27%	36%	38%	40%	37%
Business logistics, Travel & Transportation	24%	29%	31%	26%	28%	37%	29%	33%	31%
Government	28%	38%	25%	28%	21%	31%	24%	34%	28%
Power supply, Gas & Oil	18%	27%	24%	19%	17%	22%	22%	24%	29%
Healthcare & Pharmaceuticals	23%	29%	24%	18%	23%	29%	28%	31%	28%
Retail & Distribution	35%	38%	24%	21%	26%	41%	29%	31%	24%
Education	36%	32%	23%	24%	21%	28%	28%	31%	24%
Science & Research	-	-	-	-	18%	28%	26%	31%	20%
Gambling & Entertainment	20%	19%	11%	12%	9%	17%	15%	18%	17%
Media	-	-	-	-	13%	20%	18%	15%	18%
Sport & Travel	-	-	-	-	10%	20%	17%	18%	11%
Insurance	-	-	-	-	13%	28%	15%	15%	15%
Building & Real estate	-	-	-	-	12%	23%	17%	21%	28%
Services	-	-	-	-	27%	40%	35%	31%	26%
Finances	-	-	-	-	25%	30%	26%	27%	21%
Energy	-	-	-	-	17%	22%	21%	20%	24%

* before 2011- Banking & Financial Services

Chapter 5

Human resources

5.1. Assessment of general situation with human resources in the industry

In 2013 we considered that at least 120 thousand software developers worked for Russian software industry (including staff of local development centers of Russian companies oversees). At the same time the total of more than 400,000 people dealt with software development in all sectors of Russian economy. In early 2014, the number of professional developers in software companies increased by more than 11 thousand. Out of this number no less than 4 thousand new employees appeared in development centers of Russian companies abroad. Altogether, the number of software developers in all sectors of Russian economy increased by more than 30 thousand people. The headcount growth in software companies on average amounted in 2013 to 8-9%.

Much the same increment rate was determined by ANCHOR High Technologies recruiting agency. According to their information, the number of software developers in Russia in the recent years is increasing approximately by 9-11% every year.

Judging from all respondents in 2015, the total increment growth in 2014 was 17%. The major part of it was provided by two large outsourcing companies which recruit staff mainly in their foreign development centers or increase staffing level as a result of acquisitions in different countries. So in calculation of staffing level of companies in Russia it would be more correct to rule out the data of these two companies, or rather to exclude the increment rate of their foreign development centers from the calculation. In this case the cumulative growth rate of staff of software development companies in Russia will run at 5-7% of the total staff at the beginning of 2014.

Therefore, by early 2015 in Russian software industry (including development centers of Russian companies abroad) there were available about 150-155 thousand software developers, among them 115 thousand people working in Russia, and 35-40 thousand people - in development centers of Russian companies abroad. If we look at statistics of vacancy rate in IT industry provided by recruiting agencies, we will see that in all branches of Russian economy the number of software developers has moderately increased (less than by 5-7%). The total number of all software developers engaged in various branches is no less than 440 thousand people.

This spring, we had another opportunity to validate our calculations of number of programmers in Russia. The Moscow IT Department published information about citizens working in IT sphere. According to this data based on Rosstat's (Federal Service of State Statistics) statistics for Moscow, something like 140 thousand programmers work in Moscow. As it is known from different sources that Moscow accounts for a little more than 1/3 of Russian software development engineers than the total number of programmers in Russia may be appraised at 430-440 thousand people. We have done similar validations before. The error may amount to tens of thousands people, but it is extremely unlikely that a total number of programmers working in Russia is outside the range of 400-500 thousand people.

The total number of Russian employees in software development industry (with allowance for secretaries, marketing and sales managers, and other employees) is much bigger.

According to the ANCHOR High Technologies (2-3 years ago), 26% of Russian software developers are employed in Russian software companies. Others work for the IT divisions of

government institutions, banks, large industrial corporations, Internet companies, and so on. A share of programmers in software companies throughout last year could somewhat increase but no more than by 1-2 percentage points.

Approximate distribution of software developers by the largest cities of Russia

Moscow	35%
St. Petersburg	15%
Yekaterinburg	5.2%
Novosibirsk	5%
Nizhny Novgorod	2.5%
Kazan	2.4%
Voronezh	1.2%

Source: ANCHOR High Technologies

Distribution of vacancies of IT engineers by cities in 2015 (% of all corresponding vacancies in Russia)

Moscow	32%
St. Petersburg	11%
Voronezh region	5%
Moscow region	4%
Nizhniy Novgorod region	3%
Republic of Tatarstan	3%
Novosibirsk region	3%
Rostov region	3%
Krasnodar Territory	2%
Samara region	2%

Source: HeadHunter

Distribution of vacancies of young IT engineers by cities in 2015 (% of all corresponding vacancies in Russia)

Moscow	22%
Moscow region	12%
St. Petersburg	7%
Nizhniy Novgorod region	4%
Republic of Tatarstan	4%
Krasnodar Territory	3%
Rostov region	2%
Perm Territory	2%
Sverdlovsk region	2%
Voronezh region	2%

Source: HeadHunter

According to the surveil of 2015, the total number of employees of companies specialized in software development at year-end 2015 will be greater than in 2014. This suggestion stems from the observation that almost all respondent companies not without reason count on improvement of basic indicators (primarily, income), whereas in order to widen the business activity they will have to carry out more active recruiting. First and foremost, it concerns software development service providers. However, product companies also need human resources for import substitution that will also require an additional state support, but this will happen in any events, even with the minimum state support.

At the same time, in the face of the negative geopolitical situation for Russia, at the Russian labor market we have a generally favorable ballgame for staff increases. First, in 2014 the hiring of graduates was less intensive than in previous years (therefore, some recent graduates could not find employment for a time). Second, sharply increased migration of IT engineers from Russia's neighboring countries (see next section). Third, there are several thousand skilled programmers in the Crimea which in March 2014 returned into the framework of Russia. Due to the sanctions of the USA and the EU against Crimean enterprises and also the closure of local offices of Ukrainian software companies after demand of the Ukrainian Government, a lot of them lost job. The process of companies' closure was protracted for a long time. So a number of CVs from engineers who live in the Crimea continues to grow in 2015 as well.

According to HeadHunter, on its site hh.ru one year ahead of the spring of 2014, there were published some 4 thousand applications of Crimean applicants in the category "IT and Telecom". Every month the amount of new resumes is gradually growing.

Prior to accession of Crimea to Russia, in Sevastopol the development centers of Russian software companies already were in operation. Their staff in 2013 was accounted for in determination of the total number of developers of all Russian software companies. However these centers were relatively small (with 20-100 employees at most).

According to recruiting agencies, an increase in staffing level in 2015 is planned by no less than a half of Russian software companies. According to enquiry of IT-Dominanta, these are plans of 58% of St. Petersburg companies. Kelly Services reported that a share of Russian IT companies having free vacancies increased from 44% from 2014 to 58% in 2015. According to HeadHunter, in St. Petersburg the growth of IT vacancies is observed: after decrease from 115% (the level of January 2014) to 88% in January 2015, this indicator increased by early summer to 111%. It is important to emphasize that in the whole IT sector the situation is not that good as in the software sector which to a large extent is oriented toward foreign market. If the gross income of all Russian IT companies in dollar terms is decreasing, that of software companies is growing.

According to our polling, 54% of software companies plan to increase staffing level in 2015, and only 7% plan to cut down the personnel. Reposing on plans of companies, the total number of employees will increase by 8% throughout the year. Some respondents informed about plans to increase staff but did not report a specific increment rate. It appears that hiring will be carried out as far as reasonably practicable.

5.2. Labor force migration

A year ago we could declare that migration pressure did not have any significant effect on the number of programmers in Russia. Historically, the largest migration of software developers was observed from 90-s to the middle of 2000 years approximately. From the beginning of 90-s of the last century for 15 years the outflow of human resources to countries outside the CIS was a serious problem for Russian software companies. Just about 2005-2007 the salary increase in Russia was so significant that for many developers there was not much sense to go for earnings to another country. Some engineers who had left Russia before came back to Russia. At the same time a steady flow to Russia of software developers from Belarus and Ukraine was observed (including those who came to Russia to get education and found a job after graduation).

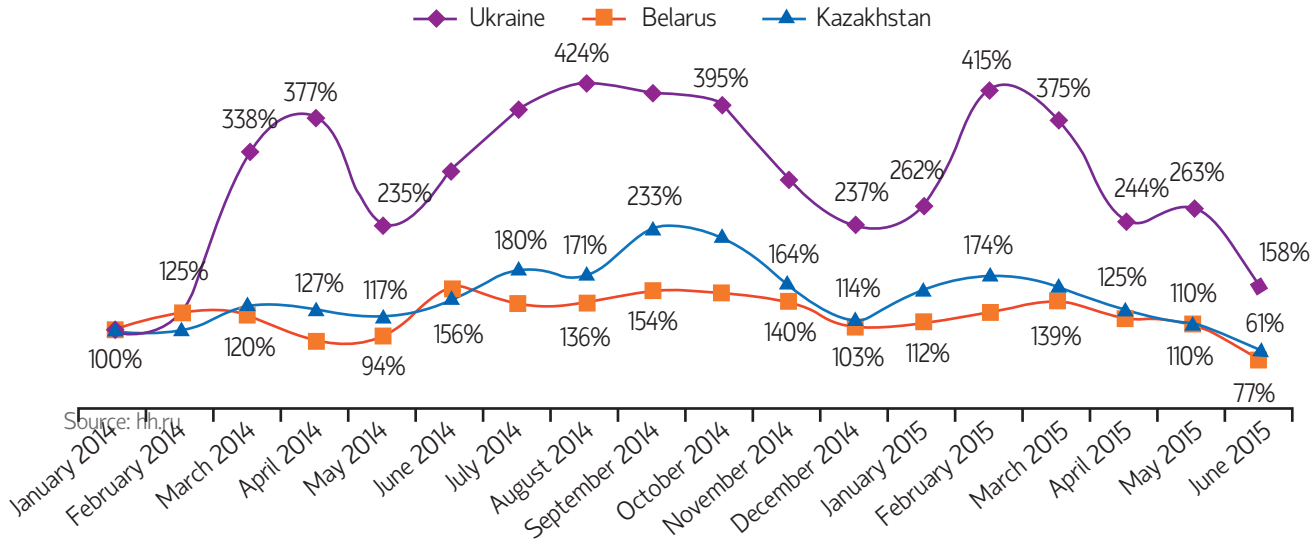
In recent years (up to the beginning of Ukrainian crisis) migration to both sides reduced. The outflow of human resources fell short to be a problem. At the same time, the invitation of engineers from former Soviet republics also ceased to be a significant source of recruitment. Russian companies more frequently wended the way of opening development centers in Belarus and Ukraine. Especially since the tax legislation in these countries was more favorable for software development than in Russia.

As a result of events of the last 1.5 years (conflict in Ukraine, the weakening ruble) one can no longer state as insignificant the impact of migration on Russian labor market. Still there is no any even crude data on migration flows of programmers. However, theses flows have arguably increased. One of the reasons to think so is that in 2014 and in first months of 2015 the number of Ukrainian applicants to vacancies in IT industry in Russia substantially increased. According to the HeadHunter experts, this figure was changing in the last year and a half due to seasonal factors. But they also relate the sharp increase in certain periods of time to escalation in Ukraine. Thus, for example, after the New Year's off-season in labor market in January 2014, the number of applicants ready to move to Russia from Belarus and Kazakhstan that spring increased by 20-27%. Such fluctuation can be seasonal. At the same time, after events on Maidan in February-March 2014, the number of applications of Ukrainian IT engineers in the same period increased almost 4-fold (by 277%, look at the table).

A next spurt in applications for employment in Russia was in the summer of 2014 – after tragic events in Odessa on the May 2nd.

According to publications in Ukrainian media, a problem of mass emigration of IT engineers is really serious. However, these publications, as a rule, write about the West as the destination of migration flow. From the standpoint of wages, seeking a new job in western countries is a better choice compared to Russia where salaries in dollars also decreased in the last year and a half. However, many Ukrainian IT engineers do not know foreign languages. So it is much easier to find job outside Ukraine just in Russia, as the Russian language as a rule is their native.

Dynamics of number of applicants from Ukraine, Belarus and Kazakhstan in IT sphere in 2014-2015



Source: hh.ru

Noteworthy that a significant increase in applications for letters-of-offer in Russia in 2014 was also observed from engineers of Kazakhstan and Belarus - countries without take-over, without other political tempests and civil war inherent in draft for military service. However, in 2015 the number of applications declined up to 77% and 61% respectively (versus January 2014).

There is another reason to state about increase in the number of IT engineers (including programmers) moving from Ukraine to Russia - the data of the Russian Federal Migration Service (FMS). If according to this information, 50 thousand citizens of Ukraine moved to Russia in 2012 (2nd place after Uzbekistan with 88 thousand people). Since April 2014 by the end of the year in Russia entered and did not go out more than 800 thousand Ukrainian citizens. In January 2015, according to FMS, 280 thousand inhabitants of southeast of Ukraine officially filed applications for asylum and refugee status in Russia. Many of migrants stay at their Russian relatives and do not apply for refugee status.

Refuges from Ukraine, according to Russian legislation, can provide a simplified set of documents under the state program of resettlement of compatriots and promptly enough gain Russian citizenship. It also promotes emigration of qualified engineers to Russia.

Since the Ukrainian crisis the Russian Government made some decisions promoting the inflow of foreign engineers. These decisions will presumably allow for attracting up to 200 thousand people from abroad in a few years by 2020.

Particularly, in order to realize targets in the autumn 2013 the Ministry of Communications and Media of the Russian Federation proposed to lower the minimum rate of wages of a foreign IT-engineer from 2 million rubles per year to 1 million rubles. It will allow for inviting not only very expensive foreign professionals, but also those who lay claim on an average salary for the IT specialist (or just above average). Experts expect that the highest inflow of developers will come from the former Soviet republics (from Ukraine, Belarus and other CIS countries). At the same time, the terms proposed by employers to programmers in Russia are also sufficiently attractive for developers from Southeast Asia and even from Southern Europe where the rate of unemployment is rather high.

According to the research of the international recruiting company Kelly Services conducted in February-March 2014, the indicator of loyalty to the employer in Russia is one of the world-highest. One of the key factors influencing personnel loyalty level is “a feeling that employer appreciates their contribution to the development of organization”. The satisfaction of Russians by this criterion is comparable to that in the countries of the Asia-Pacific region, where to the same question the majority of respondents answer that their management “values highly” or “thinks no end” of them. The highest percentage of these employees is noted in Russia (62%), Thailand (58%) and Indonesia (57%), and the lowest – in Italy, Portugal and France.

How many out of almost one million Ukrainians moved to Russia in 2014-2015 are IT-engineers or programmers, is difficult to determine. On the one hand, the mass exodus from Ukraine is not determined by affiliation with one or another branch of economy. To begin with, people go out in thousands from the most dangerous places. On the other hand, IT engineers are more prepared to leave than others, and it is an easy task for them to find job in Russia. In addition, as far as job is concerned, things are getting worse in Ukraine in these latter days, and contraction of IT market is manifested even more than in Russia. It is known that to vacancies of Russian companies respond not only inhabitants of war-struck regions but also citizens of relatively well-to-do Kiev where salaries are not much lower than in Russia (lower than in Moscow and St. Petersburg, but higher than in Russian regions). According to HeadHunter, in Q2 2015 the number of responses to the Russian vacancies from Ukrainian IT engineers was slightly over 25 thousand, and in Q1 – slightly over 40 thousand. Examples seem to indicate that roughly ¼ of applicants interested in vacancies in the neighboring state make a decision to go. However, this proportion can considerably fluctuate in different times and in different countries.

The representatives of respondent Russian companies, which have development centers in Ukraine, say that they do not close or decrease their Ukrainian branches. As a rule, these are companies oriented toward western markets and engaged in customized software development in Ukraine. Most likely, the same relatively stable position is typical for Ukrainian outsourcing companies which specifically work for export. For them a decline in the exchange rate of national currency is even a blessing. The employees of Russian development centers and Ukrainian software export companies hardly aspire to leave for Russia by the score. First, they have not lost job. Second, on the whole they have a good command of English at least meaning that can count on successful job hunting in western countries.

