How a programmer from Yekaterinburg built a $ 400 million business from scratch

In less than ten years of operation, MemSQL has raised more than $ 100 million from leading Silicon Valley investors and has acquired Comcast, Uber and Samsung as clients, and competitors - Amazon, Google and Oracle.

Nikita Shamgunov (Photo: Damien Maloney for RBC)

The name of Nikita Shamgunov, a native of Yekaterinburg, is rarely seen in Russian business media. Meanwhile, his career is an example of the path of the "global Russian" entrepreneur in the 2010s. After moving to the United States to work at Microsoft and Facebook, Shamgunov eventually co-founded his own business, the MemSQL database accelerator.

In October 2018, the famous American accelerator Y Combinator collected a rating of its 100 most successful startup graduates. The criterion was the capitalization or the valuation of non-public companies by investors. 40th place in the list was taken by MemSQL, a developer of a database management system (DBMS). The company has never disclosed how much venture capitalists estimate it, but the scale of the business can be judged by its neighbors in the rating: No. 39, a startup WePay, at the end of 2017 was absorbed by the investment bank JP Morgan Chase for $ 400 million, and No. 41, Weebly, - at the beginning of 2018 by the Jack Dorsey Square service for $ 365 million.

One of the founders, and now the CEO of MemSQL, is a 40-year-old native of Yekaterinburg Nikita Shamgunov. He created the company in 2011 with former Facebook and Microsoft colleagues Eric Frenkel and Adam Prout. MemSQL helps enterprise customers make their databases run faster: computing is faster and businesses can scale at the fastest pace. Over the past seven years, the technology's potential has been appreciated by dozens of large customers: MemSQL services are used by both companies with a rich history, from the telecom holding Comcast to the IT giant Dell EMC, and the locomotives of the new economy, unicorn startups Uber, Pinterest and others. The business model also attracts venture capital: in total, MemSQL has already invested $ 110 million (the last round for $ 30 million was closed in May 2018). There are quite a few stars among the investors - Accel Partners, Khosla Ventures, GV, Yuri Milner, Ashton Kutcher and other funds and business angels.

RBC magazine spoke with Nikita Shamgunov, his teachers, colleagues and competitors and found out

how the Ural programmer achieved recognition in Silicon Valley and why the mass audience knows so little about the business worth $ 400 million.

Dedicated from Soros
Shamgunov's career as a programmer began at the Scientific and Educational Center of the Ural State University (SSC USU). This analogue of the lyceum at the main university of the region was founded in 1988 and has graduated dozens of famous entrepreneurs, scientists and managers over 30 years, and the institution flourished in the 1990s (Shamgunov graduated from 1995).

The popularity of SUNTS was largely ensured by its developed infrastructure, recalls another alumnus, head of Yandex.Vertical service Anton Zabannykh: "An important feature was access to the Internet. Fast is a dedicated line, not a modem. The computers were good too. If I remember correctly, they bought them with grants from [the Soros foundation]. " He also highlights the atmosphere that is not typical of other schools: "We found ourselves in a unique time and place - we were not loaded with other people's problems or propaganda, but filled with the fundamental concept of freedom."

Shamgunov, already at SUNTs, became interested in algorithms and data structure. After graduating from the center, he entered the USU at mathematics and began to actively engage in sports programming, participate and win in mathematics Olympiads. At the same time, he taught at the courses for SUNTs applicants. There he met another later well-known native of the Urals IT industry - Leonid Volkov, a former entrepreneur, now an opposition politician and associate of Alexei Navalny. Among the students of young teachers there are also well-known programmers, for example, Denis Raskovalov, the chief developer of the Bing search engine from Microsoft.

