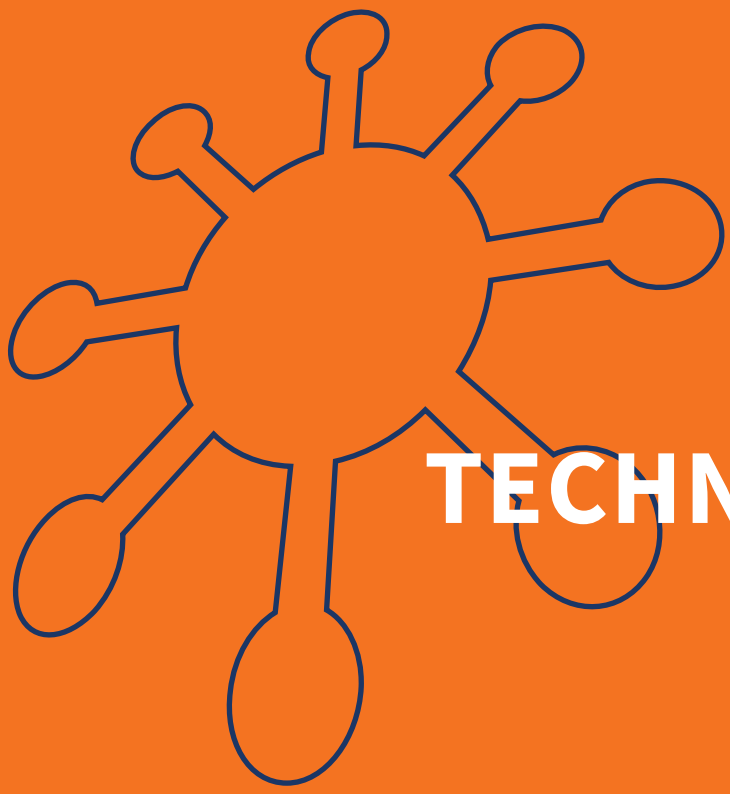

# TECHNOLOGIES

# TRENDS IN ARTIFICIAL INTELLIGENCE

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Artificial Intelligence (AI) remains the technological prime mover in developing most industries. The global AI market had reached $136.6 billion by 2022 (GrandViewResearch), and is expected to rise to $1.8 trillion by 2030, with a CAGR of 38.1% (up from 34.3% last year).

The variability of AI use scenarios is also on the rise. Technological advances made it possible by unlocking AI transformers' potential, fostering new architectures (wav2vec, HuBERT), building up data volumes ready for analytics, and perfecting ML model learning. Conversational AI thrives with new approaches that streamline its word concordance, adjust endings and punctuation, remove "verbal noise" such as slips, interruptions and filler words, and correct errors automatically. It makes speech recognition easier to apply. Consequently, the tasks where AI shows great results become significantly more complex. The use scope of mass-market digital services is expanding: voice assistants can help you compute your taxes, check your documents or any specific information, and even procure documents or references for you, performing an end-to-end commercial or government liaison role.

**Some modern trends are:**

- **High demand for internal communication data mining**
  The value of executive meeting takeaway data—decisions made, tasks assigned, project statuses, etc.—is up. As meetings become more frequent, especially online, the use of speech recognition to facilitate attendance for internal meeting participants expands accordingly. Another improving aspect is post-processing of the recognition results to improve readability, including endings adjustment and correction of incorrectly recognized words. NLU is more widely applied where the need exists to automatically highlight and generate outcomes and follow-ups on meetings without human involvement.

- **Robots sound more like humans**
  Dialogue assistants at call centers get the capability to anticipate the interlocutor's intentions in the course of a conversation. They will be able to delve even deeper into the context and emotions, adapting to the target audience and making services progressively more personalized, both in business and the public sector.

- **Creative and generative AI**
  The success of generative AI models shows that the approaches they employ are increasingly more relevant where the idea is to create radically new content. Eventually, in addition to generating texts, pictures and music, AI will be able to create the desired audio and video content along the lines of corporate virtual avatars almost instantly.

- **Face and voice biometrics-based solutions are being integrated in various fields worldwide. Notable progress in anti-spoofing technology (protection from different types of attacks)**
  Liveness detection technology protecting facial recognition data steadily improves while the machine, through speech recognition learning, becomes ever more adroit at detecting voice deep-fakes. AI is deployed to identify fraud patterns in speech communication, helping to counter them.

- **The role of AI is shifting from mere task automation to making staff work faster and easier altogether**
  Voice AI becomes the core of familiar processes, enabling a dramatic upswing in the quality of familiar services and boosting productivity without the need to alter the infrastructure.

# 6.1. Technologies used

During the survey performed in 2020 among software developers as part of the RUSSOFT annual study, the question regarding the rate of popularity of operating systems (OS), database management systems (DBMS) and programming languages was changed. Instead of simply mentioning the technology, respondents were asked to estimate (based on the time spent on corresponding solutions and applications development) the ratio of accounted for each technology used. As a result, it became possible to obtain a more objective picture, since at previous assessments of software popularity based on a single vote those technologies could be scoped out which were used in a company in completely different extents.

The change in the popularity of OSs, DBMSs, and programming languages could well be monitored in previous years, but with less accuracy.

At the same time, to assess the popularity of a particular technology the method of performance of the survey should be accounted for, i. e. the number of companies participating in the survey, and the changes in the composition of participants from year to year. In a stable situation, this composition and the number of companies surveyed change only slightly, but at any upheavals, some adjustments and reservations should be made.

For example, due to a much larger number of respondents in the survey performed in 2021, more accurate data were produced in the result of the survey regarding both the number of references and the intensity of programming for different operating systems and DBMSs, as well as regarding the intensity of the use of programming languages as compared with 2020, in which year the questionnaire did not turn out to be full due to the outbreak of the pandemic and the resulting huge uncertainty.

It should be noted that with a significant increase in the number of respondents, the percentage of small software companies participating in the survey also increased, with these companies indicating on average a much smaller number of operating systems, DBMSs and programming languages than the number indicated by large enterprises. Accordingly, the average rate of these systems, DBMSs, and languages mentioned also decreased. Thus, it cannot be concluded that most operating systems, DBMSs, and programming languages became less popular in 2021 in comparison with 2020. Nevertheless, various comparisons can be made (for example, compared with data obtained during surveys performed in 2019 and 2018, when there was a more similar structure of the array of polled companies).

The peculiarity of the survey performed in 2022 consists of the fact that many companies with a large share of exports in the revenue structure could not participate in the survey. For this reason, the percentage of such companies has decreased significantly. However, it is easy to adjust by comparing the survey data of companies with different shares of exports. Moreover, the share of exports has a clear impact on the popularity indicators of only 2 or 3 operating systems and DBMSs.

## 6.1.1. Operating Systems

With regard to the popularity of operating systems among software developers, several obvious trends can be noted with account to all random fluctuations over the past 14 years. Firstly, the frequency of MS Windows mentions has decreased (from the original 94-97% to 84-88%, and to 74-79% in the last 3 years). The times when almost all surveyed developers created solutions for Windows, apparently, forever became a thing of the past. It can be assumed that starting the next year the descent of this indicator will resume.

In 2020, the GNU Linux family even took the lead, slightly overtaking Windows. The increase in the number of Linux mentions is quite consistent with the trend revealed in previous years. The reliability of the sharp drop in the popularity of Windows was somewhat doubtful. The survey performed in 2020 was not entirely complete due to the insufficient number of companies participating in the survey. For this reason, it was not worth rushing to declare the obvious leadership of GNU Linux.

In 2021, in terms of the number of OSs mentions, Windows again took first place with a quite decent lead from the GNU Linux family. However, if related UNIX-like systems (Android and Tizen) are added to GNU Linux, the percentage of companies mentioning at least one system from this group will be 82%. This figure turned out to be more than that of Windows, even with the addition of MS Windows Mobile and MS Windows Phone, which no participant has mentioned separately from Windows. Due to the fact that the

2021 survey was conducted with an increased number of respondents and that this survey gave quite reliable results, the superiority of the GNU Linux family over the Windows family's popularity among software developers can be declared with more certainty.

In a survey performed in 2022, the GNU Linux family came out in 1st place, but at present shares this 1st place with Windows. 79% of surveyed companies develop solutions to suit both operating systems. However, if all Linux-based operating systems are compared with the entire Windows family, then a clear advantage of Linux can be noted – 88% versus 79%.

Already in 2021 MS Windows Mobile and MS Windows Phone had virtually zero indicators. Therefore, they were not included in the new rating of the most popular OSs. Oracle (Sun) Solaris and Tizen with very low scores also were not included in this rating. In 2021 Oracle Solaris was mentioned by only 3% of surveyed companies, although 2 years before the number of mentions accounted for 13%, and for 26% in 2008. However, the intensity of development for this OS is already almost zero. A few years ago Oracle has massively fired Solaris developers. Although the complete cessation of development and support for this OS has not been announced, its revival is already considered unlikely.

The mobile Aurora (Sailfish) software was added to the rating, this software is slowly but surely becoming more popular among developers of software for mobile devices.