Nevertheless, it may be assumed that several thousand Ukrainian IT engineers came to Russia within the last year and a half. As estimated by the State Agency of Science, Innovations and Computerization of Ukraine, in late 2012 a total number of IT engineers in Ukraine were 215 thousand people - less than 1 % out of the able-bodied population of the country. Taking into account that IT engineers amount to the same 1% out of the almost 1-million flow of Ukrainian refugees, we obtain almost 10 thousand people. About a half of them are programmers.

People come to Russia not only from Ukraine. For example, in Kazakhstan and Belarus there are little less potential in-migrating persons. According to HeadHunter, altogether the willingness to work in Russia is expressed by IT engineers from several tens of countries. But a significant number of such engineers exists only in three states — Ukraine, Kazakhstan and Belarus. They are trailed far behind (a number of applicants is ten times less) by Moldova, Armenia, Germany, USA, Latvia, Italy, and India.

Even two years ago we thought about Western Europe as a potential donor concerning IT engineers. In Southern Europe the programmer salaries were comparable to Russian wages, at the same time many young engineers were unemployed. In EU the situation in software development looks paradoxical — a high level of unemployment along with a huge manpower shortage. From 2006 to 2013 the number of graduates specialized in IT decreased by 13%. According to the report of the European Commission, within five years the number of available vacancies in IT sector can grow to 825 thousand. To solve this problem several educational projects were set up in the EU. In 2013 Grand Coalition for Digital Jobs Program began with training in IT specialization in Bulgaria, Greece, Italy, Malta, Lithuania, Latvia, Poland and Romania. Later they were joined by Belgium, the Netherlands, Cyprus, and the UK. In the UK an objective is set to train 1 million of IT engineers. Even with all things concerned in some countries programmers cannot find job (primarily, in Southern European countries).

ZDNet reported that in the last 5 years thousands of software developers were forced to leave Greece. In fact, over this period about 200 thousand people under 35 years of age left the country. Mostly they represent three sectors of economy — medicine, finances, and IT. Even if a programmer can find in Greece job in “software development”, the whole situation hardly will satisfy this person.

As evidenced by enquiry of MarketWatch, the problem of skilled manpower drain exists not only in Greece, but also in Spain, Italy and Portugal. Thus, for example, 82 thousand people of able-bodied population left Italy in 2013, 30% of them were graduates of higher education institutions. However all this flow went primarily to other EU states as well as to Canada and the USA.

Quite a number of engineers from Western European countries work in Russia, but not enough to appreciably impact on the local labor market. As a rule, such professionals hold key positions for

It is important to clarify that the readiness to move to Russia far from always means that this transfer is settled. If one builds a rating based on the real flows of IT engineers to Russia, the figures may significantly differ from those in the above mentioned Top-10 in terms of readiness to move. A share of Ukraine there should be much greater. In this country the readiness to go means much more than in other countries donors when it comes to IT engineers. In the last 15 years Ukraine lost, according to various estimates, 10-15 million citizens. For the country which population not long ago amounted to 55 million people, it is too many. Mass migration began before events on Maidan. It should be pointed out that Ukrainian refuges most likely post CVs on site hh.ru already as inhabitants of Russian cities where they have found a temporary shelter.

Top-10 of countries, IT engineers thereof are ready to move and work in Russia, % out of all who wish in all countries

1	Ukraine	10.8%
2	Kazakhstan	9.5%
3	Belarus	8.5%
4	Moldova	1.2%
5	Armenia	1.2%
6	Germany	1.0%
7	USA	0.6%
8	Latvia	0.5%
9	Italy	0.4%
10	India	0.4%

Source: hh.ru, 2015

For the foregoing reasons, it may be assumed that in the last year and a half 5-10 thousand software developers from the neighboring (and not only neighboring) countries should have additionally appeared in the Russian labor market (according to HeadHunter, in Russia entered no more than 5-7 thousand). With allowance for the fact that in 2014 the total number of programmers in Russian software companies increased by a roughly similar value, while in other branches the number of working programmers somewhat decreased, such inflow of resources from abroad must have a serious impact on Russian labor market. It seems that it is evidenced by increase in the average number of resumes per one vacancy.

According to HeadHunter, in H1 2013 in Russia there were received 2.5 CVs/vacancy. In H1 2014, this figure increased to 2.9, and further it increased first to 3.3 and then, in H2 2015 to 4.2. In Moscow and St. Petersburg the dynamics is similar, but this figure is greater than national average — 5.1 and 4.9, respectively. Besides, prior to H2 2014, the ratio of amount of resumes and vacancies in both Russian capitals was almost the same as for the whole country. In Moscow it was even the lowest. Situation with the beginning of conflict in Ukraine drastically changed. Moscow has shot ahead and in the second half of the year currently has the indicator which is much greater than national average. It is well-known that migrants (especially, IT engineers) first of all come to Moscow and St. Petersburg. Moreover, they have a greater interest in Moscow that in St. Petersburg.

Correlation of the number of resumes and vacancies grows to a larger extent with the increasing amount of applicants than want ads. For example, according to HeadHunter, in April 2015 the number of vacancies in IT industry in St. Petersburg exceeds the same indicator of January 2014 only by 11%, whereas the number of resumes — by 74%. Before July 2014 these values differed little, then the number of offers at St. Petersburg labor market sharply increased: first by 46% versus January 2014, then after a small seasonal drop in New Year holidays - by 77% in March. Demand fluctuated within 88-115% versus the level in January 2014 (first increased to 115%, then dropped to 88% in January 2015, and again grew and amounted to 111% in April 2015).

Such big increase of offers in labor market partially can result from activity's decrease of IT companies and of IT departments of enterprises in all economy branches due to contraction of Russian IT market and to economic crisis in Russia. However the IT market decreased only in dollar

terms. In rubles, in which the salaries of IT professionals are denominated, in 2014 it remained unaltered. Even if decrease in ruble terms began, it occurred in 2015, when in this connection mass dismissals could start. However nobody reported about mass dismissals, in the last 1.5 years the staff of software companies was growing. The majority of IT companies, according to different enquiries, by no means plan to cut the personnel. For example, according to survey of Hay Group in February 2015, 53% of IT companies stated that did not yet plan to optimize the staff number, 31% - had not make decision (it means that there is no urgent needs to cut back staff, and possible dismissals will not be mass-scale) and only 16% had such plans.

Therefore, the Russian labor market was influenced not only by reduction of staff of IT companies in Russia, but supposedly to a greater extent by migration flows. Especially that we have not only inflow but also outflow of human resources to other countries.

According to recruiting agencies, in the last year and a half the number of IT-engineers wishing to leave Russia has also increased. The main reason is reduction of wages in dollar terms. If in the previous years, wages in dollars increased even slightly, by summer of 2015 they dropped by 20-30% compared to pre-depression level. However, it is even more difficult to determine the scope of outflow than that of inflow. One might assume that the leaving abroad of IT engineers (particularly, programmers) is not such mass-scaled as admission of new onces.

Information is available only about the big number of people who wish to work abroad and not about the number of those who have already left or are going to leave before long. In May 2015, according to polling of HeadHunter and Fontanka.ru portal, in St. Petersburg and Leningrad region, 58% of IT engineers admitted possibility of going abroad for a good job. However, only 18% of respondents were in the thinking box, 23% just wondered (probably, even had not began to look for a job abroad), and 17% - admitted possibility of leaving, but had not thought about it before they were asked.

In 2011, the results were similar. According to enquiry on hh.ru portal, 63.7% of Russian programmers were ready to leave Russia for a time or forever for the career abroad. In Ukraine in the same period there were about the same number of those who wished to leave. According to enquiry of Ukrainian HeadHunter (hh.ua), they were 63.1%. Surveys showed that Ukrainian and Russian programmers had different reasons for external labor. Most Ukrainians (52.6%) desired to leave their country for high living standards, 45.2% mentioned social safeguard, 40% - higher salaries, and only 36.9% - chance of gaining new knowledge. For Russians the priority was foreign experience (44.6% of respondents), and only then high living standards (44.4%), social safeguard (42.1%), and salary (26.5%).

Since 2011 enough time has passed to transform intentions into actions. But in Russia there was not and is not any mass migration of programmers. According to enquiries performed, the main factor that prevents them from leaving is irresolution of mind. By this reason about 80% of those who wish to work abroad refrain from actions. For another 16% desires are kept within compass due to poor knowledge of foreign languages, and 8% - due to lack of technical knowledge. The importance of these factors was about the same for both Ukrainian and Russian programmers, but in Ukraine in the last year and a half the resoluteness was influenced by economic and political events, while a poor command of foreign language does not prevent from leaving for Russia. Combination of these two factors stimulated Ukrainian developers to move to Russia.

Chances are that even if the number of Russian programmers who left the country have increased after drop in the exchange rate of the ruble and hereto related decrease of salaries in

dollar terms, it hardly exceeded 1-2 thousand engineers. Those who leave are the most competent developers with a good command of foreign languages. Some companies can be adversely affected by this outflow but for the whole industry it is not very important yet.

Top-10 of countries where Russian IT engineers think of going to (% of total amount of software developers)

1	USA	2.7%
2	UK	1.8%
3	Canada	1.7%
4	Germany	1.1%
5	Australia	1.0%
6	The Netherlands	0.9%
7	Spain	0.9%
8	Belarus	0.9%
9	Sweden	0.9%
10-11	Switzerland	0.8%
10-11	Italy	0.8%

Source: according to hh.ru, 2015

Monthly average fixed salary of an experienced IT engineer in some countries, €

USA	6821
Germany	5192
UK	4484
Finland	4112
Singapore	4090
Turkey	3190
Beijing	2620
Russia (June 2014)	2546
Shanghai	2528
Czech Republic	2148
Russia (January 2015)	1634

Source: CNews, Hay Group

5.3. Rotation and personnel deficiency

The share of companies, which throughout 2013 did not hire any new staff, decreased almost up to pre-recession level and amounted to 11%. Before 2009 this indicator fluctuated within the range 5-10%. In 2010 it increased to 28%, and in the next 2 years decreased to 15-16%.

Following the results of 2014 (which is considered to be a recession year) this value again increased but this time only to 20% and not to 28% as it was in 2010 (based on this indicator and on other symptoms the current crisis turns to be less serious than that 4-5 years ago).

Share of companies which did not hire new employees in 2012-2014, depending on the turnover

year	over $100M	from $20M to $100M	from $5M to $20M	from $0.5M to $5M	less than $0.5M
2012	0%	9%	11%	8%	59%
2013	0%	14%	0%	10%	26%
2014	0%	0%	10%	20%	50%

One should separately consider the activity in labor market of companies with the turnover less than $0.5 million. In 2013, 26% of these companies hired nobody. A year before they were 59%. It may be assumed that the increase in activity of these companies in labor market in 2013 was related to the general improvement of small business environment. They are supported by venture funds, regional and federal small business support programs. Besides, activities of small businesses could be influenced by reduction of the company staff size from 30 to 7 persons to have the right to use the preferential social tax rate.

In 2014, the share of companies with turnover less than $0.5 million, which hired nobody, increased to 50%. In some degree it is related to crisis. However, it should be considered that the number of these respondent companies are sweepingly reduced, and the sample becomes too small to make firm conclusion. Before entering into our database and becoming participants of survey, successful startups have managed to clear the bar of $0.5 million Companies which stayed in the market for 5-6 years and did not grow, by this time frequently have ceased to exist. Enterprises with the turnover less than $0.5 million become endangered species in our survey. Thus, beginning from the next year we will increase the turnover level for the smallest companies up to $1 million.

The indicator of turnover of staff in 2011-2012 did not change being at a sufficiently low level — 6%. By year-end 2013, it somewhat increased (to 7.7%) jointly with activity of employers, and in 2014 decreased again — to 5.7% in the context of decreasing vacancies and absence of large-scale dismissals. In comparison with other countries, this indicator remains low being one of the national competitive advantages.

The turnover of staff is slightly higher in small enterprises: in companies with the income more than $20 million it is 5.4%, and in companies with income less than $20 million – 7.1% (in companies with income less than $5 million, the turnover of staff is 6.6%).

Annual turnover of staff depending on company size

year	over $100M	from $20M to $100M	from $5M to $20M	from $0.5M to $5M	less than $0.5M
2012	4.56%	8.9%	9.02%	8.41%	4.76%
2013	7.7%	7.4%	7.8%	8.2%	13.1%
2014	5.0%	6.5%	7.4%	6.6%	7.7%

Due to the crisis and to decline of average growth rate of staff number, the share of graduates in company staff significantly decreased. If over the period of obvious technical rally in the market it increased at year-end 2013 from 4.6% to 8.4%, then in 2014 this indicator dropped to the all-time low — 0.8%. Stemming from our results, the largest companies almost totally ceased to hire recent graduates, in the staff of all respondent companies with the turnover more than $20 million there were just 0.1% of graduates. However, it must be confessed that this value too greatly depends on random factors. If a respondent who presents a large company made a mistake answering to questionnaire, then a value of this indicator for the whole industry might change by several percentage points. For companies with the turnover less than $5 million a share of graduates in company staff remains roughly at the same level as it was in recent years — 5.8%.

In spite of potential impact of random factors, young engineers become less interesting to large companies. Previously, large companies also preferred the most gifted candidates, and conduct mass-scale recruitment campaigns primarily among engineers with working experience in IT. The graduates are hired with pleasure by small companies (clearly due to considerations of saving personnel costs). In 2013, owing to the technical rally in the labor market the situation has changed. Large companies joined in a campaign of attracting graduates, not only in IT sphere but in other branches of Russian economy as well. The enquiry of the recruiting portal Superjob.ru in the middle of June 2013 demonstrated that 72% of Russian enterprises and organizations hire graduates without record of service. Two years ago there were 66% of such employers, and in 2009 - 54%.

In 2014, the interest in graduates by large software companies decreased. First, the needs in expansion of offices in Russia lessened. Second, due to economic crisis and thereto related drop of IT market, a sufficient amount of engineers with high experience appeared in the labor market.

The technical rally in labor market during almost all years under investigation is noted in St Petersburg. This city leads in indicators of staff turnover and of share of hired university graduates. In addition, St. Petersburg traditionally has the least number of companies that employed no new staff. Though in these three indicators, St. Petersburg can be compared only to Moscow and to the whole Russia. The coverage of other cities in our survey is too scarce.

Generally the metropolitan companies reduce staff less than the companies from other towns and more often employ nobody.

As a whole, the situation in the labor market in various cities and regions year after year is smoothened. However, a year ago we assumed that adjustment of indicators characterizing the activity of the Russian software companies on labor market can be disturbed due to anticipated in 2014-2015 mass inflow of developers from abroad (primarily from Ukraine). In all appearances, that is what happened.

Activity of respondent companies in labor market depending on location

	at year-end 2012			at year-end 2013			at year-end 2014		
	Hired nobody	Staff turnover	Hired graduates	Hired nobody	Staff turnover	Hired graduates	Hired nobody	Staff turnover	Hired graduates
Moscow	29%	4.4%	2.4%	15%	7.2%	8.2%	25%	5.2%	0.4%
St. Petersburg	11%	9.7%	9%	4%	9.5%	9.3%	10%	9.2%	1.2%
Regions	11%	8.5%	7.6%	11%	7.4%	8.2%	21%	5.4%	1.9%

A year ago, for the companies that have stayed in market over 5 years all indicators of personnel development were much worse than that of young companies (staff turnover almost twice greater, the share of graduates almost twice less, and the share of companies with zero recruitment more than twice bigger). The explanation was that the government and different non-governmental structures (accelerators and venture funds) support first and foremost startups and not the entire small high-tech business. At year-end 2014, any superiority of young companies is nowhere seen. Their staff turnover indicator is even much worse than that of mature companies.

This smoothening can be explained by the obvious cyclical nature of development of the whole high-tech business in Russia. Five years ago financing was abundant, afterwards funding of startups by venture investors became much more cautious. Perhaps, some already established companies are forced to be self-reliant.