Volkov and Shamgunov became part of the USU sports programming team. The main achievement of the team was bronze at the 2001 World Championship. Shamgunov simultaneously trained at a major software developer SKB Kontur, where he was invited by the coach of the national team Evgeny Shtykov. Under his leadership, Shamgunov participated in the creation of the AMB program (now "Kontur.Zarplata"). "The names of the leading AMB developers are Shtykov, Shifman and Shinkarev. Then Nikita joined them. We were joking about the S-programmers department, "Volkov recalls.

Shamgunov developed an information processing system for AMB. "It's kind of like a database management system with which you can easily design applications," he explained to Contour Inside magazine in 1999. And at the same time he talked about his hobby for Linux. "I have not yet fully decided on the future, but [I] cannot get away from computers," the programmer summed up. After leaving the "Kontur", he got a job at "UralRelcom", where in the company of another coach of the USU national team, Sergei Gershtein, he participated in the development of the news website e1.ru ("Yekaterinburg Online").

On the e1.ru forum,

or rather, on its 37th branch, a programmer's circle quickly formed, which Volkov certifies as a hellish viper and troll. The archives are still available today: for example, in one of the threads Shamgunov wins a beer from Volkov - he offers the most effective solution to the problem of packing disparate data into a single structure. Other participants in the impromptu competition are Alexander Yakunin (now the lead developer of the Quora service) and Evgeny Kobzev (co-founder of the Button service).

Nikita Shamgunov (Photo: Damien Maloney for RBC)
In an interview with RBC magazine, Shamgunov admits that regular participation in all kinds of professional competitions not only helped to improve the skills of coding, but also greatly expanded the horizons: "Living in Yekaterinburg, I had no idea what a huge world!" The first career step outside of his hometown was admission to the graduate school of St. Petersburg ITMO University.

Software for sea battle

Shamgunov met the Dean of the IT and Programming Faculty of ITMO Professor Vladimir Parfenov at a competition in Yekaterinburg. "Even then, I liked the rounds [of the competition] that were held in St. Petersburg, and the city itself - better only than San Francisco. [Later] Vladimir Glebovich [Parfenov] called: "You have been received, come. We will help you with your work, "says MemSQL co-founder.

In St. Petersburg, Shamgunov defended his Ph.D. and got a job at the Transas company, a manufacturer of navigation systems and sea simulators. Anatoly Shalyto, the scientific director of the entrepreneur at ITMO, in the book dedicated to the department's anniversary, highlighted Shamgunov's dissertation as the first programmer's. "For Nikita, as well as for me, the candidate's program was a natural continuation [of his career]. But none of us was going to stay in science seriously, "Volkov says. He considers ITMO "the best place [in Russia] for a dissertation in theoretical computer science."

In the 2000s, Transas grew rapidly due to the demand in the external market. Shamgunov developed software for collecting information about the movement of ships in the Baltic Sea. The program was able to calculate the characteristics of movement of ships and other participants in sea traffic on the fly.

"For example, [the program could determine] which port has the most British ships now," Shamgunov described the results of his work in notes to the slides of the Microsoft StreamInsight presentation. There he also talked about a problem, the solution of which was close to the future specialization in the American part of his career: "When trying to load data into SQL Server in real time, the company found that the data flow rate was too high and the DBMS could not cope. We solved the problem, although the solution was not very simple and elegant. "

Bus tandem

In 2005, the revenue of "Transas" for the first time exceeded $ 100 million, but Shamgunov did not find a new stage in the company's development. On the recommendation of one of his former colleagues, he went to an interview at Microsoft and passed it successfully. "The interview turned out to be not so difficult, except for the language part," says the entrepreneur. In the same year, he moved from St. Petersburg to Seattle. At Microsoft, Shamgunov became a senior developer of Microsoft SQL Server and participated in the development of the program core.

SQL (structured query language) technology is designed for database management. The abbreviation stands for a structured query language - with its help, information scattered across different tables can be combined into a single query and displayed. The data obtained is the result of calculating all configurations between rows and columns. The more elements there are, the longer the time of information delivery to the user. Databases using SQL are strictly structured - for example, each position has a unique identifier.