**Top-7 most popular operating systems among Russian software companies, % of surveyed companies**

| | Software Title / Year of /Survey | 2008 | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MS Windows | 97% | 94% | 93% | 96% | 94% | 88% | 92% | 87% | 93% | 84% | 89% | 88% | 74% | 79% | 79% |
| 2 | GNU Linux family | 64% | 54% | 54% | 59% | 60% | 65% | 51% | 59% | 60% | 57% | 59% | 72% | 76% | 67% | 79% |
| 3 | Android | — | — | 6% | 4% | 37% | 33% | 43% | 36% | 43% | 39% | 53% | 58% | 60% | 49% | 49% |
| 4 | iOS | — | — | — | — | 28% | 24% | 34% | 29% | 35% | 36% | 49% | 49% | 50% | 41% | 41% |
| 5 | Mac OS | 26% | 9% | 15% | 19% | 32% | 31% | 33% | 32% | 33% | 37% | 48% | 48% | 31% | 20% | 17% |
| 6 | Open/Free/ NetBSD | 25% | 7% | 9% | 9% | 13% | 10% | 14% | 13% | 11% | 11% | 19% | 22% | 8% | 7% | 8% |
| 7 | Aurora (Sailfish) | — | — | — | — | — | — | — | — | — | — | — | — | — | — | 5% |

According to a survey performed in 2021, the MS Windows operating system also lost its sole leadership in terms of the share of time spent on the development of solutions and applications: the figure for both UNIX-like open-source systems (GNU Linux, Android, and Tizen) and the Windows family (with MS Windows Mobile and MS Windows Phone) is exactly the same. However, some UNIX-like systems fell into the "Others" category (primarily Aurora instead of Sailfish), and the share was not calculated separately for these systems. Therefore, the Windows family, although by a tiny amount, is still inferior also in the sense of intensity of the development of solutions for the OS. In addition, there is also a proprietary UNIX-like Oracle Solaris system with an indicator of 0.1%.

The entry of UNIX-like operating systems to the leading position was predicted by RUSSOFT analysts several years ago and was predicted to happen in 2022 or 2023, but this entry happened earlier – at the end of 2020, which became known in 2021. However, the advantage of these OSs is defined as little to nothing and is therefore not obvious. There is no doubt in 2022 that in Russia the development of software for Linux and other UNIX-like systems is conducted more actively than the development for all types of Windows.

To capture a leading position, the Linux family does not even need any support from related mobile systems (Android, Tizen, Aurora). When considering the data of the survey conducted among 175 companies (with a total number of development specialists of 23.6 thousand people) related to the answers to the corresponding question about the share of applications development for different operating systems, the share of Windows is only 28.2%, while the share of Linux is 48.8%. The results of a survey of only software companies (IT companies with development personnel but with software development being not their main activity also participated in the survey) give Linux a not so significant advantage over Windows – 40.0% versus 35.7%. In these companies, 17 thousand specialists are engaged in software development.

Linux will still enjoy superiority (38% versus 36%) even if the data are adjusted to account for the fact that many companies with a large share of exports in revenues could not participate in the survey performed in spring 2022. With any calculations, it is obvious that the share of Linux has been growing in recent years, and the share of Windows has begun to decline since 2021. After the announcement that Microsoft will stop working in the Russian market, it is easy to assume that by the end of 2022 the share of Windows will decrease even more, and the share of Linux will increase. Most likely, both changes will be more significant than in 2021.

**Percentage of major operating systems by time spent for the development of solutions and applications for these operating systems**

| | in 2019 | in 2020 | in 2021 * |
|---|---|---|---|
| MS Windows | 42.5% | 42.9% | 28.2% (35.7%) |
| Linux Family | 30.0% | 32.5% | 48.8% (40.0%) |
| Android | 7.8% | 9.9% | 9.3% (9.2%) |
| iOS | 6.8% | 7.7% | 7.8% (7.2%) |
| Mac OS | 8.9% | 4.1% | 3.5% (4.4%) |
| Open/Free/NetBSD | 3.9% | 1.1% | 1.3% (1.8%) |
| Tizen | 0.2% | 0.5% | 0.3% (0.4%) |
| Aurora (Sailfish) | — | — | 0.3% (0.4%) |

* — only data for software companies (IT companies that have developers who took part in the survey, but software development is not their main activity) are indicated in parentheses

Of course, users are very reluctant to switch to other operating systems from the already familiar one. However, the motives of software developers to maintain their commitment to MS Windows and its package of MS Office applications are becoming weaker and weaker every year. Since 2022, the need to switch to Linux already looks mandatory. At the same time, it was realized not only in Russia, but also in many other countries (even in the USA), this transition is quite widespread, but mainly for economic reasons, since the use of a PC with Linux can be much prolonged in comparison to the use of a PC with Windows.

For other operating systems, only a steady decrease in the share of Mac OS in the last 2 years can be noted. It did not come close to zero only thanks to exporting companies. Since Apple has supported anti-Russian sanctions, the development of software for the operating system (Mac OS and iOS) of Apple by Russian companies is unlikely to increase. Such development is likely to shrink.

Unlike Sailfish (Aurora), Tizen OS for mobile devices was not included in the Register of Domestic Software (only Smart TV Tizen was included). In spring 2018 the state-owned corporation Rostelecom proposed that the Russian government shall make it mandatory for public officials to use smartphones based on the domestic Sailfish OS. Experts questioned the fact that it would be possible to switch to the mass use of the Sailfish OS in this way, since the devices with this system will have limited functionality. In addition, as a rule, government employees, use their own smartphones, on which they install the applications they need to work.

In early 2019 Sailfish received the Russian-language name – "Aurora." Promotion under a new name has become more active.

It also became known in June 2019 that the Russian corporate messenger PostLink became the first Russian corporate software with the implementation of voice calls for the Aurora mobile OS. In 2019 Aurora OS was also first mentioned in the framework of the RUSSOFT annual survey.

In November 2019 it turned out that Russian Railways was ready to introduce the Russian "Aurora" mobile OS to the employees of this company. The relevant agreement was signed between "Russian Railways" JSC, "Open Mobile Platform" LLC, and "Branch Center for the Development and Implementation of Information Systems" LLC (the subsidiary of "Russian Railways" JSC). This Agreement is aimed at the implementation of pilot projects to introduce hardware solutions for specialized mobile devices used by the employees of Russian Railways based on the domestic mobile operating system.

The information appeared in March 2022 that the Russian trusted mobile phone for confidential communication Ayya T1, originally released on Android, was launched under the control of the Russian operating system "Aurora".

"Aurora" has earned the right to enter the top 8 most popular operating systems under development in Russia. However, it cannot yet be said that its popularity is growing rapidly.

Due to the fact that, under pressure from the US authorities, Google began to use its Android operating system as a tool of political pressure (new smartphones of the Chinese company Huawei may not have updates to this OS, as well as related services from Google), in 2020 there were doubts about the further growth of popularity of Android. There were incentives to more actively create alternative operating systems with full functionality. Such OSs have already appeared in China, Russia and in other countries, although the transition to these OSs in Russia was not very fast.

In mid-January 2020, it became known that Huawei is starting to pay developers to create applications for the proprietary operating system of this company – Harmony OS. Thus, this Chinese manufacturer is accelerating the development of its own ecosystem in order to reduce and completely eliminate its dependence on Google services.

Information appeared in March 2022 about the termination of licensing of Android-based smartphones produced by Russian manufacturers by Google. This means that these manufacturers will not be able to produce devices with pre-installed Google services, such as the Chrome browser and the Google Play app store.

The data of the survey conducted by RUSSOFT has not yet shown the obvious negative impact of political games on the growth of the popularity of Android, but this growth has definitely stopped.

Among other operating systems (not included in the top 10), respondents in recent years have mentioned mainly real-time operating systems – for example, QNX, VxWorks, ThreadX, MQX, Contiki, LynxOS, RTOS. And, as a rule, these were single-time mentions. Until 2016 the number of mentions of real-time operating systems was increasing from year to year, which was consistent with global trends. According to the results of surveys conducted in the last 5 years, such an increase has not been observed, but 3-5% of companies consistently indicate their use of such systems. In 2022, 2.9% of respondents indicated development for various real-time operating systems (3 times QNX and its branch Neutrino, Nucleus and FreeRTOS once each).

In addition to the real-time OSs, the following OSs were mentioned once each: BareMetal OS used to achieve high-performance computing with minimal cost, and proprietary UNIX-like FreeBSD OS.

In 2021 9 respondents (4%) indicated the development of software not for a specific OS, but for browsers, or reported the development of cross-platform solutions. The number of such answers became less in 2022 – 4 (2.2%).

If we compare the popularity of OSs for different categories of companies, then we can note that solutions for Android and iOS mobile operating systems are more often developed by companies in which more than 50% of revenues are coming from exports, as well as by companies whose head office is located outside of Moscow and St. Petersburg. Development for MS Windows and GNU Linux family is more required by companies receiving the main income in the domestic market.

## The intensity of development of solutions for operating systems by companies with different export shares in total revenues and with different locations of the head office

| | MS Windows | Mac OS | GNU Linux family | Open/Free/ NetBSD | iOS | Android | Tizen | Aurora (Sailfish) |
|---|---|---|---|---|---|---|---|---|
| Share of exports | | | | | | | | |
| export less than 50% | 31.8% | 1.3% | 53.0% | 3.1% | 4.3% | 5.3% | 0.5% | 0.7% |
| export more than 50% | 41.0% | 8.7% | 22.4% | 0.1% | 11.1% | 14.5% | 0.4% | 0% |
| Head Office Location | | | | | | | | |
| Moscow | 33.4% | 1.8% | 48.3% | 5.5% | 4.3% | 5.9% | 0% | 0.9% |
| St. Petersburg | 35.6% | 0.3% | 56.8% | 0.2% | 3.0% | 3.3% | 0.5% | 0.1% |
| Other regions | 36.4% | 7.1% | 30.0% | 1.5% | 9.9% | 12.9% | 0.6% | 0.4% |

The range of operating systems mentioned only once has clearly narrowed in recent years. Nevertheless, completely new OSs are being developed. Apparently, the development of new OSs is really not needed for mass-produced PCs and smartphones. New versions of mobile operating systems appear when the current operating systems are discredited (for example, caused by the participation of Google with its Android OS in political games), but they will also be based on Linux.

New operating systems are created only for certain tasks and types of equipment (not for PCs and smartphones) and, above all, for the Internet of Things (IoT).

Reports appeared in the last few years on the plans to develop new operating systems in Russia. In March 2019 Kaspersky announced that the company was developing its own operating system with a developed security system. This OS appeared in the end of 2019 in two versions – for the corporate segment, including government agencies, and for ordinary users. According to the company website, KasperskyOS allows to create cyber immune solutions resistant to most types of cyber attacks. This is especially important for industries and solutions with increased information security requirements. The company invites developers to create solutions for KasperskyOS, but not a single mention of this OS has yet been noted in the framework of the annual survey of software companies conducted by RUSSOFT.