Activity of respondent companies with the turnover less than $5 million in labor market depending on year of foundation

	Companies established before 2009	Companies established in 2009 and later
Staff turnover	5.8%	14.9%
Share of graduates	6.1%	4.8%
Zero recruitment in the last year	26%	20%

During all years under investigation, more active in the labor market were the companies - more geared they were to foreign markets. This rule was broken by the results 2012 when there were no dependency between the active recruitment by companies and their preferential orientation towards foreign or Russian market. By the results of 2013, such variations were almost missing too, in particular, in two indicators – the staff turnover and the share of university graduates. Companies more geared to foreign markets were a little bit ahead. However among companies that obtained over a half of their revenue from software export almost none employed nobody (only 3% in this category whereas among the companies with preferential orientation towards Russia - 13%).

In 2014, companies with more than 50% of income from export retained a small advantage in labor market. Among them there are less companies with zero recruitment (16% versus 21%) and with lower staff turnover (5.3% versus 7.4%). These companies almost did not hire graduates (increasing staff by recent graduates only by 0.3%, whereas companies more oriented toward Russian market have 2.8%). The reason is that companies with a high export share could afford to hire more professional developers (in labor market the competitiveness of companies with preferential orientation towards foreign markets has increased due to the weakening ruble).

Java and C# developers were demanded much more often for work at foreign markets in 2014 (these developers were hired by 34% and 39% correspondingly by companies with more than 50% export turnover, while companies with a smaller share of export – by 18% and 16%, respectively). For work in the Russian market the demand for Web programmers PHP/MySQL is the highest (21% versus 8% in 2014). Similar differences in demand for specific engineers were also observed following the results of 2012-2013.

Since 2008, changes in demand for developers with different specializations among all respondent companies has been varying modestly. The top three of the most demanded specializations throughout these years stably includes only developers of C/C++, Java and C#.

Among other most demanded specialists which were not included in the Table, are 1C and Python programmers (twice mentioned). Wanted also were database administrators, business analysts, applied software developers (also traditionally were mentioned not technical jobs – sales managers, marketing experts).

Most popular specialists that were employed by respondent companies in 2008-2014

	2008	2009	2010	2011	2012	2013	2014
Developer (C/C++)	42%	30%	25%	29%	26%	28%	24%
Developer (Java)	29%	29%	21%	30%	17%	26%	23%
Developer (C#)	20%	19%	18%	28%	23%	27%	24%
Developer (DB)	4%	5%	2%	4%	4%	4%	3%
Test engineer	9%	14%	13%	22%	16%	15%	11%
Web programmer (PHP/MySQL)	21%	11%	13%	13%	18%	20%	17%
Web programmer (ASP.Net/MS SQL)	16%	7%	4%	15%	13%	10%	9%
System administrator (Win)	2%	4%	7%	8%	6%	6%	2%
System administrator (UNIX)	2%	4%	2%	5%	2%	3%	1%
Others	8%	16%	11%	19%	15%	16%	13%
Average number of mentioned categories	1.53	1.39	1.16	1.73	1.4	1.55	1.26

Most popular specialists that were mostly employed by respondent companies in 2014 depending on location of respondents

	Moscow	St. Petersburg	regions
Developer (C/C++)	19%	26%	27%
Developer (Java)	17%	39%	18%
Developer (C #)	19%	26%	25%
Developer (DB)	0%	10%	2%
Test engineer	14%	19%	4%
Web programmer (PHP/ MySQL)	19%	16%	16%
Web programmer (ASP.Net/ MS SQL)	11%	10%	7%
System administrator (Win)	0%	0%	4%
System administrator (UNIX)	0%	0%	2%

In 2014, HeadHunter evaluated the personal qualities most frequently mentioned in CVs by job applicants to attract employer's notice. It was found out that differences between Moscow, St. Petersburg and other cities are very big. In St. Petersburg and in the regions the first place took responsibility (35% and 54%, respectively). In Moscow this characteristic was not included even in the first three qualities. In the capital the most frequently mentioned were communicability (31.5%), ability to handle stress (18%) and commitment (13%).

In the context of lack of professionals it becomes more and more important to provide a maximum efficiency of available personnel, among other things, by engaging them over the periods of temporary lack of projects (that is very typical for service companies). To solve this task in May 2013 the RUSSOFT Association and the TEAM FORCE international resource company signed a Cooperation Agreement regarding development and operation of a system exchanging information about temporarily available developers' resources.

Demand for categories of IT-engineers in Russia in July 2015, number of resumes per vacancy

System administrator	42.5	Java programmer	2.7
Technical director	21.2	PHP programmer	2.7
IT director	20	Developer Oracle	2.5
IT project manager	15.1	Programmer 1C	2.4
Programmer C++	5.8	Python programmer	1.8
System analyst	5.6	Mobile application developer	1.6
Test engineer	5.1	Programmer Ruby	1.6
Web developer	4.3	IT sales manager	0.7
Programmer C#	3		

Source: hh.ru portal

According to HeadHunter's survey, the most promising professions in the IT area are: traffic arbitration specialist, computer graphics designer, data scientist, UX designer, mobile game programmer, information system architect, cloud solution developer/programmer (cloud technologies). Other promising jobs that appeared in Russia before 2011 are as follows: GUI designer, usability specialist, Ruby on Rails developer, iOS developer.

Following international experience, Russian higher education institutions create new specialized departments with participation of a Russian or a foreign company. Thus, for example, in the Ural Federal University there was established department "Big Data Analytics". The required equipment and software for studies in Big Data in this university was supplied by Teradata in the end of 2014.

5.4. Labor compensation

In the last 2 years, the software developers' wage increase was low — at the level of official annual inflation. In 2013 it amounted to 4.5-7% in ruble terms, and in dollar terms - even lower by a few percentage points.

According to our survey, in 2014 an average salary in software companies was increased by 11.6% in ruble terms. It is slightly higher than official inflation which at year-end was 11.2%. In dollar terms, for the first time in many years wage levels decreased roughly by 6%.

According to recruiting agencies, the total wage increase in 2014 in the IT-sector was 3-5%. This agrees with our results since software companies contrary to all IT companies increased staff supporting a higher wage level.

At the same time, it should be taken into account that in our survey the average value was greater influenced by major exporters who have the wage increase higher than industry-wide. The difference may be seen if we look at the growth rate of companies with different share of export in comprehensive income. If the share of export is more than 50%, then the increase of average wage by the results of 2014 is 12.8%, and if is less than 50% - then 6.3%. In this case difference in pay is due to stricter requirements to employees who work on export, and to a higher ability to pay (based on income from foreign customers). Just thanks to fluent English, software developers can count on 10-20% raise.

An average wage was increased by 71% of companies mostly oriented toward foreign markets, and just by 45% of companies which income generally comes from sales in Russia.

Data on increase of an average salary obtained from different sources not always coincide. The existing diversity is explained by specific features of procedures, size and structure of data files under consideration, by comparison periods and finally by measurement error. Some companies determine the remuneration dynamics by actual payable average amount, the other companies - by salary offers for available vacancies. Various recruiting companies can acquire information from widely different companies. Besides, the distinction between research results may be caused by the method of determination of the pay increase in one or another month (for example, in January of this year to January of the previous year) or as a full-year average value. Almost all discrepancies in data on programmer wage increase in 2014 may be explained by these different methods.

An average wage was increased in 53% of respondent companies, and decreased in only 3%. 5% of respondents did not answer to this question; the rest of companies reported that the situation remained unchanged.

The dependence of average salary growth on company size is law. In companies with the turnover less than $5 million the increment is 9% (in ruble terms) and in larger companies — 11.9%.

The "Salary index SJ" of the superjob.ru portal for IT-specialists (not only programmers) that reflects the monthly dynamics of average salary offers in 2014 was increased by 4.2% (a year ago it was 6.5%). For Java programmers this value is 5%.

In 2015 the growth of wages continued but only in ruble terms. In dollar terms wages decreased to the middle of the year approximately by 20-30%, that considerably advanced

competitiveness of Russian software companies in the world market (primarily, of software development services providers).

According to HeadHunter, wages of entry-level engineers in St. Petersburg increased from 40 thousand rubles in Q3 last year to 46 thousand rubles in Q2 2015. In Moscow, vice versa, the cumulative income of them lowered. Earnings of experienced engineers increased both in Moscow and St. Petersburg. A similar situation is observed among leading developers and project managers. Wages of employees at the expert level in St. Petersburg decreased from 138 thousand rubles to 126 thousand rubles, quite the opposite in the capital.

According to the survey of IT Dominanta, 81% of St. Petersburg IT companies plan to increase in 2015 the payroll budget (by increase of both staff and wages). In this context none of respondent companies is going to cut wages. Similar results brought the survey of AMT Consult concerning plans to correct wages throughout the country: in 2015 84% of respondent IT companies plan by some manner or other to increase wages.

On the average, a programmer in Russia earned at year-end 2014 about 70 thousand rubles per month, but the pay level dispersion depending on specialty and on city as well as on experience and specialization of a developer is quite great (for example, depending on skills in using one or another programming tool).

Different sources indicate that the gap in the average programmer pay level between Moscow and big other Russian cities has reduced – in the capital the increase in average salary was lower than the national average.

Difference in average salary in regions compared to Moscow (how many percentage points lower) in the IT sphere in 2015.

St. Petersburg	34%
Novosibirsk region	57%
Krasnodar cray	58%
Sverdlovsk region	58%
Republic of Tatarstan	61%
Rostov region	62%
Nizhniy Novgorod region	64%
Tomsk region	71%

Source: HeadHunter

Average offered wage of programmer in different Russian cities, thousand rubles

	August 2014	August 2015.		Growth for the last year	
	Wage rate, thousand rubles	Relative to Moscow average	Wage rate, thousand rubles	Relative to Moscow average	
Moscow	82	100%	87	100%	106%
St. Petersburg	64	78%	74	85%	116%
Novosibirsk	52	63%	59	68%	113%
Nizhniy Novgorod	47	57%	48	55%	102%
Yekaterinburg	47	57%	51	59%	109%
Voronezh	46	56%	55	63%	120%
Saratov	45	55%	50	57%	111%
Perm	39	48%	52	60%	133%
Rostov-on-Don	39	48%	45	51%	115%

Source: Yandex. Job

Average offered wage of software developer in Moscow and St. Petersburg (thousand rubles)

	August 2014	August 2015		
	Moscow	St. Petersburg	Moscow	St. Petersburg
Programmer Java	106	81	111 (+4.7%)	104 (+28%)
Programmer C++	91	76	95 (+4.4%)	73 (-4%)
Programmer C#	96	74	93 (-3.1%)	77 (+4%)

Source: Yandex. Job

Average wage of MS SQL programmer in different Russian cities (according to employers' offer in August 2015), thousand rubles

Moscow	90	Kazan	50	Perm	54
St. Petersburg	75	Krasnoyarsk	56	Rostov-on-Don	54
Volgograd	48	Nizhniy Novgorod	53	Samara	54
Voronezh	50	Novosibirsk	59	Ufa	50
Yekaterinburg	61	Omsk	48	Chelyabinsk	53

Source: superjob.ru portal

Average wage of IT professionals , thousand rubles (July 2015)

	Moscow	St. Petersburg
Oracle database administrator	95	85
MS SQL database administrator	70	45
System administrator	40	35
Information security technician	79	63
Telecommunications/telephony technician	58	37
C/C++ developer	110	79
Python developer	104	69
PHP developer	90	63
Java developer	99	74
1C developer	86	65

It may be assumed that in the very next future IT companies will get an additional means for financial encouragement of employees. The point is that in March 2014 the Russian Ministry of Communications put out for public consultation a draft bill which allowed technological companies to use the stock option plan as a method of staff motivation (but later acknowledged the rectitude of some criticisms and corrected it).

According to the research of Ernst & Young, 50% of IT companies plan to adopt motivation programs on the basis of stock option plans. However, today this method is employed only by 22%. Experts think that a relative modest share of companies that have already introduced stock option plans (warranty certificates) is related to the legislative regulation problems, difficulties in appraisal of capitalization of privately held companies as well as to the insufficient popularity of these mechanisms in Russia.

5.5. Staff training. Universities

In the sphere of professional staff training for IT industry we observe an obvious though rather small progress during last 5-10 years. Some governmental decisions concerning development of the educational system look belated as the appropriate considerations were expressed by representatives of IT companies and trade associations already 10-15 years ago. However, it's better late than never. The late changes were well characterized by an ITMO professor: "We have moved to another category. Before we were beggars, now we are poor, and there is a fundamental difference between beggars and poor persons. Today we have an opportunity to make progress".

Admittedly, the financial position of Russian universities has become noticeably better. Besides, the material and technical resources of many universities is already at a good level and the lack of financing concerns primarily a salary level of the academic teaching staff. There are very rich higher

education institutions (first of all, in Moscow with very expensive fee-paying education and powerful sponsors). Some lecturers have good wages. Nowadays young people also go to work at higher education institutions improving the indicator of teaching staff mean age. But for young teachers the material incentives are not of paramount importance.

At the same time, by no means all higher education institutions deserve an increase in financing by the state. Over 50% of university graduates do not work within the chosen IT specialty largely because their level of competence does not satisfy the employers. For the leading higher education institutions this indicator is more than 70%, but the national average is about 50% (exact information not available). Not all problems can be solved with money. Sometimes the change of management of the higher education institution is needed, or is needed a merger of an underperforming university into a leading one. The process has begun, but it is still difficult to predict future results of these changes.

It is essential to improve the level of education and to increase the share of graduates who work within their specialty, but anyway it is also necessary to increase the total number of students in deficit technical areas. Thanks to activity of the Association of computer and IT companies (APKIT) in recent years this increase had a rather regular nature. In 2015, a decision was made to increase the number of students whose higher education is paid by the State. According to the Russian Ministry of Communications and MassMedia, the growth of such IT-students paid by the state will be as much as 31%. As a result, in the two last years, the government order for IT engineers increased by more than 70%, from 25 thousand to more than 42.5 thousand state-funded students.

In addition, in order to solve the problem of shortage of qualified personnel in IT industry, the Russian Ministry of Communications and MassMedia jointly with the Ministry of Labor and Social Protection initiated inclusion in 2015 of IT-engineers and technicians in the state-funded regional programs of retraining for those who have lost job in other industries.

In an effort to encourage youngsters to go to higher education institutions in IT-specialties, in December 2014 a large-scale event “Code Hour” took place within which over 7 million children from more than 35 thousand schools in all federal districts of Russia got familiarized with programming fundamentals. This event during a week covered 70% Russian school children.

It was supported by the Ministry of Education and Science, the Ministry of Communications, as well as by leading companies of the Russian IT industry. The campaign allowed children and their parents to assess the importance of such profession as informatics and to specify IT as an area for subsequent training and career building.

For popularization of IT and for initial training in the IT-field the Ministry of Communications and Moscow Education Department jointly with 1C, ABBYY, Mail.ru Group and Yandex selected on the basis of competition some fifty Moscow schools to arrange elective IT courses and classes. In opinion of the ministry, this experiment can be extended to other Russian cities.

Besides, the Russian Government made a decision on monitoring of graduate employability. The corresponding system was developed by the Ministry of Education and Science, the Federal Education and Science Supervision Service, and the Pension Fund. The heads of these agencies signed an agreement about information interaction and data exchange. The analysis of graduate employability will help to forecast the needs of the Russian economy in qualified human resources in the course of distribution of state-funded student spaces by categories and lines of training within higher education programs. The monitoring results are important for decision making in the future. Currently the Russian Government even does not have any information about the quantity

of IT engineers and, in particular, of programmers in the country. Public servants refer to data of different surveys but do not know which of them must be trusted in case of significant discrepancies in computational results.

Nevertheless, based on these results the Ministry of Communications and MassMedia determined that at least 350 thousand IT engineers should be trained for accelerated development of the IT industry during several years since 2014 till 2018. The increase of state-funded places in educational institutions in IT is one of measures to achieve this objective.

It is thought that the education system (including postgraduate and staff retraining courses) will prepare by 2018 up to 150 thousand IT engineers. However, the needs of the industry are twice as much. It is supposed to attract the deficient engineers from other countries (for further information see chapter Labor migration).