Shamgunov worked at Microsoft for five years, until 2010. In 2009, Facebook began to actively hunt him. "At first I didn't quite understand what I was going to do there. But in 2010, they persuaded me, and I switched. For some huge heap of money, "Nikita recalls. At the Guru of the Urals lecture in 2012, he recalled that he moved to California with the expectation of seeing a new mentality and culture. "The plans were to work in the company, take all the most useful from them and find a partner with whom I could establish my company," Shamgunov did not hide.

The dream of his own business appeared in his second year of work at Microsoft, but for a long time Shamgunov realized that he was not ready for the decisive step. The key obstacle he saw was the lack of a business partner with whom he could share the risks and whom he could trust. "I thought it would take a couple of years [to find a partner]. But [on Facebook] I met my partner on the very first day, "says the entrepreneur. The ideal companion for Shamgunov was the programmer Eric Frenkel.

The two met while training on the Facebook campus and quickly became close friends. Even getting into different departments did not prevent the tandem, the friends went to work on the same bus, Wired magazine wrote in 2013.

A few months later, they submitted their first application to Y

Combinator. "We wanted to see how it happens in practice," explains Shamgunov. They came to the accelerator with the idea of a service for finding apartments in San Francisco. And although initially Shamgunov did not want to leave for such a project from Facebook, the partners went through all the preliminary interviews and got to the final interview with the founder of Y Combinator Paul Graham.

"We told about the project, we were thanked and offered to wait for the verdict. At YC, everything happens very quickly: you will find out about the result the same day, "the entrepreneur recalls. According to him, after talking with Graham, Frenkel bought a bottle of the most expensive champagne and they sat down in front of the phone, ready to celebrate. But the call never rang. And the next morning, the startups received a letter: the accelerator notified of the refusal.

Interview about grenade launchers
Despite the failure, Shamgunov and Frenkel immediately set off to come up with new ideas. Both recalled that Microsoft and Facebook are actively investing in in-memory technology - storing data in RAM. Working with such databases is many times faster than with hard drives and solid-state drives, but there is also a drawback - the system does not leave information if it is de-energized or turned off. However, the partners decided to focus on the database accelerator model, from which MemSQL was later born.

Nikita Shamgunov (Photo: Damien Maloney for RBC)
The entrepreneurs were late with the formal application this time, but they managed to find a loophole to enter the 2011 course. The support of experts helped: the key lobbyist for the project was the former chief developer of Gmail Paul Beckheit. Then he left Google, founded FriendFeed, and joined the Y Combinator team. "We found his Facebook account, and there was a machine gun on the avatar," Shamgunov recalls. "So before the interview, Eric studied the question: in the end, out of 60 minutes of the meeting, we devoted 20 to the startup, and 40 to guns, machine guns and grenade launchers." At Beckheith's suggestion, MemSQL became a resident of Y Combinator out of competition.

After that, a difficult moment came for Shamgunov and Frenkel - they had to decide to leave Facebook. Moreover, the former had to part with the opportunity to receive an option in the form of a block of shares in a social network worth $ 2 million. "If you leave the company, the shares must be left on the table. I had to say to myself: my company is worth more than $ 2 million, "notes Shamgunov.

At first, the partners worked on two fronts and pondered the advisability of participating in Y Combinator. "I told Eric:" Let me become your accelerator myself, I'll give you the same $ 17 thousand, what's the problem? .. "- laughs Shamgunov. Only investor money dispelled doubts. Yuri Milner was the first to come to the rescue: the founder of DST funds donated $ 150,000 to the startup. Frenkel in an interview with the American Forbes (the magazine included him in the ranking of the 30 most promising young entrepreneurs in IT) in 2012 recalled: "At that moment Milner was in Russia, and good the news was delivered by a Segway robot with a webcam and screen attached to it. I never thought that I would get money from a robot. "

The funds came in handy: the startup has already signed a number of specialists from the Microsoft SQL Server team. For some, the decisive factor was precisely the chance to get through Y

Combinator, Shamgunov emphasizes. The first MemSQL employee was Adam Prout. He was lured away by the status of a co-founder and a package of 6.6%, while the traditional position of a senior programmer is 1-2%.