In early 2022, it became known that work on the "Phantom" operating system of DZ Systems was being finalized. This OS was created from scratch and has unique characteristics. According to developers, this OS will be of interest for companies with special requirements to security – enterprises of the fuel and energy complex and military industry, objects of critical information infrastructure (CII), banks. Apparently, the Phantom OS will also be used mainly in the Internet of Things.

## 6.1.2. DBMS

Until 2020, the frequency of mention of almost all major DBMSs included in the table insignificantly changed from year to year (as well as these DBMSs ranking based on this indicator). Random fluctuations of this indicator for each DBMS were not very large, but still they were encountered. Only a steady increase in the share of the free object-relational database management system PostgreSQL was exceptional.

For many years the three DBMS – MS SQL, MySQL and Oracle – remained most popular among the developers. They only sometimes changed places. In 2018 the composition of the first three changed for the first time: PostgreSQL made its way into it, pushing Oracle to 4th place. Over the past 3 years PostgreSQL has confidently taken first place both in terms of the number of mentions and in the intensity of development of solutions for DBMSs (more information on this is presented below). In 2021-2022 it became possible to indicate a decrease in the number of MS SQL and Oracle mentions, which cannot be explained by random fluctuations.

Over a long period, an increase was noted in the popularity of SQLite, a compact embedded DBMS. In 2010-2011 it was mentioned by 5-9% of respondents, while by 2019 this figure had grown to 35%. However, in 2020 this figure slightly decreased – to 29%, and to 12% in 2021. Based on the results of the survey performed in 2022 it is possible to say that this DBMS retained its position - it was mentioned by 15% of surveyed companies.

It is worth noting that in 2019 the many years leading MS SQL has yielded the championship to MySQL (an open source database for e-commerce, online transaction processing, developed and supported by Oracle Corporation). However, in 2020-2022, it still holds the second place, being surpassed only by PostgreSQL.

In 2020 the range of DBMSs mentioned by at least 5% of respondents has sharply reduced. There are only 10 such systems, although in previous years their number was about 15. Since not a large number of companies participated in the survey in the year of the pandemic, verification of the results was required. The survey performed in 2021 confirmed the version according to which the number of popular DBMSs among developers has decreased: 5 and more percent of developers have only 7 systems: PostgreSQL, MySQL, MS SQL, Oracle, SQLite, Firebird and MongoDB. At the same time, all these most popular DBMSs (except PostgreSQL) recorded a significant reduction in the frequency of mentions (% of all surveyed companies). With no account for the data of a not entirely full-fledged survey performed in 2020, but with these data comparison with the results of the survey performed in 2019, this indicator will show growth only for MongoDB and PostgreSQL.

Thus, according to the results of surveys performed in 2021-2022, 10 DBMSs at once had such low frequency of mentions that did not allow to rate them among the most popular solutions. IBM Informix, IBM DB2, Sybase ASA, Sybase ASE, Linter, SAP DB, InterBase, Paradox, MSDE, MS Access were mentioned by not more than 5% of respondents, and software development for these systems on average took 0.1-0.2% of the working time of all specialists of surveyed companies). For these reason these DBMSs are excluded from the rating. At the same time, a new system – ClickHouse was listed in the rating. This DBMS was developed by the Russian company Yandex. It allows to store and quickly process large amounts of information for analytical reporting. ClickHouse very quickly wedged into the list of DBMSs being most popular among the developers.

Apparently, the need for such a large number of DBMSs that respondents mentioned earlier has disappeared – 6-7 main and some other systems for specific tasks are enough.

Surveyed companies were given an opportunity to indicate other DBMSs for which they were developing software. Until 2022 (with the exception of 2020), up to 10 DBMSs were listed in the "Others" category. One of the systems – MongoDB – was subsequently included in the “Main” category.

Almost all DBMSs in the "Others" category were mentioned not more than 1-2 times (more often – only once). At the same time, not necessarily every year, but the composition of this category is constantly changing. Only Redis does not fall out of this trend, but respondents have never mentioned it more than 2 times. Cassandra DBMS was also consistently indicated 1-2 times, but in 2021 it was not mentioned not even a single time, while Redis was again mentioned 2 times.

In 2019 respondents first mentioned the ClickHouse DBMS developed by Yandex. In 2021 it was already mentioned by 7 respondents (4% of all surveyed companies) and in 2022 it became one of the main ones.

Almost 20 DBMSs, data processing platforms and data warehouses were mentioned in the "Others" category in 2022. Some of them were previously named among the main ones. Redis (4), the cloud corporate data storage Azure Table (3), Cassandra (2) were mentioned more than once. The rest were mentioned once: osmos DB, Graph DB, Greenplum (mass-parallel DBMS for PostgreSQL-based datastores), TPS

(transaction processing system), Jatoba, ElasticSearch (highly scalable distributed search engine for full-text search and data analysis), etcd (distributed storage of configuration parameters specified in the form of key/value), Tarantool, Hbase, Cockroach DB, NitrosBase (Russian high-performance DBMS supporting relational, graph and document data models), HANA (SAP resident relational DBMS), MariaDB, LINTER, OT.Platform (open universal platform for solving problems using machine learning methods without the need to involve ML specialists). Two companies indicated their proprietary DBMSs (one of them is Code Server, and the other is untitled).

## Main DBMSs used, % of all surveyed companies

| | Year of survey/ DBMS | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | PostgreSQL | 17% | 15% | 26% | 30% | 28% | 28% | 33% | 36% | 51% | 66% | 79% | 78% | 82% |
| 2 | MS SQL | 63% | 74% | 70% | 66% | 70% | 67% | 59% | 61% | 67% | 62% | 58% | 51% | 47% |
| 3 | MySQL | 47% | 40% | 59% | 56% | 56% | 54% | 42% | 53% | 61% | 72% | 54% | 43% | 41% |
| 4 | MongoDB | — | — | — | — | — | — | — | — | 6% | 10% | 35% | 26% | 26% |
| 5 | Oracle | 49% | 55% | 51% | 47% | 45% | 39% | 36% | 37% | 40% | 41% | 40% | 31% | 24% |
| 6 | SQLite | 9% | 5% | 12% | 10% | 19% | 12% | 10% | 19% | 25% | 35% | 29% | 12% | 15% |
| 7 | ClickHouse | — | — | — | — | — | — | — | — | — | — | — | — | 11% |
| 8 | Firebird | 11% | 9% | 10% | 13% | 16% | 15% | 11% | 11% | 14% | 13% | 13% | 5% | 6% |
| 9 | Other | 13% | 8% | 7% | 8% | 10% | 9% | 5% | 9% | 14% | 13% | 8% | 12% | 13% |

Changing the wording of the corresponding question in the questionnaire used in 2020 made it possible to determine not only the number of companies using DBMSs, but also to learn intensively each company was developing software for the most well-known DBMSs. According to the second popularity indicator the leading position was still occupied by the PostgreSQL DBMS, which strengthens its leading position every year, increasing the lead from the second MS SQL to a huge one.

The new wording of the question to respondents showed that there were only 6 database management systems in the DBMS rating with an indicator that cannot be considered close to zero.

In 2021 the indicator of the intensity of applications development for PostgreSQL has increased slightly, while the same indicator has decreased for MS SQL and MongoDB DBMS. There are no obvious and unambiguous changes for the rest DBMSs. In 2022 growth is observed only for Oracle and PostgreSQL, and for the rest DBMS the number of mentions has decreased. The indicator for ClickHouse is likely to have increased, but there is no exact data on its popularity in 2021.

According to the survey completed by JetBrains company in summer 2020, the world 3 top used DBMSs (in 2019) had the following composition: MySQL (66%), PostgreSQL (36%), MongoDB (35%). In Russia, PostgreSQL (61%) was the leader with a big lead, MySQL accounted for 42%, MongoDB and Redis each accounted for 30%. JetBrains noted that Russians use ClickHouse 10 times more frequently.

Despite the fact that the range of especially popular database management systems is shrinking, in recent years new DBMSs required for fundamentally new tasks that did not exist before have been developed. Russian companies joined this work. For example, in 2016 the Mail.ru Group announced plans to break into the database management system market with its Tarantool open source DBMS. Tests of this DBMS were performed on domestic products, but it is planned that this system will be distributed (primarily as a replacement for Oracle) both in Russia and abroad. Respondents have not yet mentioned this system in their answers.

**The share of DBMSs by the intensity of applications development for these systems (data of surveys performed in 2020-2022)**

| | | 2020 | 2021 | 2022 |
|---|---|---|---|---|
| 1 | PostgreSQL | 35.8% | 38.5% | 47.1% |
| 2 | MS SQL | 32.4% | 29.2% | 17.2% |
| 3 | Oracle | 9.6% | 10.0% | 16.2% |
| 4 | MySQL | 8.7% | 9.3% | 6.8% |
| 5 | ClickHouse | — | — | 3.7% |
| 6 | MongoDB | 7.5% | 4.3% | 3.0% |

In November 2019 Nokia announced the development of a software solution for the automation of development operations in the field of industrial Internet of Things (IIoT, Industrial Internet of Things) based on the Tarantool DBMS.

In September 2020 the Mail.ru Group holding announced plans to invest RUR 300 million in the development of the Tarantool DBMS and its popularization around the world. The funds will be spent to improve this system security, to launch the support in English and to strengthen the international development team.

In early 2022 VK "Digital Technologies", a part of the Mail.ru Group holding, launched a cloud service for the Tarantool DBMS have been developed without installation on a computer.

VK has launched a service on which one can test the functionality of the Tarantool DBMS.

In April 2022 VK introduced a massive update to the Tarantool in-memory computing platform. After that the technology became available in three versions: an open source version for all developers and companies (Community version), On-premise version for large companies (Enterprise version) and Tarantool as a service in the VK Cloud Solutions (cloud version) cloud. New tools will improve the security and reliability during the use of high-load services and will reduce the total cost of ownership of the infrastructure.