A new higher education institution is being created with the state participation to train exclusively IT engineers. Innopolis University will be built near Kazan, the capital of the Republic of Tatarstan for graduating engineers and making R&D for high-tech business. State budget (most likely, federal and republican) both have committed 4.7 billion rubles here for. Financing of operational expenses (including paying wages to teachers selected in competition) was imposed on sponsors. In the middle of 2014 the consent to participate financing the Innopolis University was expressed by a large Russian communications service provider MegaFon and by several Tatarstan IT companies. It is assumed that in September 2015 up to 300 bachelors and 100 masters start their training in the higher education institution in a number of specializations: Software Engineering, Cyber Security, Data Sciences, Robotics and Computer Science.

In 2014 the Russian Government launched a program called “Global education” which envisaged awarding scholarships to students to the amount of 1.38 million rubles (about $40 thousand). This sum can be spent on training Russian students in the prominent foreign universities in IT specializations (particularly, Computer Science, Software Engineering and Information Security). The scholarship also may be spent on flight, on health insurance, on accommodation and food, study materials and scholarly literature etc.

The government specified a list of foreign higher education institutions and lines of training under the program. It includes 219 higher education institutions from 27 countries including American Harvard University, Massachusetts Institute of Technology, Californian universities in Berkeley and Santa Cruz, Columbia University etc.

The state program will act in 2014-2016 covering 1.5 thousand citizens. Over this period it is planned to allot 4.4 billion rubles from the state budget.

The state scholarship is granted to persons who have advanced degree and commit to work three years according to educational qualification in a Russian company, higher education institution, scientific or medical institution. Those who violate the last condition should return the amount received and should pay the penalty at twice the amount thereof.

In Russia since the middle of 2012 the process of development of new professional standards in IT area is underway. It was initiated by order of the President dated May 7, 2012 No. 597 “On measures in implementation of state social policy”. It is assumed that by 2015 there will be developed and approved no less than 800 professional standards for different branches. In the autumn of 2013 there were released first versions of twelve new professional standards in IT area developed under the auspices of APKIT: Database administrator; Software architect; IT manager; IT

product manager; Programmer; IT project manager; Software development manager; System analyst; Information resource engineer; Information system engineer; IT test engineer; Technical writer in IT area.

Private companies the same as the Russian government began to implement the increased focus on staff training. In 2013 and in the first half of 2014 large IT enterprises which have actively cooperated with higher education institution for a long time announced launching new educational programs or broadening of existing cooperation. Currently there is much more news about similar incentives than in several prior years.

The Higher School of Economics (HSE) reported that the number of prospective university students who have won different Academic Olympics in the 2014-2015 academic year would exceed the number of state-funded student spaces (216 versus 180) at the computer science department of the higher education institution created by HSE jointly with Yandex. Exactly half of the Olympics winners enrolled at this faculty are graduates from regional schools. In cooperation with Yandex, the Higher School of Economics plans to train skilled engineers who should build up the computer science in Russia.

The EMC development center in St. Petersburg reported that in 2012-2013 they spent about $1.15 million on educational incentives and training of young engineers. In Russia this company starts training new generation of engineers already in the upper secondary school. In 2013 EMC launched the Student STAR Program which included visits of schoolers to the development center as well as intensive educational courses. In the new educational year the best students of these higher education institutions may lay claim to the "Successful freshman scholarship" to the amount of 7 thousand rubles per month. In this fashion in 2012-2013 the company subsidized 60 students. Since the sophomore year and till graduation students can attend the external mentoring program in term time. Since the junior year there appears an opportunity to undertake a paid internship at EMC, following the results thereof the successful engineers are added to the staff on a regular basis. In 2012 under the Internship program at the EMC development center 22 persons worked on probation, 17 of them remained to be with company.

The EMC Academic Alliance program is in a league of its own. Under this program the company does not provide any financial inducement. It is aimed at development of a portfolio of educational courses to be included in the training agenda of higher education institutions. In Russia and in the CIS countries more than 80 higher education institution (partners) joined this program.

In early 2014 Mail.Ru Group and Innopolis University signed a memorandum of understanding. The university's educational plan will be improved to account for market's challenges and will include the latest IT trends. Whereas, Mail.Ru will lend assistance in training of young Russian IT engineers. College students will be able to practice problem solving on the basis of cases prepared by the Mail.Ru engineers. Moreover, the successfully interviewed students will reinforce the skills by working on probation at the company, and the employees of Mail.Ru are invited to conduct research and practice classes in the university.

In the summer of 2014, Kaspersky Lab reported that it would participate in training of students of the Moscow State University (MGU) and in other leading Russian higher education institutions. The company and the department of computational mathematics and cybernetics of MGU concluded an agreement on cooperation and on joint educational activity in the information security field. In partnership with the university the Kaspersky Lab engineers will hold a course on different aspects of software development as well as actively participate in development of the "cyber security" area of focus at the department.

In February 2014, PROGNOZ and the department of information systems and mathematical methods in economics of the Perm State National Research University took stock of the international competition of student research papers in econometric modeling.

Yandex decided to open its new master's program of engineer training in data processing and storage in the St. Petersburg State University. The would-be masters will learn in the department of "Information analytical systems". Most of the time students will dedicate to studies of mathematical statistics, parallel programming, data processing and computer-aided learning. All subjects will be taught not only by lecturers of the department but also by the Yandex employees.

A combined master's program implies close cooperation of students with the company. Training is arranged in such a way that some courses will be taken in the university, and another courses — at the company's Computer Science Center. Besides, the Yandex employees not only will deliver lectures but also take upon themselves tutoring in preparation of research papers and master's thesis. Studies are planned to start on 1 September 2014.

Yandex.Money arranged in St. Petersburg a school for web developers in May-June 2014. The session implied assimilation of XML, XPath and XSLT languages.

Yandex is not the pioneer in the field of creating cooperation with the St Petersburg State University. For more that 10 years the Share of Software Engineering is cooperating with local companies (such as Lanit-Tercom, JetBrains, Digital Dersign, Macro Group and with the EMC local development center). Academia and business conduct there students' training projects, organize Summer trainings champs, where 100+ students actively participate every year. As a result of such additional professional training, students get experience of work in groups, learn new technologies and absorb industrial approaches to the software development (such as planning, quality assurance, change management, etc.).

Since the middle of 2014 such examples of cooperation between universities and large business are much fewer. According to our survey, in 2013 the share of companies cooperating with higher education institutions increased from 47% to 54%. At year-end 2014 due to the difficult economic situation this figure decreased to the 2012 level - to 47%.

Close cooperation is typical both for small and sufficiently large companies (with the turnover up to $100 million). The previous increase in the share of companies cooperating with higher education institutions in 2013 was due to small companies which in those times enjoyed somewhat redressed situation. The indicator of cooperation with higher education institutions has increased notwithstanding that in recent years it became more difficult to bring the leading universities in contact. The latter are more and more aware of themselves as producers of tight human resources. According to survey of Career.ru (portal belongs to HeadHunter) performed some three years ago, 30% of companies cooperating with higher education institutions and colleges have a hard time because higher education institutions engage with reluctance. 49% of respondents confess that the process itself is very hard to organize, and 38% of companies undergo difficulties in looking for mentors for inexperienced graduates.

Main types of cooperation between companies and universities in 2008-2013

	2008	2009	2010	2011	2012	2013	2014
Students training	42%	41%	41%	37%	39%	45%	38%
Graduates employment	34%	23%	26%	32%	31%	32%	24%
Courses for employees	24%	21%	18%	17%	19%	14%	12%
Other	1%	14%	10%	17%	12%	19%	37%
Do not cooperate	42%	48%	48%	48%	53%	46%	53%

It should be pointed out that the number of respondent companies which mentioned other forms of cooperation has greatly increased. Apparently, enterprises started to look for new possibilities of offering universities new interesting measures which are affordable even to not very large companies. As other forms of cooperation (aside from practical studies, graduate employability, courses for employees) in the last 2 years the respondents mentioned the following:

summer intern;
holding specialized seminars and conferences;
free (or at preferential prices) provision of software;
free training center for students;
mentoring programs;
development of training facilities for universities;
training courses for local college students;
implementation of joint educational projects;
provision of learning materials;
conductance of carrier fairs;
competitions of degree works;
programming competitions, organization of Academic Olympics;
student projects under the guidance of company's employees;
advanced training;
participation in the qualifying commission;
lectureship, research work.

Cooperation between companies and universities, depending on companies' turnover in 2014

	over $100M	from $20M to $100M	from $5M to $20M	from $0.5M to $5M	less than $0.5M
Students training	100%	64%	70%	30%	7%
Graduates em	100%	64%	40%	14%	7%
Courses for employees	50%	9%	30%	8%	7%
Other	100%	82%	65%	26%	14%
Do not cooperate (a year before)	0% (0%)	27% (13%)	20% (24%)	62% (53%)	79% (70%)

In the recent years, the quality of engineer training is affected by so-called 'demographic hole' caused by a sharp decrease in the number of schools graduates due to the birth-rate falling during the 'perestroika' period in the 1990th (the growth of the number of school graduates is expected not earlier than in 2018). This results in a year by year reduction of competition between applicants in technical colleges.

Entrance to universities became easier and the threat of expel decreased. Therefore, both higher education institutions and young people have fewer stimuli to improve the quality of training. By 2010, the fall of the graduate and student educational level (who start working in the companies even before the graduation) became obvious almost for all employers.

Besides, the teaching staff began to note that nowadays students ceased to read not only fiction but even professional literature. Consequently they have a limited intelligence in comparison with the time when open mindedness was one of competitive advantages of Russian developers. It is essential for understanding the requirements of customers who present different spheres of human activities. Besides, lack of knowledge that cannot be gained by a narrow technical specialization hinders development of high-tech business whereas a low level of culture prevents adherence to their country. For this reason some young engineers are ready to leave Russia, and consequently other countries will take advantage of contributions made by Russian Universities to students' training. The teaching staff of leading universities already feels anxious about a limited students' intelligence and values that they share these days.

At the same time, there are some positive changes. Universities receive grants, which allow them to invite well-known professors from abroad. Furthermore, judging by achievements of the Russian students and graduates in the international programmer competitions, there is no significant deterioration in comparison to foreign universities. This can be partly explained by the fact that the level of IT major training is gradually decreasing in most countries (especially in the developed ones).

However, an increase in the state financing support still does not allow involving young talented teachers in the quantity necessary to retain the existing quality of training. The salary of university faculty remains rather low, and many things stay up thanks to the enthusiasts (by the way, which retire over time or switch to a better-paid job by family circumstances).

The same things happen at the high schools specializing in Physics and Mathematics, which give basic knowledge to future students. Universities are unable to train excellent specialists without such knowledge. The government of Russia sets the task to increase the university professors' and school teachers' salary up to the average level of the region where the educational institution is located. However, such increase is materialized too slowly. Besides, providing the pay rate at the level of the average regional salary is obviously not enough to involve the best professors.

As a rule, the Russian technical institutes are placed far outside the first hundred of the international ratings of universities though in some lines can be considered to be among the world best. One of the main reasons is a small volume of R&D works performed by higher education institutions by orders of companies. Historically, Russian universities have never focused on this kind of research which was dealt with by other organizations (sector research institutes and institutions at the Russian Academy of Sciences). However in recent years universities turned upon R&D, the government encouraged emergence of universities with the status of the "national research universities".

Another reason is that higher education institutions have not learned yet how to work with rating agencies, which do not have enough information on higher education in Russia. In the future, the situation may change and Russian educational institutions will break into the lists of the world's leading universities in international ratings. To implement the measures for achieving this result, 40 billion rubles are provided in the budget of Russia in the next 4 years. As a result of the competition, a part of this money has been already allocated to 15 Russian universities. In 2013, each of them received about 600 million rubles ($20 million) for the above purposes.

At year-end 2013, one of the best known international ratings - QS World University Rankings - included 8 Russian universities in the 500 best. Next year almost all of them improved their places. Moscow State University rose from the 120th place to the 114th, St. Petersburg State University — from the 240th to the 233rd, Moscow Bauman State Technical University— from the 334th to the 322nd, Novosibirsk State University — from the 352nd to the 328th. It should be pointed out that all these universities are in our Top-10 rating of the best national higher education institutions in terms of training in software development.

Only the Moscow State University dropped in the Top-500 QS World University Rankings from the 386th place to the 399th for International Relations. The “Golden 500” included Moscow Institute of Physics and Technology, Moscow Engineering Physics Institute, St. Petersburg State Polytechnical University, Tomsk State University and People’s Friendship University of Russia. Altogether, Top-800 QS World University Rankings included 21 Russian universities, some of them were first-timers (a year before there were 18).

So far, it is difficult to compare Russian and foreign universities by key parameters. Nevertheless, higher education institutions in Russia take the highest positions in some specific ratings. For example, St. Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO University) is the best in the world by ACM International Collegiate Programming Contest results during the whole period of 38 years when these competitions have been running (with its six-fold World Champion status). St Petersburg State University is not far behind with its 3 absolute Championships and with numerous medals. Some other Russian higher education institutions are in the top twenty in the rating prepared by the organizers of this competition.

Some more Russian universities also take high places in this main programmer competition on a regular basis. In the last 5 years, there have usually been at least 4 Russian teams among 12-13 prize-winners of the contest. Altogether, 14 Russian universities were prize-winners of the ACM ICPC world championship.

Such competitions in many respects reflect the quality of programmer training. Judging by their results, programmer training in Russia is the best in the world, although in the last decade, Chinese universities achieved the similar great progress. Among the leaders and prize-winners, there have been teams from Poland, Belarus, and Ukraine, but these countries do not have as many strong teams as Russia and China. Individual representatives of Western Europe and the USA sometimes appear among the top teams.

Not always champions and prize-winners on sports programming reach the outstanding results in work in commercial and state structures. However, they can usually meet the most complex challenges in their labor activities, as well that is confirmed by the fact that many Russian ACM contest champions and prize-winners established successful software companies or work as the key experts for these companies (DevExperts, SPb Software, Yota, Vkontakte, Yandex).

In June 2014, ACM ICPC world championship for the second time in its almost 40-year history was held in Russia — in Yekaterinburg. A year before this prestige competition was hosted by St. Petersburg. The performance of Russian students in 2014 was again triumphant. The team of the St. Petersburg State University became an all-round champion. The second place was taken by the Moscow State University, which the same as SPtSU was awarded a gold medal (gold is captured by 4 first places). A bronze medal and the 9-th absolute place were taken by the ITMO University. Another medal place (in this contest there are 12 of them) won the National research university Higher School of Economics (a bronze medal and the 10th place).

In 2015, ACM-ICPC prize-winners were only two Russian teams, but again they occupied two first places. The team of the ITMO University for the 6th time became the all-round champion, and the 2nd place was taken by the Moscow State University.

Over 120 teams that have won regional contests in the autumn of the prior year participate in the ACM-ICPC final. In the very beginning 300 thousand students of IT departments are screened over.

Medal places of Russian universities teams at the Student World Cup in Programming (ACM International Collegiate Programming Contest) from 1999 to 2015*

		1999-2010	2011	2012	2013	2014	2015
1	Saint Petersburg State University of Information Technologies, Mechanics and Optics	3, 5, 3, 3, 1, 3, 3, 1, 1		1	1	9	1
2	St. Petersburg State University	9, 1, 1, 6, 11, 3, 9	4		5	1	
3	Moscow State University	9, 2, 2, 9, 10, 5, 2	10	10	10	2	2
4	Saratov State University	6, 7, 1, 6, 4, 7	6				
5	Izhevsk State University	8, 9, 3					
6	Altai State Technical University	3, 8					
7	Moscow Institute of Physics and Technology			3			
8	Perm State University	4			13		
9	Petrozavodsk State University	13, 1, 5					
10	Novosibirsk State University	5					
11	Nizhny Novgorod State University		5				
12	National Research University Higher School of Economics					10	
13	Ufa State Aviation Technical University	10					
14	Ural State University	13	11				
	Total number of prizewinners	from 2 to 5	5	3	4	4	

* The quantity of medal places varied from 10 to 13 during this period

Source: ACM International Collegiate Programming Contest, the rating is compiled by the RUSSOFT Association

Russians also win in other competitions in programming and informatics. In the last three years they steadily became winners of the Facebook Hacker Cup contest. In 2013 as well as two years earlier Pyotr Mitrichev won these competitions, and last year Roman Andreyev from St. Petersburg State University was the winner. In 2014 this contest was won by Belarusian Gennady Korotkevich who became student of the St. Petersburg ITMO University. He again won in 2015. In this year Gennady Korotkevich also became a world champion within the ITMO team at the ACM ICPC championship.