The second came Alexander Skidanov, who is well known to Shamgunov from his work at Microsoft. "Nikita worked at Microsoft in 2008 and sponsored the Urals [sports programming] championship, which I won, and there we met. He helped me get to Microsoft, and from there I went to him in MemSQL, "Skidanov says. At first, Skidanov's wife Maria helped Shamgunov to test the product for free. "By inviting her to join the team, we solved two problems at once - we got a cool developer on the staff and saved Masha from boredom," laughs Shamgunov.

The first time after graduating from Y Combinator, the team worked in a rented apartment. The office was rented for $ 100 thousand after the release of the first version. And today the company is preparing to move to a new space - already for $ 1.5 million.

HipHop by Zuckerberg
Shamgunov created technologies at the heart of MemSQL's business "by hand" together with Skidanov and Prout, they are co-authors of 11 out of 12 patents assigned to the company. The MemSQL DBMS was designed to systematically solve the problems of the SQL language - insufficient computation speed and scaling. MemSQL translates it to C ++ before executing the SQL query and allows the operation to be scaled across multiple servers. This makes it faster.

The JIT compiler (Just in Time) is responsible for the translation - this part of the software turns languages into a set of zeros and ones. MemSQL compiler - development based on similar tools HipHop and Scuba from Facebook. For example, the VKontakte social network KPHP has its own JIT compiler (its developers are Shamgunov's former rivals in sports tournaments

programming Nikolay Durov and Andrey Lopatin).

MemSQL software allows you to find errors in your code without sacrificing speed. It combines two data conversion models - interpretation and compilation. The first one sequentially translates each instruction into machine-readable binary code and executes it. The second translates and executes all instructions at once. The mix of models eliminates their disadvantages - it automatically finds and bypasses bugs without requiring programmer intervention.

MemSQL DBMS stores basic data in random access memory (RAM) - only the result of operations performed is recorded on the hard disk. The risk of data loss due to a power outage is leveled by the constant updating of the operation log - a small file that reflects all changes to the database. Information in the first iterations of the DBMS was still sometimes lost, but customers did not pay attention - the speed more than compensated for this deficiency, Shamgunov said in 2012. Having reduced the time for processing queries, his team made significant progress compared to the classical implementation of a DBMS in SQL: the speed of work has increased tenfold.

"Databases should be as simple and as functional as possible, like a Kalashnikov assault rifle," Shamgunov postulates in an interview with RBC magazine. MemSQL is one of those, he says. The structure of any modern website or application is based on ordinary rows and columns of data, reminds an entrepreneur. For example, in the "skeleton" of an online store, a table with the name and price of a product interacts with a table of buyers when one of them decides to purchase an item. These data are interconnected and together create a database built on these relationships - a relational one. MemSQL manages exactly these bases,

Microsoft thief
The big problem for MemSQL at first was finding qualified personnel. "Engineers in the Valley are

gods," states Shamgunov. It is incredibly difficult for a startup to hire high-level programmers: corporations like Facebook, Google and Twitter tend to win the competition. But even here the MemSQL founders found a way out. "We chose the path of sponsoring the TopCoder competition and poaching employees from Microsoft," says the entrepreneur.

Nikita Shamgunov (Photo: Damien Maloney for RBC)
The company has sponsored TopCoder since 2011, almost from the moment of its foundation (among other sponsors - Facebook and Intel). In the first year at the competition, a landing party consisting of Frenkel and Skidanov landed. They brought not only formal job offers, but also a prize for a poker tournament - the MacBook Air. Due to lack of time, the finals had to be held right during lunch on the last day of TopCoder - famous programmers from Russia and Belarus Pyotr Mitrichev and Gennady Korotkevich participated.