Until 2021 inclusive, not a single software developer surveyed by RUSSOFT has mentioned Tarantool as the DBMS for which they develop applications. The first mention appeared in 2022.

In December 2021 it became known that Relex (the Russian developer of Linter DBMS) since 2017 has been developing its own scalable relational DBMS named Soqol and and that this system was already brought to the MVP stage. The unique architecture of the system made it possible to combine the best features of relational and resident solutions. Tests conducted by the developers show a significant performance superiority of this domestic solution compared with PostgreSQL.

In April 2022 Yandex published the source code of the Yandex Database (YDB) DBMS, the base for Taxi, Market and another 500 projects operation. Experts believe that the solution will be in demand in services based on Big Data technologies and when working with SQL and NoSQL databases. YDB is capable of processing millions of requests per second.

Yandex has published the source code of a distributed database management system.

## The main DBMS used by companies of different sizes and with different shares of foreign sales, % of all surveyed companies

| Year of survey/ DBMS | Size of companies: turnover less than RUR 375 million (USD 5 million) | Size of companies: turnover more than RUR 375 million (USD 5 million) | Overseas sales: less than 50% of turnover | Overseas sales: more than 50% of turnover |
|---|---|---|---|---|
| PostgreSQL | 76% | 100% | 81% | 84% |
| MS SQL | 44% | 62% | 46% | 58% |
| Oracle | 13% | 62% | 24% | 16% |
| MySQL | 43% | 48% | 41% | 63% |
| ClickHouse | 9% | 14% | 8% | 26% |
| MongoDB | 25% | 45% | 24% | 63% |
| Others | 14% | 10% | 13% | 11% |

Companies receiving more than half of their revenues from overseas sales used PostgreSQL more often compared to developers focused primarily on the Russian market. But the popularity of PostgreSQL among the companies with the Russian IT market being the major one is growing very quickly, well in advance of this system popularity among exporters in terms of growth rates. It should be noted that this DBMS holds the leading position in all categories.

The larger the company, the larger its set of DBMSs used. Therefore, all DBMS are mentioned more often by companies with a turnover of more than RUR 375 million (USD 5 million) than by smaller companies.

Development for all DBMSs except Oracle is more often used by companies with a more than 50% export share.

**Video communication solutions are divided into technology classes that are not intercompatible - classic videoconferencing, web conferencing and video communicators. The VCS segment is limited - there are not more than ten vendors in the world, the development requires high quality expertise. Creators of web conferencing solutions often sell their less technological and, consequently, low-budget products as VCS. Improperly chosen technology limits customers in functionality, there appear difficulties in integration with the existing infrastructure, implemented on imported solutions of classic videoconferencing.**

**Boris Popov**
Director of Business Development at Vinteo

Vinteo
VIDEO COMMUNICATION CORE

## 6.1.3. Languages and Programming Tools

In 2020 the wording of the question regarding programming languages has changed dramatically. These languages were no longer divided into basic and other. At the same time, the share of company specialists using programming languages specified in the list was estimated.

Consequently, the popularity of programming languages was determined by other parameters in comparison with the surveys performed in previous years. For this reason the results obtained in 2020 regarding this popularity cannot be correlated with the data of surveys performed in previous years.

The question of programming tools was completely excluded from the questionnaire based on the recommendation of experts who have rendered assistance during this questionnaire development. They considered that information about the popularity of these tools is not of great interest to companies.

As a result, there was only one question about programming tools in the survey, and it was formulated as follows: "What percentage (approximately) of your company's specialists use the following programming languages?". The results of surveys performed prior to introduction of corresponding changes in the questionnaire in 2020 are presented below (after conducting the analysis of the data obtained during the last survey).

According to the results of the survey performed in 2021 the distribution of places in the rating of the most popular programming languages by the share of employees using a specific programming language did not change over the year. Even the indicator for rating turned out to be almost the same in all languages as in 2020. However, the rating expanded to include the Kotlin and Swift languages (the number of ranked languages changed from 8 to 10). As a result of

**Most popular programming languages in Russian software companies (data of surveys performed in 2021-2022)**

| | | Percentage of employees using this programming language | | Percentage of surveyed companies using this programming language | |
|---|---|---|---|---|---|
| | | survey of 2021 | survey of 2022 | survey of 2021 | survey of 2022 |
| 1 | Java | 21.4% | 25.6% | 52.8% | 50.9% |
| 2 | JavaScript | 16.2% | 21.2% | 65.6% | 72.3% |
| 3 | C# | 17.9% | 13.9% | 49.5% | 44.1% |
| 4 | C++ | 14.5% | 9.0% | 55.7% | 48.0% |
| 5 | Python | 6.3% | 8.4% | 49.0% | 58.2% |
| 6 | Kotlin | 4.1% | 6.4% | 26.8% | 25.4% |
| 7 | PHP | 5.3% | 5.2% | 44.3% | 36.7% |
| 8 | C | 6.0% | 4.3% | 28.3% | 22.6% |
| 9 | Swift | 1.8% | 4.0% | 20.1% | 20.3% |
| 10 | Visual Basic .NET | 1.7% | 2.1% | 10.4% | 12.4% |

**Travel tech is at a high level today: we see powerful digital platforms on the market that solve the most complex tasks of planning, budgeting, organizing business processes, control, analytics and online travel reporting. Such platforms help quickly solve the problems of booking tickets, hotels, transfers, even in urgent and multitasking conditions; provide for the use of new payment methods, including cases when a client has to travel outside Russia. Today, companies can carry out business trips comfortably, safely for employees and businesses, while reducing operational and financial costs, as well as administrative burden due to the use of technology.**

**Anatoly Kuryumov**
CEO of Raketa

RAKETA

these two languages addition, Microsoft's Visual Basic .NET was pushed from 8th to 10th place.

Java took the lead in the main rating in 2019 (even before changing the questionnaire) and in terms of the share of employees using this programming language, it ranked first both in 2020 and 2021. However, JavaScript was the leader in terms of the number of references among surveyed companies in the last two years (with a significant lead from the rest).

In 2022 Java and JavaScript strengthened their leading positions, C #, C++, C languages started to lose their popularity, and Swift and Kotlin, the newcomers to the rating, continued their way up.

In addition to main 10 programming languages the respondents also named 17 other languages used, which were mentioned by 33% of surveyed companies. Most often respondents mentioned Go (5.1% of surveyed companies, with 3.8% a year earlier); Delphi (2,8%); Ruby (2,8%); Golang (2,8%); 1C (2.3%); SQL (2,3%); Scala (1,7%); Typescript (1,7%). The rest languages were mentioned 1-2 times (ABAP (2), Erlang (2), Objective-C (2), Flutter (2), Goland, Clarion, CSS, LUA, SmaLL).

The data of the survey performed by RUSSOFT can be compared with the results of other studies. In summer 2020 JetBrains has completed its fourth annual software development ecosystem study. Based on the results of this study JetBrains decided to find out how Russian programmers differ from their foreign colleagues. 20 thousand programmers from 18 countries were interviewed, among which 2.5 thousand respondents were from Russia.

According to JetBrains in 2019 Python bypassed Java in the list of the most used languages both in Russia and in the world. However, the majority of respondents still were always choosing Java as the main programming language. PHP was forced out from the list of top five most commonly used languages in the world by TypeScript and C++, while in Russia PHP was still in the 4th place.

Top 5 programming languages for the whole world: JavaScript (70.6%), Python (56.1%), Java (55.6%), TypeScript (28.5%), C++ (27.6%); for Russia: JavaScript (62.8%), Python (46.8%), Java (36.5%), PHP (24.5%), TypeScript (23.1%).

A similar picture was observed in the answers regarding languages in the category of "additional" programming languages: new languages are more attractive to Russian developers. They learn Go and Kotlin more often, and they learn Python, Java, TypeScript and PHP less often. Top 5 languages that respondents have begun or continued to learn over the past 12 months (data of 2020): in the world – Python (31%), JavaScript (26%), Java (22%), TypeScript (20%), Go (18%); in Russia – JavaScript (24%), Python (23%), Go (22%), Kotlin (18%), Java (15%).

Go and Kotlin lead the world list of programming languages that respondents plan to switch to. The list is the same in Russia, with the only difference that Kotlin holds the first place.

Some programming languages are no longer used at all. However, the need for the capability to program these languages may arise. In April 2020 it became known that several US states unsuccessfully searched for specialists in the COBOL programming language to update the software used in the employment system – this system ceased to cope with the load due to an increase in the number of

unemployed against the background of the coronavirus pandemic.

At the same time the Fortran programming language developed in 1957 is experiencing a sharp surge in popularity. In the TIOBE rating Fortran was in the last 50th place in summer 2020, but by April 2021 it was on the 20th place. Despite its venerable age, Fortran continues to develop and is still used in various fields – its most current version was released in the end of 2018.

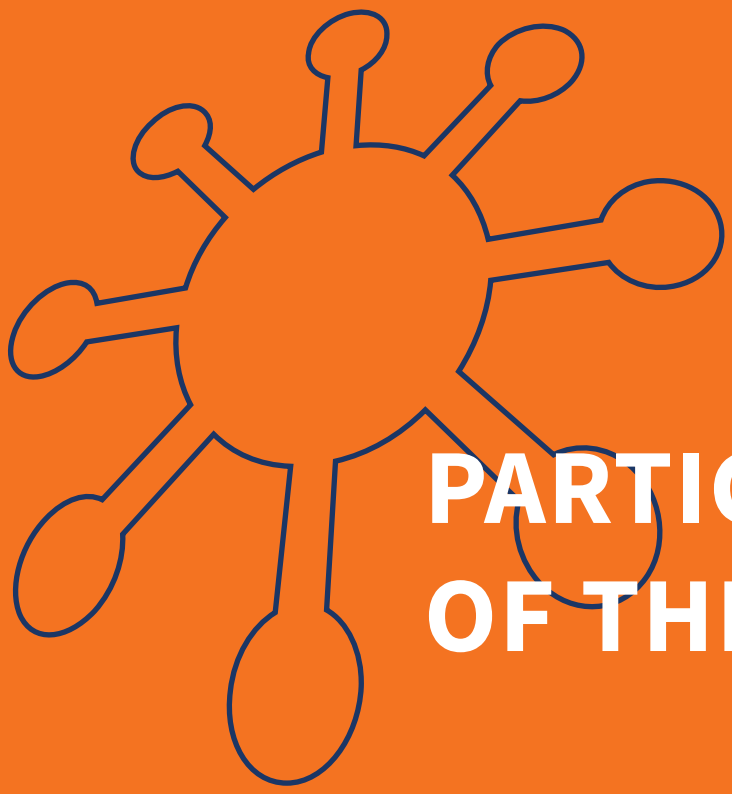
Tasks have arisen in 2021-2022 related to the creation of a safe development environment independent from foreign solutions. At least, publications on these have appeared in media.