The projects of Russian upper-form pupils on mathematics, chemistry, programming, materials science and engineering were awarded by 6 basic and 3 special prizes at the 66th World Festival of scientific achievements of secondary school students Intel ISEF (International Science and Engineering Fair). The final of the contest was held in Pittsburg, USA, and lasted for almost a week, since 10 till 15 May 2015.

In November 2013, in the final of programmer competition PayPal Battle Hack the first place was won by the team of four Russian programmers with application DonateNow which facilitates a collection of donations.

In late 2013, the picked team of the department of computational mathematics and cybernetics of the Moscow State University won in the international hacker competition iCTF 2013. Russian hackers were the first to find out vulnerabilities of services and protected them as well as to built a virtual nuclear missile and fired it to counterpart virtual objects.

At the International Informatics Olympics in summer 2014 in Taiwan, Russian secondary school students won four medals. The first of gold medals was awarded to the graduate of the vocational school No.40 of Nizhniy Novgorod Nikolai Kalinin. The second gold medal was awarded to the graduate of the special academic center at the Ural Federal University (SAC UrFU) in Yekaterinburg Nikita Sivukhin. The silver medals were awarded to the graduate of the vocational school No.41 in Izhevsk Konstantin Semenov and the graduate of the vocational school “Moscow Second School” Nikita Uvarov.

It becomes trendy to hold in Russia different competitions in programming and informatics, as well as various international contests in the field of innovations. In several days after ACM ICPC contest, the world final of the Imagine Cup, an international contest of student's innovative projects, which was organized by the Microsoft corporation, took place in St. Petersburg. This competition was also held in Russia for the first time. Next year, ACM ICPC took place in Yekaterinburg. Holding similar competitions in Russian cities promotes the 'Russia' brand in the world market of high technologies, as well as contributes to the very important purpose - popularity of IT profession within the country.

The results of students' performance in this programming contest give an idea of the quality of training at Russian universities. However, it is more important to estimate this quality by the degree of employer satisfaction. The university rating by this indicator would not be completely objective neither but comparison of higher education institutions by different ratings and the ranking by different criteria allows drawing more reasonable conclusions concerning the output of different educational institutions.

The rating of RUSSOFT Association is created based on the poll of software exporters and therefore reflects how successfully universities prepare personnel for the software industry. However, it is also not beyond reproach.

Since the position of the higher education institution in this rating depends to a great extent on the number of companies representing the specific city, first places were occupied by universities from Moscow and St. Petersburg. In this regard, it is more appropriate to compare universities located in one city; however, sufficient sample for this comparison presents only in Moscow and St. Petersburg higher education institutions.

Nevertheless, even taking aforesaid note into account, universities ranking reflects the level of programmers training especially when taking into consideration the range containing specific higher education institution (3rd to 5th place).

In total, in 5 recent years respondents have mentioned about 100 universities (in 2015 - 79) graduates of which are in the greatest demand among IT companies in their region. In this number we may find higher education institutions which as judged by their names should not train software developers. They are: Higher School of Economics, Samara State Architectural and Construction University, Siberian State Motor-Road Academy, Russian University of Chemical Technology and some others. However, it should be noted that Higher School of Economics jointly with Yandex created a department of computer science those students already managed to achieve success at the ACM ICPC world championship in June 2014.

In the RUSSOFT's rating the first place is retained by the St. Petersburg National Research University of Information Technologies, Mechanics and Optics (ITMO University). As the last year version of rating was added only with the results of the last survey, no big changes in places of universities happened. Any conclusions on deterioration or improvement in staff training in a specific higher education institution may be made only on the basis of surveys for 3-4 years.

TOP-10 Russian universities by the results of polling among software companies over the last 5 years

Place (a year ago)	Name/year of survey	number of references over the last 5 years
1 (1)	St. Petersburg National Research University of Information Technologies, Mechanics and Optics	100
2 (2)	Bauman Moscow State Technical University	94
3 (3)	St. Petersburg State University	92
4 (5)	St. Petersburg State Polytechnic University	77
5 (4)	Moscow State University	76
6 (6)	Moscow Engineering Physics Institute	63
7 (7)	St. Petersburg State Electrotechnical University	58
8 (8)	Novosibirsk State University	36
9 (9)	Moscow Institute of Physics and Technology	34
10 (10)	Novosibirsk State Technical University	25

Source: Association RUSSOFT

The closest to TOP-10 are the Southern Federal University and the St. Petersburg State University of Airspace Instrumentation. Down the list are 7 higher education institutions, which the respondent companies mentioned about 10 times over the past 5 years:

- National Research Technological University (Moscow Institute of Steel and Alloys),
- Voronezh State University,
- Omsk State Technical University,
- B.N. Yeltsin Ural Federal University,
- Moscow State Institute for Foreign Relations,
- Izhevsk State Technical University,
- Belgorod State University.

Among TOP-20 can be classed also Penza State University, Tomsk State University, Tomsk State Polytechnical University, Ulyanovsk State Technical University. With similar indicators they take the 19th-22nd places.

Some companies compile their own ratings of Russian higher education institutions. For example, PROGNOZ from Perm compared data on cost of attendance of bachelors and engineers in IT specializations to average wages of developers in the corresponding region. Data was obtained from different sources (in January-February 2014) on the basis of its resource called Prognoz Data Portal. The study resulted in a rating of universities with the most expensive cost of attendance which is measured by the number of average wages of IT engineers in the relevant region. From all appearances, the company experts did not have at their disposal information about cost of attendance of all leading Russian higher education institutions.

Average salary in IT industry in region versus cost of attendance in Russian higher education institutions

Higher education institution	City	Average salary in IT industry in region per cost of 1 year of study in a higher education institution
National Research University of Information Technologies, Mechanics and Optics	St. Petersburg	1.8
Tomsk State University	Tomsk	2.1
Moscow Engineering and Physics Institute	Moscow	2.5
Ural Federal University	Yekaterinburg	2.7
Moscow State University of Economics, Statistics and Informatics	Moscow	2.7
Novosibirsk State Technical University	Novosibirsk	2.8
Novosibirsk State University	Novosibirsk	2.8
Perm State National Research University	Perm	3.2
Moscow Bauman State Technical University	Moscow	3.4
St. Petersburg State University	St. Petersburg	3.8
Perm National Research Polytechnical University	Perm	4.1
National research university Higher School of Economics (branch)	Perm	4.5
National research university Higher School of Economics	Moscow	5.3
Moscow State University	Moscow	5.4

Source: PROGNOZ

For students and employers is of interest the rating of universities by the proportion of the graduates who found jobs according to their university major. The leader of this rating is St. Petersburg ITMO University with its 76%. In the majority of higher education institutions that train software developers, this share is usually much less – about 50%. Employers consider that 15-20% of university graduates are ready to work for software company's right after the graduation. Other 30-35% of graduates need to continue their studies. Thus, a half of graduates who got degree of a software developer are unable to work for software companies, although there is a huge staff shortage.

Therefore, there is a great potential for an increase in the number of engineers graduating from Universities who are capable to satisfy employers. For this purpose, first of all, it is necessary to create stimuli to encourage young and perspective people to work in the education system, creating competition for university professor' and school informatics teacher job positions.

The postgraduate education system (the career development and staff retraining system) created by the organized business may also ensure an increase in the Russian labor market supply. For example, in June 2013, St. Petersburg Academy of Postgraduate IT Education (SPb ITAPO) was opened. Here about twelve chairs offering modular programs for retraining of engineers in various IT areas – from programming and software testing to application programs of the city/enterprise level – are established on the basis of commercial companies' training centers.

The government has already been trying to change the situation in the field of IT professionals' training. At the end of 2011, Vladimir Putin, then the Prime Minister of Russia, approved the list of specialties in higher educational institutions and the list of scientist specializations that correspond to the priority directions of the Russian economy modernization and technological development. The list included about 100 positions approximately one third of which deals with the ICT sphere. Since 2012, students and scientists who have chosen the priority specialties will apply for the president and government grants, which will be rather high by Russian standards.

Besides, the Ministry of Education approved the three-year refresher course program for technicians, within which at least 15 thousand people are supposed to be trained. This program will be implemented based on the private and state partnership principle. The Ministry of Education is ready to finance up to 50% of the employers' expenses on engineer training. Up to $10 million are supposed to be annually allowed for these purposes in the Ministry federal budget. This program provides professional development in Russia, as well training abroad. Similar support measures are taken and prepared at the regional level.

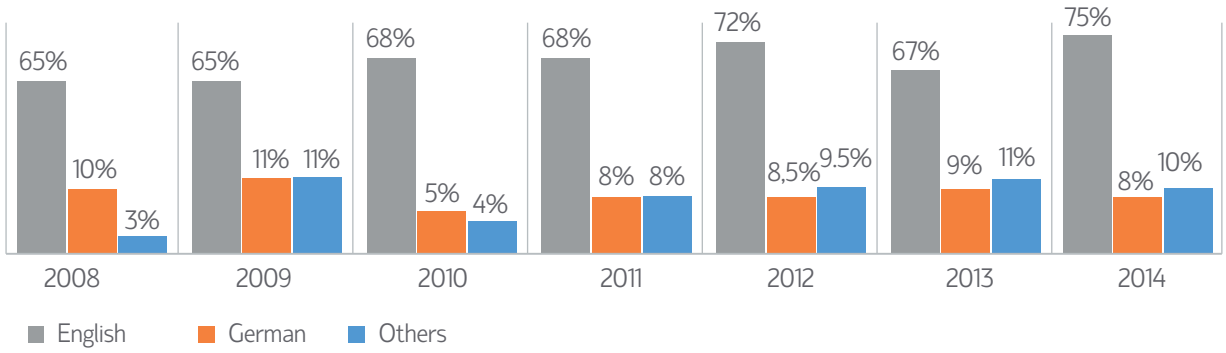
Unfortunately, the proposed program is intended for staff retraining based on the existing chairs of universities and does not provide involvement of the capacities of medium and large Russian companies' training centers, as well as of foreign corporations' training centers in Russia. Experience shows that, in terms of professional development and retraining of active IT engineers, the efficiency of higher education institutions is lower than that of companies' training centers as the majority of university professors are not involved in specific software engineering projects on a regular basis.

Considering all aforesaid, it can be stated that the existing education system is only capable to partially reduce the deficit of IT specialists and, in particular, of software developers.

5.6. Foreign language skills

The share of employees of software development companies fluent in English in the last 2-3 years consistently averages out 70%. Most likely, after increase in previous years this value is stabilized.

The share of the employees who know foreign languages well (of total staffing level of respondent companies)

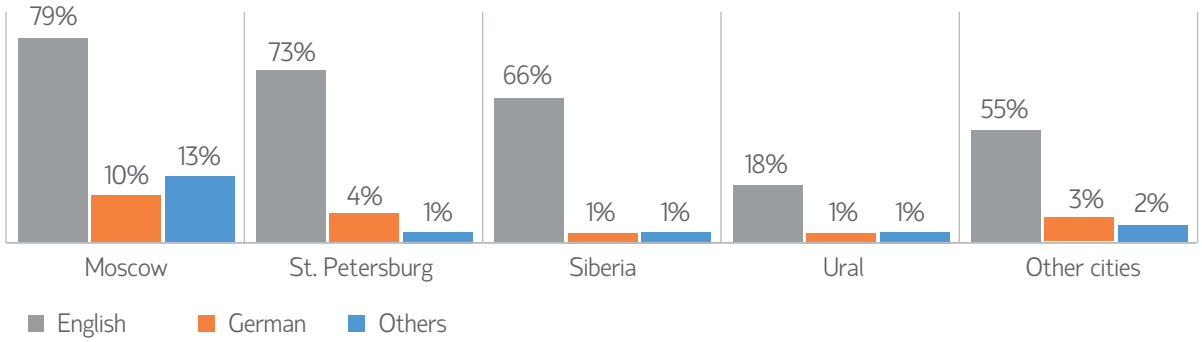


The share of German-speaking developers in the interrogated export companies remains at the level of 8-10%. The number of the employees who have good command of other languages is similar.

As a rule, knowledge of English is sufficient for communicating with foreign colleagues, and localization and promotion of software solutions can be performed by local partners.

Despite an obvious progress in foreign language training by companies' staff, many problems remain unresolved. There are not enough English-speaking employees in small and regional companies. An increase in the number of such employees is provided by the largest companies located in Moscow and St. Petersburg.

Share of the staff with good knowledge of foreign languages, depending on company location



Share of the staff with good knowledge of foreign languages, depending on company turnover

	less than $5M	over $5M
English	51%	77%
German	3%	9%
Others	1%	11%

Partly, this happens because big companies pay for their employees' foreign language training. However, this growth is mainly connected to the fact that companies from two capitals have opportunities to poach the best engineers from regions and from small companies.

The growth of the share of English-speaking employees in IT companies is not caused by improvements in the Russian state educational system. People often study foreign languages at their own expense or at their employers' expense, attending language courses and engaging teachers.

Skilled English teachers in Russia, as a rule, do not tend to work at schools and universities because of the low salary level in the state educational institutions. This problem should be solved by the government. Otherwise, the export potential of high-technology sector of economy would not be realized due to an unsatisfying level of foreign language knowledge obtained by engineers in Russian Universities.

It is especially important to improve the language training level in regional universities and schools because many of these institutions provide a high level of education in the field of mathematical and technical sciences, but cannot provide their graduates with competitive positions with respect to foreign languages skills.

Russia is not at the bottom of the English proficiency level list, but it is in the second half of the world ratings.

Young small companies with the turnover of less than $5 million (established after 2009) have less engineers with knowledge of foreign languages than in the companies of similar size, established before 2009. For example, the share of employees with a good command of English is 54% (for older companies) and 33% (for younger companies). The reason is that the vast majority of startups are oriented exclusively toward Russian market and CIS market where people speak Russian. The engineers with knowledge of languages are engaged mostly by large companies.

For example, according to GlobalEnglish research, where the level of proficiency in business English was defined, Russia received 3.6 points. That is higher than in Colombia (2.75), Brazil (2.95), and Turkey (2.97), but it is much lower than in the Philippines (7.11), India (5.57), and some other large countries. Sweden and Finland, which take the top positions in the world English knowledge ratings, should be a reference point for Russia. In many respects, the high percentage of English-speaking population in these countries is ensured by the countries' integration in the world economy and by their considerable achievements in the field of high technologies.

An insufficiently high level of proficiency in English interferes with creation of competitive solutions and services by Russian companies, and furthermore, with their promotion in the global market. The unwillingness to monitor the global trends can be mainly caused by weak competence in languages.

According to superjob.ru portal, 84% of job-seekers specify knowledge of English in CVs. However, in reality among them there are much less programmers with a good command of this language (most likely, less than 70%, because roughly the same amount of English-speaking employees work at companies which predominantly operate for export).

A more fundamental analysis of CVs made by the Superjob research center shows that only 15% of software developers specify the 'fluent' or 'conversational' level of English in their CVs, 50% declare knowledge of the language at the level of technical documentation reading, 28% admit that they have basic skills only and 7% do not specify their level of proficiency in English.

According to ANCHOR High Technologies, the situation with knowledge of English is much better: 64% of all developers (included in the recruiting agency's database) have a good command of English or are fluent in English.

Considerable differences in the data of these two agencies can be explained by the fact that they cover absolutely different audiences. ANCHOR is more oriented towards recruiting of personnel for international companies and for Russian exporters that implies more strict requirements to knowledge of foreign languages while SuperJob focuses on a wider audience.

Foreign languages proficiency level in CVs in the category of Software development (throughout Russia in August 2014)

English	84%
German	9.6%
French	3.3%
Spanish	0.8%
Italian	0.4%
Japanese	0.2%
Turkish	0.2%
Chinese	0.2%
Others	1.3%

Source: superjob.ru portal

Chapter 6

Technologies

6.1. Operating systems

At present, it seems that nothing puts in question the leadership of two leading operating systems (OS) Windows and Linux. Though the distance between them is significantly changing year by year, these changes are bidirectional: sometimes they come closer together, some other time the gap increases. Fluctuations are attributable to a sufficiently big error.