Russia in general remains an important supplier of human resources for MemSQL. For example, Anatoly Shalyto, Shamgunov's supervisor, in an interview with Khabr in 2017, told how the two-time world champion in sports programming, ITMO graduate Mikhail Kever got a job there. The professor also recalled that Shamgunov told him about the great prospects of the students of the Massachusetts Institute of Technology: "They are the same as yours, a little stronger."

Finally, the cradle of MemSQL frames is Microsoft. Shamgunov spoke frankly in 2012: "We violated Microsoft's patents, we took away several employees from them. Plus I broke my contract not to work for competitors. In every case Microsoft can sue us. " However, there are no legal proceedings on the last point, and the rest of the reputation and financial losses from the litigation will exceed the effect of victory, the entrepreneur assured.

Even today he is confident in his former employers: "We never had any problems with them. Moreover, we are discussing possible cooperation with Microsoft. " According to the entrepreneur, corporations patent technologies not to sue startups, but to fight patent trolls. At the same time, MemSQL diligently patents its own technologies. "It's important to apply to the patent office and get in line. In this case, if difficulties arise, the company has a paper on hand that secures the right to use the technology, "he explained during one of his public speeches.

Microsoft, like Google, has recently indeed patented technologies for protection, not claims, confirms Nikolai Davydov, partner of the Gagarin Capital fund. According to him, California has very lenient laws: an employee cannot be prohibited from competing and poaching people. "If the company really violated contracts and patents, then problems can begin during rapid growth or sale to competitors - before that, the amount of legal costs exceeds the benefit from the won process," the expert adds.

Such a tactic is life in a big city, Shamgunov said. According to him, all companies copy the successful experience of competitors, and this is what the Valley is good for: "Knowledge is constantly exchanged here".

Business development in 2011 still forced Shamgunov to part with Facebook: "One of the

Ruzei convinced me that if I didn't leave, then no one would dare to participate in MemSQL on a full-fledged basis. I quit my job on Friday and spent the weekend in a bad mood: $ 2 million is $ 2 million. "

It didn't take long to be sad: the market quickly appreciated the seriousness of Shamgunov's intentions, and on Monday the assistant of the famous American investor Ron Conway contacted the MemSQL founders. After 20 minutes of negotiations with Conway, $ 200,000 fell on the startup's account. Yuri Milner again invested the same amount in the company through assistant Felix

Shpilman.

Found the first MemSQL clients in the accelerator. One of the residents of the 2011 recruitment grew very quickly - the team needed technologies to scale the infrastructure, Frenkel recalled in an interview with TechCrunch in 2013.

His skills have also helped expand the investor base. If the venture capital market after a successful 2011 was overtaken by a hangover in the form of an outflow of money, then MemSQL managed to maintain interest in itself, says Shamgunov: then the funds GV (formerly Google Ventures) and In-Q-Tel, associated with the CIA, as well as the actor and business angel Ashton Kutcher and co-founder of PayPal, Kiev-born Max Levchin.

Running with tears in my eyes
The public release of MemSQL took place in the same 2011. For a free trial, the company has released a special version with restrictions. "A few days later, we had 10,000 downloads. It made me cry - we put 16 months of hard work into the release, "Shamgunov shares. According to him, even companies from the Fortune 500 list used the demo version: "Then they contacted us and asked:" Your program works on one machine, will it work on several? "

Back then, the database market targeted by the MemSQL founders was estimated at $ 60 billion a year. "We were not afraid to start a business for two reasons: cheap memory (you can buy a terabyte for several thousand dollars) and a growing segment of big data that requires such solutions. Microsoft does not have these solutions - we know, we worked there, "Shamgunov said in 2012.