In February 2022 it became known that the Federal Service for Technical and Export Control plans to create by 2024 a unified environment for the development of safe domestic software, thanks to which a set of tools for such software development will be provided for Russian software developers.

In the end of 2021 "Gazprom Dobycha Astrakhan" announced that it had transferred key systems to the Java runtime environment developed by Bellsoft, the Russian developer, abandoning Oracle Java.

In April 2022 CFT and Bellsoft companies announced a start of technological partnership and the compatibility of their products. The "CFT-Bank" banking information complex can operate on the domestic Libercat Java application server with Bellsoft Java SE runtime environment. The use of this software stack will allow credit institutions to implement plans for import substitution of software, to avoid operational and technological risks, and also to comply with regulatory requirements for critical information infrastructures (CII).

In March 2022 Atlassian, an Australian software developer for software development management, announced that it was suspending the sale of all its new software in Russia due to the situation in Ukraine. Atlassian's development framework includes products such as Jira, Confluence, Bitbucket. The company also suspends existing licenses granted to a number of Russian state organizations and individual corporate clients. As a result, Russian developers of programming tools have another window of opportunity.



# PARTICIPANTS OF THE SURVEY

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **2Nova Interactive** | Saint-Petersburg | 2nova.ru | hello@2nova.ru | (812) 318-4085 | Custom software development | |
| **7bits** | Omsk | 7bits.it | | | Custom software development | AR & VR Development; Artificial Intelligence; Big Data & BI; IoT; Smart City |
| **A7 Systems** | Saint-Petersburg | a7systems.ru | info@a7systems.ru | (812) 603-7137 | Development of programming tools and database | Artificial Intelligence; Big Data & BI; IoT; Smart City |
| **Across Engineering** | Moscow | across.ru | info@across.ru | (495) 517-8033 | Custom software development | |
| **Active Business Consult / VS Robotics** | Moscow | vsrobotics.ru | pr@vsrobotics.ru | (495) 136-5182 | Embedded software (equipment, devices) | Artificial Intelligence; Big Data & BI |
| **ALAN-IT** | Yaroslavl | alan-it.ru | info@alan-it.ru | (485) 237-0303 | Development of own analytical services | Artificial Intelligence; Big Data & BI; IoT; Smart City |
| **Alee Software** | Saint-Petersburg | alee.ru | info@alee.ru | (812) 309-7859 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Custom software development | |
| **ALPOM** | Saint-Petersburg | alpom.ru | inbox@alpom.ru | (921) 745-5069 | Custom software development; Embedded software (equipment, devices) | |
| **Altcraft** | Ryazan | altcraft.com | contact@altcraft.com | (491) 290-1004 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Big Data & BI |
| **ALT-SOFT** | Saint-Petersburg | altsoft.spb.ru | altsoft@altsoft.spb.ru | (921) 956-7961 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence |
| **Alvion Europe** | Sevastopol | alvioneurope.ru | info@alvioneurope.ru | (978) 767-9890 | Custom software development; Website designing | Big Data & BI; IoT; Smart City |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Angels IT** | Voronezh | angelsit.ru | it@angelsit.ru | (473) 255-5007 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Embedded software (equipment, devices) | AR & VR Development; Artificial Intelligence; IoT; Smart City |
| **Arax Group** | Moscow | araxgroup.ru | info@araxgroup.ru | (495) 504-8263 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Blockchain Technology |
| **Arcadia** | Saint-Petersburg | softwarecountry.com | info @softwarecountry.com | (812) 610-5955 | Custom software development | Artificial Intelligence; Big Data & BI |
| **A-Real Consalting** | Yaroslavl | xserver.a-real.ru | hello@a-real.ru | (800 )555-9297 | Information security solutions | Artificial Intelligence |
| **Artezio** | Moscow | artezio.com | welcome@artezio.com | (495) 981-0531 | Custom software development | Artificial Intelligence; Big Data & BI; Blockchain Technology |
| **ASys Soft** | Moscow | asys.ru | asys2007@mail.ru | (929) 539-7815 | Custom software development | |
| **ATM** | Moscow | атм.москва | mail@atm.msk.ru | (499) 490-2207 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Big Data & BI; IoT; Smart City |
| **Auriga** | **Moscow** | **auriga.com** | **pr@auriga.com** | **(495) 713-9900** | **Custom software development** | **Embedded and system-level development; Big Data; ML; IoT** |
| **AV Soft** | Moscow | avsw.ru | konkurs@avsw.ru | (495) 988-9225 | Information security solutions | Artificial Intelligence; Big Data & BI; IoT; Smart City |


Established in 1990, Auriga is one of the top 100 leading outsourcing software R&D providers worldwide. Headquartered in the U.S., with 600+ employees located across seven development centers and operating 13+ embedded testing R&D labs, Auriga delivers 100+ projects yearly. We offer custom software development, product maintenance, re-engineering and porting, integration, testing and test automation services for medical device, automobile and construction tools manufacturers, industrial automation and power management companies, consumer electronics, retail & logistics, software vendors (ISVs), semiconductors and hardware manufacturers (OEMs), like Chrysler, Draeger Medical, nVent and others.

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **AVS Consulting** | Moscow | avsconsulting.ru | avs@avsconsulting.ru | (925) 999-3071 | Custom software development, Website designing | AR & VR Development; Artificial Intelligence; Big Data & BI; Blockchain Technology; Smart City |
| **AXELOT** | Moscow | axelot.ru | a.dolgikh@axelot.ru | (495) 961-2609 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |
| **Axilon** | Moscow | axilon.ru | info@axilon.ru | (916) 815-3499 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other), Custom software development | Big Data & BI |
| **BOBDAY** | Krasnodar | bobday.ru | info@bobday.ru | (800) 201-3375 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Custom software development | Big Data & BI |
| **Brain Systems Group** | Saint-Petersburg | brainsystems.ru | zakupki @brainsystems.ru | (800) 555-3107 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |
| **Celsus** | Kaluga | celsus.ai | celsus@celsus.ai | (965) 077-7705 | Embedded software (equipment, devices) | Artificial Intelligence |
| **CenovikPRO** | Moscow region | cenovik.pro | info@cenovik.pro | (495) 215-5248 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI |
| **Cerebro** | Moscow | cerebrohq.com | info@cerebrohq.com | (499) 110-8234 | Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools) | |
| **Citrus** | Ioshkar-Ola | citrus-soft.ru | alex@citrus-soft.ru | (987) 702-7147 | Website designing | |
| **CodeInside** | Penza | codeinside.ru | office@codeinside.ru | (8412) 636-736 | Custom software development | Artificial Intelligence; IoT |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **CommuniGate Systems** | Moscow | communigate.ru | russia @communigate.ru | (499) 271-3154 | Development of unified communications technologies | |
| **Cortex** | **Krasnodar** | **cx.technology** | **info@cx.technology** | **(988) 245-9945** | **Custom software development; Scientific researching** | **Artificial Intelligence; Blockchain Technology** |
| **Crosstech Solutions Group** | Moscow | ct-sg.ru/ | info@ct-sg.ru | (495) 741-8864 | Information security solutions | Artificial Intelligence; Big Data & BI |
| **CVisionLab** | Taganrog | cvisionlab.com | info@cvisionlab.com | (903) 464-7047 | Custom software development | Artificial Intelligence |
| **Cyberprotect** | Moscow | cyberprotect.ru | info@cyberprotect.ru | (903) 203-2299 | Information security solutions | |
| **Data East** | Novosibirsk | dataeast.com | support@dataeast.com | (383) 332-0320 | Navigation and geographic information systems | Artificial Intelligence; Big Data & BI; Smart City |
| **DDoS-Guard** | Rostov-on-Don | ddos-guard.net | info@ddos-guard.net | (495) 215-0387 | Information security solutions | Artificial Intelligence |
| **Development Center SAPR "GeoS"** | Nizhny Novgorod | k3info.ru | sale@k3info.ru | (831) 435-2539 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |

Cortex

Cortex Technology is an international software group focused on digital commodity trading, agritech, biotech, and digital transformation of state authorities.

Our key practices:

— Digital commodity markets for metals and chemicals, trade platforms integration (Nasdaq, CQG, public blockchains), real-time data exchange, blockchain technologies (custom blockchain, dAps, smart-contracts);

— MedTech and BioTech: end-to-end product lifecycle automation, procurement and contract management, bioinformatics, machine learning for biological and medical data, telemedicine SaaS;

— Incident management in casinos;

— Regional decision support and incident management systems.