For several years, Android laid claim to the 3rd place. The growing popularity of this OS among Russian developers was evident in spite of any random fluctuations. If in 2010-2011 only 4-6% of respondent companies operated OS Android, in 2014 there were already 43%. But in 2015 the growth exchanged for the decline up to 36%, and in the next year we will have a chance to determine whether this drop has been regular or still within the ordinary random fluctuations.

It would not be exactly correct to match Android against Linux. Linux means a whole family of single core operating systems (GNU Linux family). Android was also developed on the basis of Linux, but it is intended for mobile devices, so it apparently stands out against the background of closely related systems (both in terms of popularity and devices where it is installed). That is why this operating system is separately mentioned in the questionnaire. If we consider Android together with the GNU Linux family it will emerge that both open source OS are used not less frequently than Windows. That's for sure.

The previously growing degree of utilization of operating systems for mobile communication devices this year has been stabilized except the dying Symbian and Blackberry which next year will be more likely than not excluded from the list of basic OSs.

The companies that are oriented towards the Russian market much less frequently mention these operating systems than those developers who gain over 50% of their income from export. It also concerns Mac OS, which in Russia is not so popular as in the western countries. Such distinction of OS popularity depending on the companies' export share means that the applications for mobile devices and Apple tablets are mainly created for sale abroad.

Considering an increase in the share of smart phones and tablets in Russia, it is possible to assume that the indicator of these systems' popularity will be aligned among the companies with orientation towards the Russian market and mainly among exporters. However this forecast which we already made several years ago has not come true yet. Therefore it is quite reasonable to assume that mobile applications are meant for the whole global market including the Russian market.

Traditionally, the percentage of the companies that use mobile operating systems — Android, iOS, Windows Phone is significantly higher in St. Petersburg. Besides, 71% of respondents from St. Petersburg companies indicated GNU Linux family as the commonly used operating system. It is much more than a year ago and countrywide. Perhaps this growth reflects real changes but it is difficult to draw any firm conclusions on a single year basis.

Among Moscow companies it may be noted that MS Windows Phone and iOS are mentioned with a slightly increasing frequency than countrywide. It appears that muscovites break into mobile applications with the same intensity as St. Petersburg developers. As for other big cities, a sample is too small to draw even conservative conclusions.

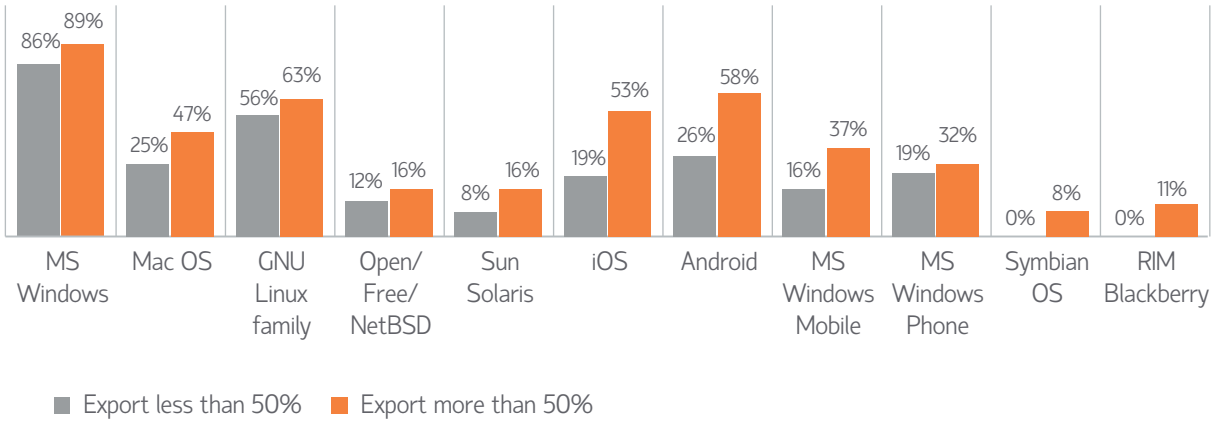
Along with the OSs specified in the table, the respondents also mentioned QNX twice, (another four times - unnamed real-time operating systems), once — VxWorks, Tizen, as well as the virtualization product VMware ESX. It is noteworthy that the real-time operating systems are increasingly mentioned from year to year, this observation is consistent with the global trends.

The operating systems for IBM mainframe which in previous years were mentioned 1-2 times at least, for two consecutive years now are not mentioned at all by respondents among other OSs.

Annual turnover of staff depending on company size

		2008	2009	2010	2011	2012	2013	2014	2015
1	MS Windows	97%	94%	93%	96%	94%	88%	92%	87%
2	GNU Linux family	64%	54%	54%	59%	60%	65%	51%	59%
3	Android	-	-	6%	4%	37%	33%	43%	36%
4	Mac OS	26%	9%	15%	19%	32%	31%	33%	32%
5	iOS	-	-	-	-	28%	24%	34%	29%
6	MS Windows Mobile	41%	17%	16%	15%	23%	17%	15%	23%
7	MS Windows Phone	-	-	-	-	19%	19%	22%	23%
8	Sun Solaris	26%	16%	15%	19%	19%	14%	15%	11%
9	Open/Free/NetBSD	25%	7%	9%	9%	13%	10%	14%	13%
10	RIM Blackberry	-	-	-	-	11%	6%	8%	3%
11	Symbian OS	25%	11%	12%	9%	11%	6%	7%	2%

Main operating systems used by companies with different export shares in cumulative income



6.2 Programming tools

In the questionnaire 2014 we modified the groups of programming languages. More exactly, we distinguished individual languages in certain group. In this context, we also restated the question — instead of specifying the main programming language, respondents were offered to select one from the list (in previous years, not one but several programming languages were put into the relevant box). Because of it, the direct comparison with the last year outcomes now presents difficulties.

Nonetheless, it is fair to say that popularity of one or another programming language did not greatly change among respondents. This is not surprising. If stemming from the results of previous survey 2014 it follows that, for example, first four places with identical indicator were justifiably taken by C#, C, C/C++ and Java/J2EE while in 2015 the growth of C++ and Java/J2EE popularity is noted with the lowered popularity of C and C# languages.

The 5th-7th place of PHP is logical, it has risen in popularity in recent years.

Among the programming languages that are not listed in Table of our questionnaire, respondents twice mentioned Python, and once - ABAP/4.

Twice there were mentioned not as the main but still used programming languages Assembler, Scala, Cobol, LINQ, ABAP/4, once - PostScript, Oberon-2, Lotus Script, Iron Python, iOS SDK, Flex, ASP, Android SDK, Ajax, 1C, ActionScrip, Shell, Aspect J, Fortran, Jython and Pascal. A number of languages mentioned on one occasion only have considerably increased.

Frequency of mention of the programming languages specified as main tools, % of respondent companies

Year of survey/ programming language	survey 2014	survey 2015
C#	17%	16%
C	17%	12%
C/C++	17%	26%
Java/J2EE	17%	22%
.NET	9%	6%
PHP	9%	6%
Delphi	8%	7%
Pascal	0%	3%
Perl	1%	0%
Visual Basic	1%	3%
other	3%	0%

Usage of programming languages which are not considered as main tools, but are applied by the companies in a number of projects, % of respondent companies

1	Java	39%	44.4%
2	C++	30%	25%
3	C#	25%	21.3%
4	PHP	23%	17.6%
5	.Net	14%	24.1%
6	C	10%	15.7%
7	Delphi	7%	3.7%
8-9	Javascript	5%	6.5%
8-9	Objective C	5%	4.6%
10-11	Perl	4%	3.7%
10-11	Ruby	4%	3.7%
12-14	Python	3%	8.3%
12-14	Visual Basic	3%	5.6%
12-14	SQL	3%	3.7%

Most popular development tools

Year of survey/development tool	2008	2009	2010	2011	2012	2013	2014	2015
MS Visual Studio	46%	64%	60%	62%	45%	36%	53%	49%
Eclipse	19%	25%	19%	6%	16%	15%	34%	12%
Intellij IDEA	10%	5%	3%	8%	9%	4%	14%	9%
Xcode	-	-	-	-	-	2%	14%	6%
NetBeans	-	-	-	-	-	3%	8%	0%
WebStorm								2%
other	-	-	-	-	-	-	15%	24%
Not used	-	-	-	-	-	-	-	24%

The results of 2014 survey as regards the used programming tools differ markedly from the last year results by a considerable increase in frequency of mention of practically all tools (by 5-19 percentage points). Assumebly, this growth is related to the modified phrasing in the questionnaire as well as to changes in composition of respondents.

In 2015, this indicator returned to the values of the 2013 survey. These fluctuations convey little to us.

There is no doubt that MS Visual Studio remains the most popular building tool among Russian companies. It is fair to assume that the free of charge Eclipse and Intellij IDEA of St. Petersburg company JetBrains, that took 2nd and 3rd place, respectively, in 5-10 years increased their shares anyway. Their positions are also remained unchallenged.

6.3 DBMS

Frequency of mention for all DBMSs that are present in the table almost did not change in the recent years. The random fluctuations of each DBMS are not big, however they are present. A similar change in 2015 was an insignificant decrease in frequency of mention of all three most used DBMSs (MS SQL, MySQL, Oracle).

MS SQL is still in the lead. On the second place, there is the free MySQL , which two years ago moved back to the third place the commercial Oracle (both systems are developed and supported by Oracle). However, Oracle DBMS is still on the second place among the companies with the turnover over $4 million, which account for nearly 90% of all respondent companies' personnel (by the results of 2014 it has the same figure as MySQL — 69%).

This year with the figure of 70% MySQL took the first place among companies with the turnover over $5 million while Oracle moved to the third place (61%). Interestingly, MS SQL for the first time in many years dropped to the second place (67%) behind the free MySQL.

A little bit more than ten DBMSs mentioned in the questionnaires are absent in the table. MongoDB was most often mentioned among them (three times) as well as NoSQL (twice). This is a class of

DBMS which includes MongoDB as well.

Commonly used DBMSs, % of respondent companies

Year of survey /DBMS	2010	2011	2012	2013	2014	2015
MS SQL	63%	74%	70%	66%	70%	67%
MySQL	47%	40%	59%	56%	56%	54%
Oracle	49%	55%	51%	47%	45%	39%
PostgreSQL	17%	15%	26%	30%	28%	28%
SQLite	9%	5%	12%	10%	19%	12%
MS Access	19%	9%	19%	17%	18%	19%
Firebird	11%	9%	10%	13%	16%	15%
IBM DB2	13%	14%	9%	10%	12%	12%
Sybase ASE	6%	3%	3%	6%	8%	6%
MSDE	7%	5%	5%	5%	7%	2%
InterBase	9%	7%	7%	10%	6%	6%
Sybase ASA	6%	6%	5%	6%	6%	3%
IBM Informix	7%	5%	7%	7%	6%	4%
SAP DB	6%	5%	7%	5%	5%	3%
Paradox	4%	3%	3%	2%	4%	3%
other	13%	8%	7%	8%	10%	9%

Summary

In 2014 the Russian IT market continued to develop even in the context of a significant reduction in total sales amount (in dollar terms) which is always in the focus of foreign analysts. This apparent paradox owes to the fact that the market volume reduction took place generally in the segment of imported hardware on the back of major changes in the IT market structure. From the standpoint of domestic developers who mainly produce software and render IT services, the situation is not that catastrophic. Users (both private and corporate) continued to increase their consumption of software and of IT-services though less intensively than in years past.

It was reasonable to expect that the flare-up between Russia, on the one hand, and the USA and EU, on the other hand, would have a negative impact on the tone of publications mentioning Russian high tech economy sector. The number of publications that negatively influence the image of Russia drastically increased (twice precisely). However, it is not worth overestimating the effect of this growth. A lot of readers get huge amount of news about Russian threats in their stride and do not put much trust in them. At the same time, not only the number of negative publications increased but also the number of articles with a positive tone have considerably grown with a surge in interest towards Russia.

In the recent versions of international ratings (where countries are ranked by the level of innovative development, of IT and of business environment) some changes have taken place, and Russia has much more often improved its positions than made the situation worse.

The presence of Russia in the international ratings of software companies is retained at a high level. For example, totally, 10 Russian companies have been included at least once in the Top-100 outsourcing service providers according to Global Services and IAOP (if only high-tech services are accounted for, the presence of Russian companies in the Top-100 will be as much as 15%-20%).

A vast majority of respondent companies have not or almost have not been affected by external factors (such as drop of petrol prices, economic crisis in Russia, western sanctions against Russia and counter sanctions). But on the average, this effect is assessed by respondents as negative rather than positive.

To a large extent, this negative impact was compensated by a positive effect of the weakening ruble which had added a lot to competitiveness of Russian software development industry in the global market.

As a result, the cumulative sales volume of the software development companies in the Russian market in 2014 did not decrease even in dollar terms and amounted to roughly $6 billion (it is almost the same as a year before). In terms of rubles, sales at domestic market even increased even though keeping in mind 11.2% inflation.

Export of software and of software development services in 2014 increased by 11% and reached $6 billion. It is slightly smaller than forecasted a year ago (15% growth was expected and sales volume - $6.3 billion, respectively). Thus, the cumulative turnover of Russian software companies in 2014 reached $12 billion at least having increased by 5% per year.

If we attempt to forecast on the basis of expectations of respondent companies, then the annual growth of software export at year-end 2015 will be as much as 16%, and the growth of turnover (keeping in mind the inflation in Russia) will be as high as 10%.

As of 17 June 2015, 5082 organizations dealing with IT-sector were accredited at the Ministry of Communications and MassMedia. The majority of them are software companies (or government institutions engaged in software development). In Moscow are registered 35% of accredited companies, in St. Petersburg — 12%, in Yekaterinburg — 3.3%, in Novosibirsk — 3.1%.

According to assessment of RUSSOFT Association, at least 3,200 commercial software companies operate in Russia. In recent years, the number of software vendors was growing faster than that of service companies.

For three consecutive years now we can see an obvious effect gained as a result of granting social tax incentives to software companies (under the Federal law No. 212). If it is granted that companies that take advantage of social tax incentives gained higher growth rate only thanks to incentives themselves, then the preferential social tax treatment resulted in increase in cumulative business of the Russian software industry in 2012 by $830 million, in 2013 - by $1.16 billion, and in 2014 – by $640 million (the increase in export in these years was approximately $250 million, $500 million, and $600 million, respectively). In three years the total effect was more than $2.6 billion in turnover and about $1.35 billion in export.

The share of Russian software foreign sales in the total export income of Russian enterprises and organizations keeps on growing. At the year-end 2014, this indicator was 1.2% (in 2013 - 1%, in 2012 – 0.88%, and in 2011 – 0.8%). Last year the growth of the IT-share in export was provided not only by increased foreign sales, but also by decreased total Russian export by 5% from $523.2 billion to $498 billion.

The main growth of the Russian export of software development services over few last years has been provided by large companies. At year-end 2014, the export of services increased by 16% and amounted to $2.9 billion. The total turnover of software development services exceeded $5 billion. In dollar terms the growth was 6%, in rubles: 27%, in rubles after allowing for inflation: 14%.

Export of products and of ready-to-use solutions amounted to $2.6 billion having increased by the year by 10%. The turnover of software vendors increased by 5% to $6.5 billion (in ruble terms the growth was 25.5%, after allowing for inflation — 12.8%).

For the first time in our investigation the export of services of international software development centers has reduced. If in previous years the export of these services had been steadily increasing by 8-12%, at year-end 2014 it decreased roughly by 5%.

Judging from the survey results, the number of companies' intended directions of development and the number of revealed trends in the industry per respondent were drastically reduced in 2014. It gives evidence of an intensive specialization of business along the lines where companies have bigger competences and more stable bargaining power. On the other hand, this decrease may count in favor of reduced certainty in what is going on and what will come in the future in the minds of top managers of Russian software companies.

The results of survey performed by RUSSOFT Association and data of other studies show that the volume of investments attracted by software companies decreased in the last 2 years. However, we have here also positive changes: the quality of project selection procedures has been enhanced, regional companies got to be easier now to attract external financing, the share of projects assuming entry into international markets has increased.