Nikita Shamgunov (Photo: Damien Maloney for RBC)
According to him, the main thing in b2b software is a wide range of offers for all categories of clients. "At the very beginning, we experimented: we called different numbers to different people and followed the reaction," the entrepreneur recalls. Six years ago, he called $ 25,000 a year for a standard set of MemSQL services and $ 5,000 for each new node in the system. These costs have pushed dozens of large companies that have built MemSQL into their IT infrastructure. The DBMS participates in the payment chains of the product manufacturer Kellog's, Cisco, Samsung Electronics and other global players.

At first, the uproar in the market was caused by the startup's bravura statements about creating the fastest product in the segment, which allegedly works 30 times faster than the nearest competitor. Later, Shamgunov admitted to a marketing ploy: "Any engineer will say that the comparison of speed is incorrect, since companies often use profitable metering tools."

Domas Mituzas, a former colleague of Shamgunov and Frenkel on Facebook, publicly opposed MemSQL. In a personal blog, he criticized the startup's statement and argued for the conclusions with examples from a competitor's system - MySQL. "Nothing has passed since the launch, in the middle of the night Eric calls me and asks if I saw the post of Domas. We sat down to prepare an answer, "says Shamgunov. It turned out that Mituzas had composed the query incorrectly, focusing on MySQL logic other than MemSQL.

One way or another, but the uproar has risen capital and the new start-up was learned on the market, the entrepreneur concludes. The number of downloads on the day of the scandal went off scale, he says. Shamgunov came in a comment under the post of Mituzas and explained in detail the nature of the error: "It defeated a brood of trolls. The next day we published a post in which we explained the methodology of our calculation and put an end to the discussion. " Shamgunov is sure that the company's philosophical attitude helped to survive the stressful period: "It is much easier to convince an enemy than a person who does not care."

Time and open source

MemSQL's features have expanded over time. Its customers today use the company's products for monitoring the state of infrastructure, and for projects in a promising niche of the Internet of Things, and for business intelligence on the fly. MemSQL is an analytical platform. The emphasis on in-memory has long since disappeared. Many tables are out of memory today, "says Alexander Skidanov, who left the startup.

The product changed along with market trends, he explains: the original strategy did not imply the creation of a tool for working with transactional databases, in which each record means a separate operation. We changed the strategy quite quickly: already in 2012, Shamgunov talked about the popularity of big data and the need to work with it: "Everyone is obsessed with analytics, and we suggest doing it in real time."

MemSQL also supports user location tracking, which can be used to build high-demand applications. And one of the last cases —

fast databases for applications capable of recognizing objects in photographs using artificial intelligence. This is done by one of MemSQL's clients - the German company Everybag.

Among competitors, Shamgunov distinguishes solutions from Amazon (AWS Aurora), Google (Spanner) and Oracle. "There are many new databases in the segment, we are waiting for their consolidation into something large," the entrepreneur predicts. The market, according to him, is "very hot": against the background of global digital transformation and growing volumes of information, any, even the largest company, can instantly lose its advantage "due to aggressive competitors."

MemSQL is confident as a business, the entrepreneur emphasizes. The $ 30 million in investment raised in May is being spent on infrastructure development and team expansion: according to Y Combinator's estimates, the company has already created about 80 jobs. "We are still working at a loss, but we are definitely closer to payback than competitors from the corporate segment," Shamgunov said. According to him, the company is not going to IPO.

Over the eight years of the project's existence, its advantages have practically not changed: the company offers a fast and inexpensive set of solutions for working with data compared to competitors, the ability to use any cloud solution for deployment and information processing in almost real time, Shamgunov lists. He himself continues to invest a lot of efforts in scaling the business - Erik Frenkel has moved away from operational management to devote more time to his family.

Shamgunov does not hide pride in his brainchild: "We have achieved a lot. When we started, it was hard to imagine that such a complex software could be written by such a small team. " He does not want to think in the subjunctive mood about the prospects of such a business at home: "You can succeed anywhere, there are no clear rules in life. If we were to launch in Russia, it would take more time and the project would have to be done according to the open source model ".

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