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Diasoft** | **Moscow** | **diasoft.ru** | **pr@diasoft.ru** | **(495) 780-7575, (495) 789-9339** | **Software development for the financial and other industries; custom software development; enterprise resource planning (ERP platform); development of basic software (DBMS, programming tools)** | **Business processes management, visual analytics, Big Data, AI, ML** |
| DIASOFT all for real | Diasoft is one of the largest Russian providers of IT solutions. During its 31-year history, it has accumulated a unique experience in development, implementation and support of comprehensive IT systems for customers from different industries, with the main focus on financial institutions.<br>Diasoft is recognized as a systemically important company for the Russian information and communications industry. Its products are listed in the Unified Register of Russian Programs for Electronic Computers and Databases, and are recognized by Gartner, IDC, Forrester, BIAN and other global experts.<br>The company is headquartered in Moscow, has branches in Saint Petersburg, Yaroslavl, Cheboksary, Perm, Novosibirsk, a representative office in Germany and a subsidiary in Vietnam. | | | | | |
| **Digital Design** | Saint-Petersburg | digdes.ru | info@digdes.com | (812) 346-5833 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Custom software development | Artificial Intelligence; Digital Workplace |
| **DZ SYSTEMS** | Moscow | dzsystems.com | sales@dz.ru | (495) 225-7693 | Mobile applications; Custom software development | Artificial Intelligence; Big Data & BI; Smart City |
| **Econophysica** | Tomsk | econophysica.com | conactus @econophysica.com | (3822) 900-601 ext: 1003 | Custom software development; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI; Smart City |
| **EC-Tavrida** | Simferopol | ec-tavrida.ru | ec-tavrida@yandex.ru | (978) 780-6700 | Custom software development | |
| **Edelink** | Saint-Petersburg | edelink.ru | info@edelink.ru | (812) 507-3804 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | PropTech |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **e-legion** | Saint-Petersburg | e-legion.ru | anna.krasavtseva@e-legion.com | (981) 844-4060 | Mobile applications; Custom software development | Big Data & BI; IoT; Smart City |
| **ErmineSoft ltd.** | Novosibirsk | erminesoft.com | denis@erminesoft.ru | (913) 926-2697 | Custom software development; Website designing | AR & VR Development; Artificial Intelligence |
| **Etton Grup** | Kazan | etton.ru | info@etton.ru | (800) 100-0815 | Custom software development | Artificial Intelligence; Big Data & BI; Blockchain Technology; Smart City |
| **Evavision** | Ekaterinburg | evavision.tv | sales@evavision.tv | | Development of a broadcasting control system for a network of video monitors of a new generation | IoT; Smart City |
| **FAYGROUP** | Moscow region | faygroup.ru | info@faygroup.ru | (964) 786-6003 | Custom software development | IoT |
| **Fidesys LLC** | Moscow | cae-fidesys.com | v.a.levin@mail.ru | (495) 177-3618 | Scientific researching; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; IoT; Smart City |
| **FlexSoft** | Moscow | flexsoft.com/about | info@flexsoft.com | (495) 788-0325 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Big Data & BI |
| **Fogstream** | Khabarovsk | fogstream.ru | org@fogstream.ru | (4212) 909-809 | Custom software development | Blockchain Technology; Smart City |
| **Foresight** | **Moscow** | **fsight.ru** | **info@fsight.ru** | **(495) 137-5498** | **BI-systems** | **Artificial Intelligence, Big Data & BI, IoT, Smart City** |

foresight.

Foresight is one of the largest Russian BI vendors. The company delivers to the market native and mature solutions for data analysis and corporate mobility development – Foresight Analytics Platform and Foresight Mobile Platform.

Foresight Analytics Platform features high performance, supports various data types and their data sources, includes machine learning, big data, modeling and forecasting technologies.

The company has also developed such products as Foresight Budgeting, Foresight Investment Management, and FlyBI used for business analysis on-the-go. Company products are used by companies in corporate, state and banking sectors. The Foresight partner network includes more than 60 Russian IT companies.