The poll of software exporters showed that their estimates of the Russian business environment kept on improving but in a lesser degree than previous years. An average score for all categories under assessment increased from 2.83 to 2.85. It may imply that on the average in opinion of respondents the business environment is assessed as "satisfactory" (3 out of 5), but only "almost" as well as it used o be before.

Since 2007 till 2012, the share of respondent companies operating on the North America market was lowering. Over the last 2 years the interest to American market as the biggest and competitive world market keeps coming back. At the same time, Russian software exporters successfully develop emerging markets, primarily, in Southeast Asia, Latin America, and the Arab states.

Regional trade offices abroad or in Russia were operated in 2014 by 44% of respondent companies. This figure is growing: in 2012 the share of these companies amounted to 33%, in 2013 – to 40%.

At the same time, we observe the growth of geographic footprint and importance of remote development centers opened in pursuit of new resources. Over 40% of respondents reported that they had remote development centers in Russia, an over 20% - in other countries.

The attractiveness of the Ukrainian labor market to newcomers drastically reduced owing to its contraction and to deterioration of political relations between countries. However, 3% of respondents plan to open development offices in Ukraine in the next two years. A year ago none of companies had similar plans.

At the same time, despite all political tempests Ukraine remains the largest source of personnel for remote development centers of Russian companies. It holds out a hope of maintenance of integrity of the European biggest "Russian-speaking software development cluster".

The South European countries could be of interest to Russian software companies in terms of opening there not only trade offices but also of production departments as well. The first development center of a Russian company has already been opened in Italy.

The cumulative growth rate of staff of software development companies in Russia increased by 5-7%. By early 2015 about 150-155 thousand software developers were engaged in Russian software companies (including their oversees development centers). Among them 115 thousand people worked in Russia and 35-40 thousand people were engaged in development centers of Russian companies abroad.

If we look at statistics of vacancy rate in IT industry provided by recruiting agencies, we will see that in all branches of Russian economy the number of software developers have moderately increased (less than by 5-7%). The total number of all software developers engaged in various branches are no less than 440 thousand people.

The number of software developers coming into Russia and the exit of those who go out to work in other countries in 2014 increased. The main inflow of human resources is provided by Ukraine, Kazakhstan and Belarus. The number of CVs applied by Ukrainian citizens eminently increased. An outflow of programmers from Russia increased due to economic instability, to the weakening ruble and to the corresponding decrease of wages in dollar terms. However, the inflow is much greater than the outflow — nearly by 4-5 times.

The share of companies, which throughout 2013 had to abstain from hiring new staff, decreased almost up to the pre-recession level and amounted to 11%. Before 2009, this indicator fluctuated within the range 5-10%. In 2010 it increased to 28% and in the next 2 years decreased to 15-16%. Following the results of 2014 (which is considered to be a "recession year") this value again increased but this time only to 20% and not to 28% as it was in 2010 (based on this indicator and on other symptoms the current crisis turns to be less serious than that 4-5 years ago).

In 2014 the interest of large software companies in Universities' graduates decreased. First, the needs in expansion of offices in Russia lessened. Second, due to the economic crisis and thereto related drop of IT market a sufficient amount of engineers from IT departments in different sectors of economy appeared in the labor market.

According to our survey, in 2014 the average salary in software companies was increased by 11.6% in ruble terms. It is slightly higher than official inflation which at year-end was 11.2%. In dollar terms, for the first time in many years the wage levels decreased roughly by 6%. In dollar terms, an average salary decreased to the middle of 2015 approximately by 20-30%.

The share of companies cooperating with higher education institutions increased from 47% to 54% in 2013. At year-end 2014 due to the difficult economic situation this figure decreased to the 2012 level - to 47%. The main obstacle on the way of business investments in education still remains unavailability of tax incentives (by the way, adopted in all countries which are competitors to Russia in IT).

At the same time, the 5 years long steady growth of state funding into high-education and competition between the leading Russian universities for inclusion in the international ratings had already resulted in improvement of training quality and to an enhancement of R&D activities in the leading higher education institutions as also evidenced by the growth in exports of scientific and technological services of Russian universities.

Participants of the Survey

Aplana
Group of Companies

Founded: 1999
Number of Employees: 500+

About Aplana:
Aplana is a software services company specializing in applications design, development, testing and quality assurance using modern technologies, platforms and tools. Aplana initially emerged in 1999 as part of one of the largest IT services companies in Russia, I.T. Co. Since 2001 Aplana has been servicing its international customers under the current name.
Aplana is an international company delivering projects out of Russia, Ukraine and Belarus and with sales operations in the USA, UK, Germany, Russia and France.

We serve:
- Technology companies and new businesses developing their own software products or services
- Enterprises from various industries

For both types of clients, we help get the most out of modern technologies such as cloud and mobile. We deliver scalable, reliable, multi-platform solutions that help our customers better serve their clients or to serve their internal business automation needs.
Aplana works in close partnership with world-leading software vendors IBM, Microsoft, HP, Oracle, Red Hat, Atlassian and others.

Our Clients:
Raiffeisen Bank, Unicredit Bank, Sberbank, OTP Bank, P&G, OTIS, Tetrapak, IAEA, GEHC, Aeroflot, Newmarket (Amadeus group), INRIX, Starbucks, Media Vault, Concert.ru, Citation, Holstein and many others.

Certification and Partnerships:
ISO 9001-2008 (TUV Thüringen); IBM Premier Partner, Microsoft Partner, HP Silver Partner, SAS Institute, Pentaho Gold Partners, Atlassian Experts partner, Red Hat Advanced JBoss Partner, Liferay, Pega, MicroStrategy Solution Provider, Attacama.

Awards:
2013 - The Winner of the nomination "Public Sector" with the project "Pocket Office". "The ISV Partner of the Year" in Russia award.
2012 - IPMA Project Excellence Award winner
2009 - Microsoft Development Partner award in two categories at the Microsoft Worldwide Partner Conference.
2008 - Microsoft 'Smart Client Development Partner of the Year' award.
2007 - IBM Group Business Partner Award
2006 - Technology Fast 500 EMEA rating (Deloitte) – 43th place; Global Outsourcing 100 IAOP rating
2005-2006 - Two IBM TOP 100 Business Partner Awards
2004 - Two Microsoft® Partner Awards – 'Winning Customers Award' and 'Customer Experience Award'

Engineering Locations:
Russia (Moscow, Perm, Ufa), Ukraine (Kiev), Belarus (Minsk)

Services:
For enterprise clients:
• Software systems design, development and testing, deployment, support and maintenance
• Applications integration
• QA and testing
• Migration from legacy platforms
• Moving enterprises to Cloud
• Web enablement, Portals
• Building Mobile Clients
• BI and Reporting
• Big Data
For software product development companies and SaaS providers:
• Ideations and concept: Consulting, Product roadmap, MVP, MAAP, PoC
• Software product development: Cloud, Mobile, BigData
• QA and testing: QA process setup, Continuous Integration, DevTest and Staging/UAT, Load testing

Technologies and Platforms:
Languages & platforms: C#, Microsoft .NET, Java, J2EE, C++

Web: Microsoft ASP.NET, HTML 5, Java Script, Silverlight, Python

Mobile: Windows Phone, Android, iOS, PhoneGap

Cloud: Microsoft Azure, Office 365, Amazon AWS

Database: Microsoft SQL Server, Oracle, IBM DB2

ECM: IBM Lotus Notes, IBM FileNet, Alfresco
Portals and Integration: Microsoft SharePoint Server, IBM WebSphere Portal, RedHat JBoss family

BigData: Hadoop, Storm, Spark

Contact Information:
Aplana, International
Phone: +1 (267) 439-4343
Aplana, Russia
Phone: +7 (495) 710-7580
http://www.aplana.com Email: mail@aplana.com

Elite Software R&D Services Since 1990

Founded: 1999
Number of Employees: 500+

Engineering Locations

6 development centers in Russia (2 in Moscow, N. Novgorod, Rostov-on-Don, St. Petersburg), + 1 in EU (Vilnius, Lithuania)

Services

- Software Product Engineering and ADM
- Custom Software Development
- Product Maintenance
- Re-engineering and Porting
- Customization and Integration
- Software Testing and QA
- Product Support
- Technology Research and Consulting

Domain Verticals

High-tech, Telecom, Mobile, Healthcare, Finance and Banking, Information security, Enterprise, Computer SW, Education, Government, Automotive, Media & Entertainment, Robotics, Avionics, Logistics and more.

Major Clients

IBM, Draeger Medical, Chrysler, Sberbank Russia, LynuxWorks, Pigeon Point Systems, Digital Guardian, Conservation Services Group, HomeCredit, IBM, CROC, iMind, onMobile, etc.

Technologies & Platforms

- Embedded devices (ARM, PowerPC, Intel, FPGA…)
- Real-time systems (VxWorks, QNX, ThreadX, pSOS, eCos, LynxOS)
- Linux (server, desktop and embedded), UNIX, Windows internals.
- Mobile (Android, iOS, Windows Phone, Tizen) and Connectivity (GSM, 3G, 4G, LTE, GLONASS, Bluetooth, WiFi, WiMax)
- Enterprise applications: Workflow, document and content management (EMC Documentum and other), CRM systems.
- Web services, high loaded distributed applications, Big data
- Net and Java platforms for portals (SharePoint, Liferay, IBM WebSphere), web and desktops application development
- Databases (MS SQL, Oracle, DB2, Sybase, MySQL)
- Multimedia streaming: multiplexing/de-multiplexing, real-time transcoding, optimization for mobile devices, face recognition
- Geolocation and Geopositioning (LBS, GPS, GSM, NFC, SS7)
- Social networks, Web 2.0, Internet of Things, wearables
- Robot locomotion, sensors, computer vision

Awards

- In Global Outsourcing 100 (rating by IAOP) since 2008. In 2015 Auriga received top marks in Customer References, Delivery Excellence and Corporate Social Responsibility categories.
- In Global Services 100 (by Global Services Media and neoIT) since 2006. The company is ranked among the "Top 10 Service Providers: Eastern Europe".
- In The Black Book of Outsourcing (by Datamonitor) c 2006. In 2011 Auriga is ranked the No. 1 Engineering Services Outsourcing (ESO) provider worldwide. In 2010 Auriga was named #15 in the prestigious "Global Top 50 Vendors" list. In previous years the company is named No. 3 in the list of IT Outsourcing Vendors in Central/Eastern Europe and No. 6 in the list of Global Software QA & Testing.
- Auriga is included in overall Top 20 of software R&D service providers and in Top 10 among the companies serving Software industry, in a 2009 ranking of service providers in India, China, Russia, Ukraine & CEE by Zinnov Management Consulting, a leading management consulting firm
- Microsoft Silver Partner in Software Application Development since 2010

Industry Standards

CMMI Level 4, ISO 9001, SPICE, DO-178B, ISO 13485

About Auriga

Founded in 1990, Auriga (www.auriga.com) was the first Russian company to provide software R&D offshore/nearshore services to EU/US customers. Auriga offers the full range of software engineering services – managed teams and projects – for high-tech and software vendors, allowing them to quickly build and scale teams, access required skills and expertise, focus on strategic tasks. Auriga services cover all aspects of software RnD either as an all-in-one full-cycle outsourced product development engagement, or as a set of sub-services including conceptualization, development, testing, maintenance, support, porting, etc.
In addition to technical expertise, Auriga pays special attention to soft skills - transparent communications, flexibility, engineering mindset, cultural compatibility, building trust. In 2011 Auriga was named world's #1 engineering services provider based on customer satisfaction survey by Datamonitor, ahead of such names as Wipro, Siemens, Capgemini, IBM, and others. Auriga client list consists of both established industry leaders and fast-growing start-ups, including IBM, Draeger Medical, Chrysler, Sberbank Russia, Yandex, LynuxWorks, Pigeon Point Systems, and many others.

Contacts:

Auriga, USA
400 Trade Center, Ste 5900,
Woburn, MA 01801, USA
Phone: +1 (866) 645-1119
Fax: +1 (603) 386-6097

Auriga, Russia
125 Varshavskoe Shosse, Unit 16A
Moscow, Russia, 117587
Phone: +7 (495) 713-9900
Fax: +7 (495) 939-0300

Web site: http://www.auriga.com
E-mail: info@auriga.com

eLearning Solutions Provider Since 1993

Founded: 1993
Number of Employees: 200+

Engineering Locations
4 development centers in Russia (Moscow, St.-Petersbourg, Izhevsk, Bryansk), + 1 in Belarus (Minsk)

Services
- Learning Platform Development and Improvement
- Interactive Simulations and Virtual Labs
- Authoring and Interactive Media Tools
- HTML5 & Mobile
- Content Authoring

Domain Verticals
Education, Government, Enterprise, Healthcare, Media & Entertainment, High-tech, Mobile and more.

Major Clients
Cengage Learning, Pearson Education, The McGraw-Hill Companies, John Wiley & Sons, Bedford, Freeman & Worth, Houghton Mifflin Harcourt, W.W. Norton, Edgenuity, Apollo Group

Technologies & Platforms
- Programming and Script Languages (JavaScript, XML/XSL, C/C++, Flash (AS 1-3), Java, C#, Visual Basic, Delphi, Perl, PHP, ASP, SQL, DHTML, Tcl, Python, Ruby on Rails, Assemblers)
- Technologies (HTML5, .NET, EJB (2.1, 3.0), Servlets, JSP 2.0, JSTL, Struts, JSF, Spring, JNDI, JDBC, JAXP, WS-I BP 1.0, JAX-RPC, SAAJ, SOAP, WSDL, AXIS, AJAX, Hibernate, JMS, Macromedia Flash, Flex, Shockwave, QuickTime, WPF, WCF, Silverlight, Apple Macintosh API, COM, ActiveX, DCOM, CORBA, OpenGL
- Operating Systems (Windows XP/Vista/7/8.1, Mac OS 7.5-10.9.2, iOS 4.3-7.1, Android 3.2-4.4.2, Unix [Linux, Solaris, BSD-flavor])
- Client Platforms (Internet Explorer 8-11, Google Chrome, Mozilla Firefox, Safari (latest versions))
- Web servers (Apache, Tomcat, Jetty, Resin, IIS)
- Application Servers (JBoss, GlassFish, BEA WebLogic, IBM WebSphere, ORION, Oracle)
- Databases (Oracle, MySQL, SQL Server, MAX DB, Firebird, Informix, DB2, BerkeleyDB, PostgreSQL, Sybase)

About Competentum
Competentum Group is a technologically-advanced provider of innovative, award-winning e-Learning services and solutions. Competentum is an expert in global e-Learning standards and technologies and is an outsourcing resource for the development of software solutions, scientific simulations, virtual labs, interactive 3D virtual worlds, multimedia content, and many other types of learning material for publishers, educational software providers, universities, and virtual schools. It specializes in hard sciences, technology, engineering, math, and statistics, as well as economics, accounting, business, and social and life sciences.
The Company has customers in North America, Europe, Asia, Australia, and Commonwealth of Independent States (CIS) countries, and has developed over 1.5 million learning objects for over 200 customers. Competentum's e-Learning solutions and learning objects are used in more than 10,000 universities in over 20 countries around the world.

Contacts:
Competentum, USA
1495 NW Gilman Blvd,
Suite 14, Issaquah,
WA 98027, USA
Phone: +1 (425) 996-4201

Competentum, Russia
4/1 Likhachevskiy Proezd, Moscow region,
Dolgoprudniy, Russia, 141700
Phone: +7 (495) 514-1100

Web site:
http://www.competentum.com

E-mail
contact@competentum.com

Founded: 1993
Headquartered: St. Petersburg, Russia
Number of employees: 370+

Company overview

Arcadia is a private Russian company operating on international market. Our team consists of 370 engineers and we have been providing software development and technology consulting services to our clients for over 22 years.

Most of our customers are companies from US, UK, EU and Australia. We focus on establishing long-term relationships with our clients: with many we've been working for more than 10 years, with some - for 20+ years.

We pay a lot of attention to quality of our work: developers follow BDD and TDD approaches; around 25% of our production staff are testers responsible for quality assurance of our deliveries (functional, usability, security, performance and load testing).

We have an established infrastructure and practices supporting modern development processes. The processes are aligned with client: in most cases we use Scrum or Kanban customized for specific project.