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Format Koda** | **Saint-Petersburg** | **formatkoda.ru** | **info@formatkoda.ru** | **(812) 336-5533** | **Custom software development; Mobile applications** | **Artificial Intelligence, Big Data & BI, IoT, Smart City** |
|  | | FormatKoda is a premier provider of software engineering, software enablement, and digital transformation advisory services.<br>The company leverages its agile technological excellence to efficiently deliver complex projects in retail digitalization, web content management & eCommerce, healthcare IT & real world evidence and data, machine learning and enterprise data management. Software engineering services include Mobile and IoT Dev, Test Automation, and Big Data Implementation. | | | | |
| **GDC Services** | Usady town (Tatarstan) | icl-services.com | pr@icl-services.com | (800) 333-9870 | Custom software development; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | AR & VR Development; Artificial Intelligence; Big Data & BI; IoT |
| **Gektor** | Moscow | gektorstroi.ru | support@gektorstroi.ru | (495) 510-1545 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |
| **GEOCAD plus** | Novosibirsk | geocad.ru | info@geocad.ru | (383) 352-1333 | Navigation and geographic information systems | AR & VR Development; Smart City |
| **Geoscan Group** | Saint-Petersburg | geoscan.aero | info@geoscan.aero | (812) 363-3387 | Professional unmanned technologies; Embedded software (equipment, devices) | AR & VR Development; Artificial Intelligence; IoT |
| **Global Rus Trade** | Moscow | globalrustrade.com/ru | info @globalrustrade.com | (495) 256-2625 | International trade Marketplace | |
| **GLOLIME LTD** | Saint-Petersburg | glolime.ru | info@glolime.com | (812) 334-9384 | Specialized tablet computers and development of a management system for enterprises and organizations on their basis | IoT |
| **GS Labs** | Saint-Petersburg | gs-labs.ru | alexey.goilo@gs-labs.ru | (911) 000-3347 | Integrated solutions for the formation of ecosystems for the creation and delivery of digital products based on proprietary technologies | IoT; Smart City |
| **HARMAN Connected Services** | Nizhny Novgorod | harman.ru, harman.com | Olga.Sheinfeld @harman.com | (905) 664-1155 | Custom software development | AR & VR Development; Artificial Intelligence; Big Data & BI; IoT; Smart City |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **IBS InfiniSoft** | **Moscow** | **ibs-infinisoft.ru** | **ymaksimenko@ibs.ru; info@ibs-infinisoft.ru** | **(495) 967-8080; (495) 967-8081** | **Custom software development; Mobile applications; Website designing** | |
| IBS InfiniSoft | | IBS InfiniSoft is a development hub of IBS group of companies with global 30 years' experience and big number of projects providing technology solutions and drive business change for customers in Russia and abroad. We focus on the business landscape with industry knowledge and digital capabilities, combining strategy and results-driven software development. IBS InfiniSoft operates efficiently with an agile workforce of 1000+ developers and other IT specialists. It combines a unique mixture of development excellence and deep industry expertise, helping our clients innovate in the areas of State administration, Automotive industry, Financial services, Healthcare, Media and Telecommunications, Retail, Oil and Gas, Energy, and other industries. We offer software, SAP, mobile, 1C and web development, as well as UI/UX design, UX-research, architecture & consulting services. | | | | |
| **Ideas World** | Simferopol | iw-group.pro | info@iw-group.pro | (800) 301-0762 | Custom software development; Mobile applications | |
| **INEC-IT** | Moscow | inec.ru | support@inec.ru | (495) 786-2230 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |
| **InetPartners** | Moscow | callpy.com | business @inetpartners.ru | (926) 613-4870 | Custom software development | Big Data & BI; IoT |
| **Infinity Video Soft** | Tomsk | videograce.ru | contact @videograce.com | (903) 953-3424 | Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools) | |
| **INFOPRO** | Moscow | info-pro.ru | post@info-pro.ru | (800) 600-2401 | Custom software development | Artificial Intelligence; Big Data & BI; Blockchain Technology; IoT; Smart City |
| **Information Systems and Services** | **Novosibirsk** | **isands.ru** | **info@isands.ru** | **(800) 775-1986** | **Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other)** | **Artificial Intelligence; Big Data & BI; IoT; Smart City** |
| ИНФОРМАЦИОННЫЕ СИСТЕМЫ И СЕРВИСЫ | | Information Systems and Services, LLC is a company that uses its own low-code development platform IS.PROMETHEUS to create applications quickly and easily. The company's products are based on microservices architecture to show solid performance in handling the growing number of requests and are used by a variety of large enterprises. | | | | |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **INFORM-TEKHNIKA** | Moscow | minicom.ru | inf@infotek.ru | (495) 662-7321 | Developer and manufacturer of modern means of communication | |
| **Inline Group** | Voronezh | inlinegroup-c.ru | contacs @inlinegroup-c.ru | (910) 749-8328 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | AR & VR Development |
| **Innotech** | **Moscow** | **inno.tech** | **info@inno.tech** | **(800) 500-3333** | **Custom software development** | **Artificial Intelligence; Big Data & BI** |
| INNOTECH | Innotech Group (part of Group T1) is a fast-growing high-tech IT company. Since 2020 we have been providing cutting edge software solutions for business digitalization. Innotech Group builds partnerships with leading companies in the financial sector, offering them comprehensive solutions for front and back offices, modern fintech products and big data systems. Moreover, Innotech Group carries out custom-made technological projects of any complexity, helping its clients on the path of digital transformation. | | | | | |
| **Inostudio Solutions** | Taganrog | inostudio.com | russoft@inostudio.com | (8634) 320-318 | Custom software development | AR & VR Development; Artificial Intelligence |
| **INOVENTICA Technologies** | Moscow | inoventica-tech.ru | info@inoventica-tech.ru | (495) 646-7308 | Information security solutions | |
| **Inreco LAN** | Vladimir | inrecolan.com | sergey.pyatigorskiy @inrecolan.com | (492) 244-4090 | Custom software development | |
| **Integral** | Saint-Petersburg | integral.ru | eco@integral.ru | (812) 740-1100 | Stationary software for environmental calculations | |
| **ISGneuro** | Moscow | isgneuro.com | info@isgneuro.com | (495) 232-2233 | Development, support and development of our own product line of analytical software | Artificial Intelligence; Big Data & BI; IoT |
| **iSpring** | Ioshkar-Ola | ispring.com | buh@ispring.ru, valentina.bulygina @ispring.com | (960) 099-0074 | Online Training Software | |
| **ISPsystem** | Irkutsk | ispsystem.ru | e.lavrenteva @ispsystem.com | (963) 305-0563 | Embedded software (equipment, devices); Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools); Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **IT Pro** | Moscow | biqube.ru | dp@itprocomp.ru | (952) 056-1199 | Custom software development | Artificial Intelligence; Big Data & BI |
| **ITB LLC** | Saint-Petersburg | itb.spb.ru | manager@itb.spb.ru | (812) 335-0145 | Information security solutions | |
| **ITC Solutions** | Sevastopol | itcsolutions.ru | dm@itcsolutions.ru | (989) 836-9939 | Outsourcing/ outstaff architecture, development, system and business analysis, software testing | |
| **ITConstruct** | Novosibirsk | itconstruct.ru | office@itconstruct.ru | (383) 375-1277 | Website designing | |
| **ITPS** | Perm | itps.com | info@itps-russia.ru | (495) 660-8181 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI; IoT |
| **IVA Technologies (IVKS)** | Innopolis | iva-tech.ru | info@iva-tech.ru | (495) 134-6677 | Developers of innovative IT solutions for building a modern digital infostructure | Artificial Intelligence |
| **IZZZIO** | Moscow | izzz.io/ru | info@izzz.io | (905) 520-3080 | Custom software development | Artificial Intelligence; Big Data & BI; Blockchain Technology; IoT |
| **KAMIS** | Saint-Petersburg | kamis.ru | info@kamis.ru | (812) 274-3522 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Smart City |
| **KODEKS** | Saint-Petersburg | kodeks.ru | nishonov@kodeks.ru | (812) 740-7887 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | AR & VR Development; Artificial Intelligence |
| **LANIT-TERCOM** | Saint-Petersburg | lanit-tercom.ru | contact @lanit-tercom.com | (812) 922-2091 | Custom software development | AR & VR Development; Artificial Intelligence; Big Data & BI; Blockchain Technology; Smart City |
| **Lartech** | Saint-Petersburg | lar.tech | info@lar.tech | (812) 339-4501 | Embedded software (equipment, devices) | IoT; Smart City |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Lexema** | Ufa | lexema.ru | info@lexema.ru | (347) 284-7000 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI |
| **Lotsiya** | Moscow | loodsen.ru | welcome@loodsen.ru | (495) 730-2023 | Custom software development; Mobile applications; Website designing | Big Data & BI |
| **Luxms Group** | Saint-Petersburg | luxmsbi.com | sales@luxmsbi.com | (812) 974-7403 | Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools) | Artificial Intelligence; Big Data & BI; IoT; Smart City |
| **Makves** | Moscow | makves.ru | marketing@makves.ru | (495) 150-5406 | Information security solutions | |
| **MATSBKT-SEZ** | Moscow | interpolymech.com | nnevskaya@global-rc.ru | (916) 609-0790 | Custom software development; Embedded software (equipment, devices) | AR & VR Development; Artificial Intelligence; IoT |
| **Megaputer Intelligence** | Moscow | megaputer.ru | info@megaputer.ru | (499) 753-0129 | Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools) | Artificial Intelligence; Big Data & BI |
| **Microolap Technologies** | Tatarstan | microolap.ru | formal@microolap.ru | (926) 326-9277 | Information security solutions | Network Traffic Analysis (NTA) |
| **Monolit-Info** | Saint-Petersburg | monolit.com | alex@monolit.com | (921) 937-8542 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Custom software development | Big Data & BI |
| **Motiware** | Belgorod | motiw.ru | office@motiw.ru | (472) 278-0000 | Custom software development; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Moy Klass** | Ekaterinburg | moyklass.com | info@moyklass.com | (495) 108-5239 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Big Data & BI |
| **New space** | Moscow | newspacecorporation.com | info @newspacecorporation.com | (928) 165-3302 | Custom software development; Website designing | Big Data & BI; Blockchain Technology; IoT; Smart City |
| **Nexign** | Saint-Petersburg | nexign.com/ru | Yekaterina.Petrova @nexign.com | (812) 326-1299 | BSS solution provider | IoT |
| **NitrosData** | Moscow | nitrosdata.ru | info@nitrosbase.com | (495) 101-4324 | | Big Data & BI |
| **NooSoft** | Bryansk | noosoft.ru | lv@noosoft.ru | (913) 271-3993 | Custom software development | Artificial Intelligence; Big Data & BI |
| **Nord Clan** | Ulyanovsk | nordclan.com | welcome @nordclan.com | (499) 404-0943 | Custom software development; Mobile applications; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence |
| **NotiSend** | Tomsk | notisend.ru | | | Marketing platform for business | |
| **Novosibirsk Scientific and Technological Center** | Novosibirsk | nntc.pro | ematveeva@nntc.pro | (923) 248-2615 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI |
| **NTP-DIP** | Saint-Petersburg | ntp-dip.ru | dip_zenit@mail.ru | (911) 928-8478 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |
| **OFT** | Bryansk | oft32.ru | oft@inbox.ru | (920) 602-3335 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Open Solutions** | Penza | osinit.com | info@osinit.com | (800) 250-9669 | | AR & VR Development; Artificial Intelligence; Big Data & BI; Blockchain Technology; IoT; Smart City |
| **Piter-Soft** | Saint-Petersburg | piter-soft.ru | info@piter-soft.ru | (812) 333-0860 | Custom software development | |
| **POWWWER** | Novosibirsk | powwwer.io | a.mitasov@powwwer.io | (383) 318-1043 | Custom software development; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Blockchain Technology; IoT |
| **Project** | Moscow | project-llc.ru | sdmitriy@project-llc.ru | (985) 890-0000 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI |
| **PROMT** | Saint-Petersburg | promt.ru | julia.epiphantseva @promt.ru | (812) 655-0350 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI |
| **Prostorlab** | Moscow | prostorlab.com | korolev@enersys.ru | (926) 296-0502 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | IoT; Smart City |
| **PROTEI** | Saint-Petersburg | protei.ru | sales@protei.ru | (812) 449-4727 | Embedded software (equipment, devices) | Big Data & BI; IoT; Smart City |
| **RAIDIX** | Saint-Petersburg | raidix.ru | request@raidix.com | (812) 622-1680 | Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools) | Artificial Intelligence; Big Data & BI; IoT; Smart City |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Raketa** | **Moscow** | **raketa.world** | **hello@raketa.travel** | **(925) 655-9007** | **Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other)** | **Big Data & BI** |
| RAKETA | “Raketa” Company is a developer of the digital platform and the mobile application for business trips and expense management. Our solution helps commercial and government companies save up to 30% of business travel budgets and up to 90% of employees' working time, makes the process of organizing business trips and expense management fully digital and automated.<br>“Raketa” is the winner of the prestigious Buying Business Travel Awards in the Technology category in 2022 and the best Online booking tool in 2018.<br>The company's offices are located in Moscow, Vladivostok, Yekaterinburg, Novosibirsk, Almaty, Nur-Sultan, Bishkek. The staff has 100 employees. Now we have more than 300 largest companies from Russia and abroad in our portfolio. | | | | | |
| **RDTEX** | Moscow | rdtex.ru | marketing@rdtex.ru | (495) 995-0999 | IT Services | Artificial Intelligence; Big Data & BI; IoT |
| **red_mad_ robot Tomsk** | Tomsk | redmadrobot.ru | ee@redmadrobot.com | (909) 542-2169 | Custom software development; Website designing; Mobile applications | Blockchain Technology; IoT |
| **Redline** | Tomsk | redlg.ru | info@redlg.ru | (999) 619-7912 | Website designing; Mobile applications | IoT |
| **Reksoft** | Moscow | reksoft.ru | info@reksoft.ru | (495) 926-1771 | Custom software development | Artificial Intelligence; Big Data & BI; Blockchain Technology; IoT; Smart City |
| **Relex** | Voronezh | relex.ru | market@relex.ru | (473) 271-1711 | Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools) | Big Data & BI |
| **Renga** | Saint-Petersburg | rengabim.com | info@rengabim.com | (812) 703-1011 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |
| **RNDSOFT** | Rostov-on-Don | rnds.pro | es@rnds.pro | | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Custom software development | Big Data & BI; Blockchain Technology; Smart City |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **RTC ARGUS** | Saint-Petersburg | argustelecom.ru | t.stakanova @argustelecom.ru | (921) 781-2612 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Big Data & BI |
| **S.C.A.T** | Krasnodar | skat-vending.com | info@skat-vending.com | (918) 199-3891 | Custom software development | Artificial Intelligence |
| **SatvaSpace** | Tver | satvaspace.com | s.abdulova @satvaspace.com | (921) 655-6958 | Custom software development | Artificial Intelligence; IoT |
| **SDI SOFT** | Moscow | sdisoft.ru | info@sdisoft.ru | (499) 495-1042 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | NRI – Network Resource Inventory |
| **SearchInform** | **Moscow** | **searchinform.ru** | **info@searchinform.ru** | **(495) 721-8406** | **Information security solutions** | **Artificial Intelligence; Big Data & BI** |

SEARCHINFORM
INFORMATION SECURITY

SearchInform is a leading Russian developer of information security solutions. The company's list of products includes instruments for complex internal threats protection: SearchInform Risk Monitor, SearchInform DLP, SearchInform SIEM, SearchInform FileAuditor, SearchInform ProfileCenter and TimeInformer as well as information security services using its own products.

SearchInform products are suitable for companies of all industries, where data is stored, processed and transferred. The competence of the company is confirmed by a perpetual license from the Center for Licensing, Certification and Protection of State Secrets of the Federal Security Service of the Russian Federation, as well as by licenses from the Federal Service for Technical and Export Control of Russia.

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|---|---|---|---|---|---|---|
| **Secret Technologies** | Moscow | secretgroup.ru | info@secretgroup.ru | (495) 109-2950 | Information security solutions | |
| **SETERE** | **Saint-Petersburg** | **setere.com** | **info@setere.com** | **(812) 921-0977** | **Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools); Custom software development** | **Blockchain Technology** |

SECURITY
TECHNOLOGY RESEARCH

SETERE (LLC "TBI") is a software development company for users of domestic operating systems based on LINUX. At the moment, the company has released two of its own products: a software package for the rapid deployment of remote workstations "ISU Terminal" and "SETERE OCR optical text recognition system".

SETERE is also engaged in import substitution projects, carries out complex deliveries of software and equipment of its partners.