Certification

Company: ISO 9001:2004, Microsoft Gold Certified
Employees: Certified Microsoft Developers, ISTQB Certified Testers, Certified SCRUM masters

Development centers

St. Petersburg, Taganrog (Russia)
Enterprise solutions
Portal & Collaboration: Sitecore, SharePoint
Business process automation: workflow, document management, case management
Bespoke software: Web, mobile and desktop applications, complex distributed systems
Mobile apps: business-oriented apps for iOS, Android and Windows Phone – native and hybrid
Business Intelligence: machine learning, SQL Server Analysis Services, SQL Server Parallel Data Warehouse, Amazon Redshift
High-load: big data, SaaS, multitenant systems, globally distributed systems, Azure, AWS
Internet of Things: people counting, people traffic analysis, sensors, turnstiles, access control, transport monitoring

Industry Focus

Core: Education, Human Resources Management, Payroll, Financials, Accounting, Pharmaceuticals/Clinical trials, Digital publishing, Security and data protection, Online surveys

Emerging: Healthcare, Energy management, Travelling, Insurance, e-Ecommerce

We cover full cycle of software development: from business analysis and design to implementation, testing and support.

Top services are:
- Offshore development center
- Bespoke software development
- Modernization of legacy systems
- Technology consulting
- Business analysis and consulting
- Architecting for reliability and high load
- UX and graphical design
- Security audit
- Functional testing
- Performance and load testing
- Support and maintenance

Technologies

Development platforms: Microsoft, J2EE, MEAN, LAMP
Programming languages: C#, VB.NET, Java, C/C++, JavaScript, PHP, Python, Objective C, Swift
Databases: Microsoft SQL Server, Oracle, MySQL, PostgreSQL, MongoDB, CouchDB, MarkLogic
CMS: Sitecore, Sitefinity, SharePoint, Umbraco
Web: Microsoft ASP.NET, Java EE, Node.js
Cloud: Microsoft Azure, Amazon
Mobile: iOS, Android, Windows Phone, PhoneGap/Cordoba, Xamarin
Application servers: Microsoft IIS, Apache Tomcat, Zend
Methodologies: Scrum, Kanban, Waterfall, RUP

Contact information

Phone: +7 812 610 5955
http://offshore-software.ru/
info@arcadia.spb.ru

10-Strike Software	1998	Ulyanovsk	www.10-strike.com	info@10-strike.com	906-143-72-99
ABC	1993	Novosibirsk	www.abccenter.ru	info@abccenter.ru	383-211-92-50
Advanced Software Development	2008	Ulyanovsk	asdevel.com	webinfo@asdevel.com	8422-270-499
AGG Software	1999	Vladimir	www.aggsoft.ru	support@aggsoft.ru	910-180-78-33
Aktive Systems	2008	Moscow	aktivsystems.ru	contact@aktivsystems.ru	903-810-57-47
Almeza Company	2005	Yaroslavl	www.leadertask.ru	911@leadertask.com	4852-681-701
ALT Linux	2001	Moscow	www.altlinux.ru	org@altlinux.ru	495-662-38-83
Alt-invest	2004	Moscow	www.alt-invest.ru	spb@alt-invest.ru	812-448-83-89
Alt-soft	1991	St. Petersburg	www.altsoft.spb.ru	petr@altsoft.spb.ru	812-579-29-45
Alt-soft	1993	Moscow	www.altsoft.ru	support@altsoft.ru	3812-236-732
Altec	2000	St. Petersburg	www.altec.ru	info@altec.ru	812-320-08-88
Aplana International projects	2008	Moscow	www.aplana.com	ru@aplana.com	495-710-76-29
APM Research and Development Centre LLC	1992	Korolev	www.apm.ru	com@apm.ru	498-600-25-10
Appercode	2013	Novosibirsk	www.appercode.com	info@appercode.com	383-214-87-59
Apps.Group	2012	Yekaterinburg	www.appsgroup.ru	info@appsgroup.ru	965-5384995
Arcadia	1993	St. Petersburg	offshore-software.ru	info@arcadia.spb.ru	812-610 59-55
Arealidea	2003	Moscow	www.arealidea.ru	hello@arealidea.ru	495-660-37-78
Arello Mobile	2012	Novosibirsk	www.arello-mobile.ru	service@arello-mobile.com	383-328-31-27
Arsis Corp	1993	Moscow	www.arsis.ru	info@arsis.ru	495-980-29-31
Artensoft	2007	Smolensk	www.artensoft.ru	support@artensoft.ru	910-764-79-79
Artezio	2000	Moscow	www.artezio.com / www.artezio.ru	info@artezio.com	495-981-05-31
ASKsoft	2004	Penza	asksoft.ru	info@asksoft.net	960-326-53-48
ASPO	1990	St. Petersburg	www.aspo-spb.ru	aspo@aspo-spb.ru	812-710-88-63
Atom-security	2013	Novosibirsk	www.securitycurator.ru	kandybovich@gmail.com	913-915-21-37
Auriga Inc.	1990	Moscow	www.auriga.com; www.auriga.ru	info@auriga.com	495-713-99-00
Automatica plus	1998	Penza	www.automatikaplus.ru	autoplus@sura.ru	8412-487-012
AVSSOFT	2006	Moscow	www.avssoft.ru	info@avssoft.ru	915-290-00-58
Axmor	2003	Novosibirsk	www.axmor.ru	sales@axmor.com	383-363-01-28
Azoft	2002	Novosibirsk	www.azoft.com	azoft@azoft.com	383-363-05-49
BACUP IT	1990	Novosibirsk	www.bacup.ru	info@bacup.ru	383-325-07-71
BTO Group Total Objects Spb	1999	St. Petersburg	www.totalobjects.co.uk	info@totalobject.spb.ru	812-303-83-98
Business Leader	2008	Ulyanovsk	www.b-leader.ru	dev@b-leader.ru	951-096-48-81
Center programm solves	1999	Belgorod	www.1cps.ru	cps@1cps.ru	4722-240-396
Centrobit	2010	Moscow	centrobit.ru	info@centrobit.ru	495-927-02-78
CHTD	2009	Moscow	chtd.ru	info@chtd.ru	8-800-555-92-54
Citronium	2008	Yoshkar-Ola	www.citronium.com	sales@citronium.com	8362-220-546
Competentum	1993	Moscow	competentum.ru	info@competentum.ru	495-514-11-00
Constant	2001	Obninsk	www.constant.obninsk.ru	andrey@constant.obninsk.ru	484-394-44-74
DataArt	1997	St. Petersburg	www.dataart.com	info@dataart.com	(+1)212-378-41-08
Digital Design	1992	St. Petersburg	digdes.com, digdes.ru	info@digdes.com	812-346-58-33
East Wind	1997	Yekaterinburg	www.eastwind.ru	info@eastwind.ru	343-336-77-00
Elcomsoft Co	1990	Moscow	www.elcomsoft.com	info@elcomsoft.com	495-974-11-62
Elesy	1990	Tomsk	www.elesy.ru	elesy@elesy.ru	3822-601-000
Elicom	1995	Ufa	www.npf-elicom.ru	elicom@ufanet.ru	347-293-49-28

Elma	2006	Izhevsk	www.elma-bpn.ru	elma@elewise.com	3412-936-693
EMC St.Petersburg Development Centre	2007	St. Petersburg	https://russia.emc.com/campaign/centre-of-excellence/index.htm	Marina.Varzar@emc.com	812-325-46-33
Energoservice Engineering Center	1992	Moscow	www.ens.ru	v.bovykin@ens.ru	8182-657-565
Entegrit	2006	Moscow	avantlab.ru	info@avantlab.ru	495-545-46-42
Enterra Soft	2001	Barnaul	www.enterra.ru	info@enterra.ru	3852-567-295
EPAM Systems	1993	Moscow	www.epam-group.ru	ask@epam.com	495-730-63-62
ETNA	2002	St. Petersburg	www.etnasoft.com	info@etnasoft.com	(+1)855-779-71-71
Evelopers	1999	St. Petersburg	www.evelopers.com	info@evelopers.com	812-324-32-11
Excelsior	1999	Novosibirsk	www.excelsior.ru	info@excelsior.ru	383-330-55-08
Garant	1990	Moscow	www.garant.ru	info@garant.ru	495-647-62-38
GDC Services	2006	Kazan	http://www.icl-services.com/	Daliya.Ilyasova@icl-services.com	843- 272-26-03
Genery Software	2002	Novosibirsk	www.genery.com	dmitry@genery.com	913-743-17-99
Geosis	2009	Moscow	www.geosis.ru	m.fenkelshtein@geosis.ru	495-633-71-54
Globus	2002	Omsk	www.iaglobus.ru	office@iaglobus.ru	3812-388-528
Guru-soft	2005	Izhevsk	www.guru-soft.ru	info@guru-soft.ru	3412-916-626
Gypermethod	1991	St. Petersburg	www.learnware.ru	hyp@learnware.ru	812-380-88-77
IC Elit-profit SPB	2008	St. Petersburg	http://spb.eprof.ru/	info@eprof.ru	495-514-19-90
iITRP	2001	Moscow	www.itrp.ru	sales@itrp.ru , partners@itrp.ru	495-600-61-79
Inesoft	1998	Khabarovsk	www.inesoft.com	support@inesoft.com	914-546-88-62
Inexika	2001	Novosibirsk	inexika.ru	support@inexika.com	383-332-15-41
Inostudio Solutions	2006	Taganrog	inostudio.com ; inostudio.ru	welcome@inostudio.com; welcome@inostudio.ru	495-640-45-00
Inreco Lan	1989	Vladimir	www.inrecolan.ru	marketing@inrecolan.com	492-244-40-90
Insat	2012	Moscow	www.insat.ru	insat@insat.ru	495-989-22-49
Instream	2005	Moscow	www.instream.ru	info@instream.ru	495-255-15-45
Integral	1990	St. Petersburg	www.integral.ru	eco@integral.ru	812-740-11-00
Integrated Biometrical Solutions & Systems	2011	Moscow	www.ibrislab.com	info@ibios.ru	495-762-52-38
Integro	1998	Ufa	www.integro.ru	integro274@yandex.ru	347-232-12-41
Intelect-Inform	1998	Moscow	www.generalcomp.ru	info@generalcomp.ru	863-201-38-21
Intellect Climate	2008	St. Petersburg	www.it-ic.ru	info@it-ic.ru	812-333-18-01
Intelligence-Soft	1994	St. Petersburg	www.intsoft.spb.ru	info@intsoft.spb.ru	812-579-36-37
Internet-Frigate	2000	Novocherkassk	www.ifrigate.ru	main@ifrigate.ru	8635-224-110
ISS. Art. Ltd	2005	Omsk	issart.com	contacts@issart.com	381-290-98-08
Itech Mobile	2012	Ulyanovsk	www.itech-mobile.ru	hello@itech-mobile.ru	495-665-02-54
Itransition Rus	2010	Moscow	www.itransition.ru	info@itransition.ru	495-640-89-37
Kentor	1983	St. Petersburg	www.kentor.ru	spb@kentor.se	812 325-13-00
Knowledge Genesis	2010	Samara	www.kg.ru	info@kg.ru	846-279-37-79
Krug	1992	Penza	www.krug2000.ru	krug@krug2000.ru	8412-499-775
Labware	2005	Moscow	www.labware.ru	info@labware.ru	495-229-62-28
Lanit-Tercom	1991	St. Petersburg	www. Lanit-tercom.com	katherina.ufnarovskaia@lanit-tercom.com	911-208-11-92
Logrus LLC	1993	Moscow	www.logrus.ru	marcom@logrus.ru	495-646-35-64
Luxoft	2000	Moscow	www.luxoft.com	info@luxoft.com, LuxoftMarketing@luxoft.com, ozolotykh@luxoft.com	495-967-80-30
Mapilab	2006	Kaliningrad	www.mapilab.com	info@mapilab.com	4012-991-366
Measuring Technologies	1995	Sarov	www.	iv.vinokurov@mail.ru	83130-633-34
Mobile Up	2009	St. Petersburg	mobileup.ru	hello@mobileup.ru	812-425-01-58

Network Media	2013	St. Petersburg	network-media.ru	zakaz@network-media.ru	812-670-07-32
NICETU Engineering research centre of Saint Petersburg Electrotechnical University-	2006	St. Petersburg	www.nicetu.spb.ru	info@nicetu.spb.ru	812-703-75-83
Nicotech International	1991	Moscow	www.nicotech.ru	info@nicotech.ru	499-500-38-29
Ñvision Lab	2011	Taganrog	www.cvisionlab.com	info@cvisionlab.com	8634-327-269
Oktetlabs	2004	St. Petersburg	www.oktetlabs.ru	konstantin.ushakov@oktetlabs.ru	812-784-65-91
Open-Source Software Labs	2012	Tolyatti	Www.osslabs.ru	info@osslabs.ru	499-703-39-66
Optic recognation	2002	Samara	www.magtoapp.ru	info@magtoapp.ru	499-638-86-59
Oracle Development SPB, LLC	2004	St. Petersburg	www.oracle.com/ru	olga.volkova@oracle.com	812-334-64-51
Papilon	1992	Miass	www.papillon.ru	4requests@papillon.ru	3513-546-433
Parallels	1999	Moscow	http://www.parallels.com	schlek@parallels.com	495-783-29-77
Pharus	2012	Moscow	www.web-pharus.ru	info@web-pharus.ru	499-391-21-28
PiterSoft	2005	St. Petersburg	http://www.piter-soft.ru/	info@piter-soft.ru	812-333-08-60
Potok	1998	Korolev	www.potok.ru	potok@potok.ru	498-600-27-60
PROMT	1991	St. Petersburg	www.promt.ru	pr@promt.ru	812-655-03-50
Reksoft	1991	St. Petersburg	www.reksoft.com	info@reksoft.ru	812-325-21-00
RELEX	1990	Voronezh	www.relex.ru	market@relex.ru	473-271-17-11
Renaissance-it	2007	Rostov-on-Don	www.renaissance-it.ru	alexey@renaissance-it.ru	905-479-76-77
Rubius	2008	Tomsk	www.rubius.com	info@rubius.com	3822-977-772
Ruswizard	2008	Taganrog	www.ruswizards.com	info@ruswizards.com	8634-319-100
SAPRUN	2008	Moscow	www.saprun.com	info@saprun.com	495-663-77-59
SibEDGE	2007	Tomsk	www.sibedge.com	contacts@sibedge.com	3822-701-841
Sidenis	1995	St. Petersburg	www.sidenis.ru	info@sidenis.ru	812-611-06-86
SIGMA	2005	St. Petersburg	www.sigma-it.ru	info@sigma-it.ru	812-602-27-72
Signatec.ru	1993	Novosibirsk	www.signatec.ru	maf@signatec.ru	383-363-03-83
Sinercom	1997	St. Petersburg	newlinestudio.ru	prog@sinercom.ru	812-635-81-23
Softlab-nsk	1991	Novosibirsk	www.softlab-nsk.com	administration@softlab-nsk.com	383-339-92-20
SoftMasters	2008	Kingisepp	www.soft-masters.ru	init@soft-masters.ru	812-313-23-11
Solvo	1995	St. Petersburg	www.solvo.ru	sales@solvo.ru	812-606-05-55
Sonda Technologies	2011	Miass	www.sonda.ru	sonda@sonda-tech.com	3513-546-800
Spectec	1996	St. Petersburg	www.trim.ru	sales@spectec.ru	812-329-45-60
Star-Force	2000	Moscow	www.star-force.ru	info@star-force.ru	495-967-14-51
Tech-soft	2003	Moscow	www.tech-soft.ru	support@tech-soft.ru	495-960-22-83
TrueConf	2003	Moscow	www.trueconf.ru	sales@trueconf.ru	495-698-60-66
Virtual Technologies	2002	Moscow	www.prometeus.ru	info@prometeus.ru	495-739-48-54
Yuma Development	2003	St. Petersburg	www.yumasoft.ru	sales@yumasoft.ru	812-334-08-05

RUS®SOFT

RUSSOFT Association
Birzhevaya line 16, suite 411,
St. Petersburg, 199034, Russia
contact@russoft.org
www.russoft.org

Executive Editor
Valentin Makarov

Analytics
Dmitry Zhelvitsky