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|---|---|---|---|---|---|---|
| **Sibedge** | Tomsk | sibedge.com | contacts@sibedge.com | (382) 270-1841 | Custom software development | Artificial Intelligence; IoT |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **SIGMA messaging** | Saint-Petersburg | sigmasms.ru | integration @sigmasms.ru | (904) 615-4608 | Content provider for A2P text and multimedia messaging | |
| **SimbirSoft** | **Ulyanovsk** | **simbirsoft.com** | **request @simbirsoft.com** | **(800) 200-9924** | **Custom software development** | **Artificial Intelligence; Big Data & BI; Blockchain Technology; IoT** |
| SimbirSoft | SimbirSoft provides custom software development and testing services. Since 2001, we have created more than 1000 IT products for business growth and development in fintech, retail, healthcare, logistics, industry, etc. We develop IT solutions for work automation, high-load systems, mobile apps, machine learning and data science systems for customers from Russia, Europe and the USA. We provide all services with our own staff of 1300 employees.<br><br>SimbirSoft is listed among the largest IT companies in Russia and in the Software 500 global rating. Growth rates and service quality are confirmed by international awards and Global Outsourcing 100, RAEX, RUSSOFT AWARD, CNews, Tadviser, and Tagline ratings. | | | | | |
| **SIMETRA** | Saint-Petersburg | simetragroup.ru | moscow @simetragroup.ru | (812) 702-1335 | Custom software development; Navigation and geographic information systems; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Smart City; Big Data & BI; Artificial Intelligence |
| **Simtech Development** | **Ulyanovsk** | **simtechdev.ru** | **sales@simtechdev.org** | **(800) 550-8510** | **Custom software development** | |
| simtech DEVELOPMENT | Simtech Development is a developer of eCom solutions for the transitioning of business to a new level of digitalization.<br><br>We have been converting sales to online for more than 17 years. Since then, we have implemented more than 5,000 projects, including the launch of highly loaded online stores and marketplaces “from scratch”, as well as modifications of existing complex eCom projects. We work with corporations, financial and trading companies, manufacturing enterprises and local businesses.<br><br>We work in the in-house development format, implementing projects by specialists of our own.<br><br>Furthermore, our operation is in accordance with the requirements of the international standard ISO 9001:2015. | | | | | |
| **SKB Kontur** | Ekaterinburg | kontur.ru | pr@skbkontur.ru | (800) 500-5080 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools) | Artificial Intelligence; Big Data & BI |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **SkyDNS** | Ekaterinburg | skydns.ru | | (812) 385-7421 | Information security solutions | Big Data & BI |
| **Smart Analytics** | Perm | sm-analytics.com.ru | eugenia.shadrina@sm-analytics.com | (964) 190-3412 | Custom software development | Big Data & BI |
| **Smart Design** | Saint-Petersburg | smddev.com | vitaly.tishkov@smddev.com | (921) 932-7150 | Custom software development | Artificial Intelligence; Big Data & BI; IoT |
| **Smartilizer Rus** | Saint-Petersburg | smartilizer.ru | evgeny.filippov@smartilizer.ru | (921) 323-1370 | Custom software development | Artificial Intelligence |
| **SMS-Information technologies** | Samara | sms-it.ru | info@sms-it.ru | (846) 205-7900 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | IoT |
| **Soft Company** | Moscow | softwarecom.ru | info@softwarecom.ru | (495) 983-0548 | Custom software development | Big Data & BI; Blockchain Technology |
| **SoftLab-NSK** | Novosibirsk | softlab-nsk.ru | administration@softlab-nsk.com | (383) 363-0462 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other); Custom software development | AR & VR Development |
| **SOLVO** | Saint-Petersburg | solvo.ru | sales@solvo.ru | (812) 606-0555 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI |
| **Sopos** | Saint-Petersburg | einsur.ru | info@einsur.ru | (812) 507-6780 | Custom software development; Tender platform; Health insurance expertise | |
| **SPC KRUG** | Penza | krug2000.ru | krug@krug2000.ru | (841) 249-9775 | Development of software and hardware complexes and industry solutions in the field of industrial automation | IoT |
| **Speech Technology Center** | Saint-Petersburg | speechpro.ru | stc-spb@speechpro.com | (812) 325-8848 | Embedded software (equipment, devices) | Artificial Intelligence; Big Data & BI; Smart City |
| **SPHAERA** | Moscow | sphaera.ru | info@sphaera.ru | (495) 672-7076 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Big Data & BI; Smart City |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **SSP SOFT** | **Moscow** | **ssp-soft.com** | **sales@ssp-soft.com** | **(495) 975-9390** | **Custom software development** | |
| SSP SOFT | SSP SOFT is a service company and a reliable IT service provider for the implementation of complex, large-scale business digital projects in banking and financial sector, retail, telecommunications, transport and logistics, power engineering and other areas.<br>The company was awaded by the «RUSSOFT AWARDS 2021» prize in the category of fast-growing service companies that have made significant progress in the field of software development and IT -services export.<br>Access to more than 1500 highly qualified specialists, high quality requirements, quick response to customer`s requests and modern management approaches allow SSP SOFT to provide services that meet international standards.<br>SSP SOFT operates in the Russian Federation, Republic of Belarus, Republic of Kazakhstan and other EAEU countries. | | | | | |
| **Statanly Technologies LLC** | Saint-Petersburg | statanly.com | sergey@statanly.com | (921) 875-2396 | Custom software development | Artificial Intelligence; Big Data & BI; Smart City |
| **Supl.biz** | Tomsk | supl.biz | info@supl.biz | (800) 600-5831 | Services based on our own business platform Supl.biz | Artificial Intelligence |
| **SWDC RTSoft** | Moscow | rtsoft.ru | rtsoft@rtsoft.ru | (495) 967-1505 | Embedded software (equipment, devices); Custom software development | AR & VR Development; Artificial Intelligence; IoT; Smart City |
| **SWTECNN LLC** | Nizhny Novgorod | swtec.group | Artem.Kalachev @swtecnn.com | (960) 173-8444 | | |
| **Syncretis** | Saint-Petersburg | Syncretis.com | info@syncretis.com | (812) 611-0686 | Custom software development | Artificial Intelligence; Big Data & BI; Blockchain Technology |
| **T1** | Moscow | t1.ru | info@t1.ru | (495) 727-0985 | Custom software development; System integration; Consulting | Big Data & BI; IoT |
| **TEAM FORCE** | **Moscow** | **teamforce.ru** | **welcome @teamforce.ru** | **(495) 646-8040** | **Custom software development; Mobile applications; Website designing** | **Human capital** |
| TEAMFORCE | TEAM FORCE is the pioneer of SmartStaffing and the leader of the TEAM FORCE Alliance, where IT teams have been strengthening each other via project-based rearrangement of required competencies since 2008. Our Alliance, as an industry partnership, is focused on solving the challenges of the largest corporate customers. | | | | | |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Technoservice** | Moscow | techsrv.ru | info@techsrv.ru | (499) 704-3425 | Custom software development | Big Data & BI; IoT; Smart City; AMS (Association Management Software); ESB (enterprise service bus) |
| **TERMIKA** | Moscow | olimpoks.ru | info@termika.ru | (495) 956-2101 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | |
| **TLK** | Novosibirsk | youlk.ru | info@youlk.ru | (383) 209-3430 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; IoT; Smart City |
| **Tract-Soft** | Saint-Petersburg | tract-soft.ru | ns@tract.ru | (812) 490-7799 | Embedded software (equipment, devices); System for broadcasting automation and planning the radio content | |
| **Transset** | Moscow | transset.ru | inform@transset.ru | (499) 649-4668 | Custom software development; Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | Artificial Intelligence; Big Data & BI; IoT; Smart City |
| **TRONIC** | Moscow | tronicint.ru | info@tronicint.ru | | Supply of technological solutions for the production of microelectronics and relevant IT solutions for various sectors of the economy | Big Data & BI; Smart City |
| **Unlim-Soft** | Tyumen | unlim.group/ unlim-soft | m.zemlyanoy @unlim.group | (345) 228-5052 | Custom software development | Artificial Intelligence; IoT |
| **Usetech** | Moscow | usetech.ru | info@usetech.ru | (495) 660-5048 | Custom software development | Artificial Intelligence; Big Data & BI; Blockchain Technology; IoT |

| Company | Head office location | Web | E-mail | Phone | Specialization | Expertise in areas corresponding to global technological trends |
|---|---|---|---|---|---|---|
| **Vinteo** | **Krasnodar** | **vinteo.ru** | **info@vinteo.ru** | **(800) 333-4016** | **Basic software development (DBCS, OS, office applications, virtualization tools, programming languages and tools)** | |
| Vinteo VIDEO COMMUNICATION CORE | Vinteo is a Russian producer of professional videoconferencing software and endpoints (telepresence) and a provider of video engineering services. The Vinteo products are based on the international ITU-T standards and H.323 and SIP protocols and provide the maximum compatibility with third-party videoconferencing solutions. Vinteo products are used for holding conference calls at the highest government level, organizing national programs on distance education, telemedicine, etc.<br>The company's developments are included both in the Unified Register of Russian Software and in the official list of analogues recommended by the Russian Ministry of Digital Development, Communications and Mass Media for replacement of popular foreign video communication services. | | | | | |
| **VR Concept** | Moscow | vrconcept.net | info@vrconcept.net | (495) 212-1147 | Replicated enterprise (institution) management, document of automation, design and production process systems (ERP, CRM, ECM, EDMS, CAD, APCS and other) | AR & VR Development; Smart City |
| **Web3 Integrator** | Moscow | wavesenterprise.com | sales@wavesenterprise.com | | Custom software development | Blockchain Technology; IoT |
| **Webpractik Ltd** | Rostov-on-Don | webpractik.ru | info@webpractik.ru | (863) 303-2038 | Custom software development; Website designing | Artificial Intelligence; Big Data & BI |
| **WESMA** | Moscow | wesma.agency | manager@wesma.ru | (495) 118-2474 | Website designing | |