

Whitepaper IDC

# Building a Market Leading High Technology Manufacturer: Charting the Rise of YADRO in Russia

October 2020

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## EXECUTIVE SUMMARY

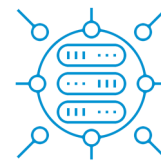
During the course of just three years the high technology engineering company YADRO has emerged as a major player in the Russian enterprise infrastructure market. In an unprecedented development, in 2019 YADRO became the absolute leader of the Russian enterprise storage market in terms of capacity shipped (1,360 petabytes), representing market share of 63.7%. In terms of market value, in 2019 YADRO recorded double its previous year's results, taking second place with a share of slightly less than 20%\*.

A Russian-based vendor has never placed this high in the Russian enterprise storage systems market ever since IDC's research in this sector in Russia began in 1999. The extent to which YADRO has achieved such impressive penetration in a segment historically dominated by the large global vendors, and the speed with which this has occurred is also unprecedented in the history of the Russian enterprise IT market.

The purpose of this document is to explain YADRO's current market position and to provide our view on how this kind of explosive business growth could occur.

## THE TRAJECTORY

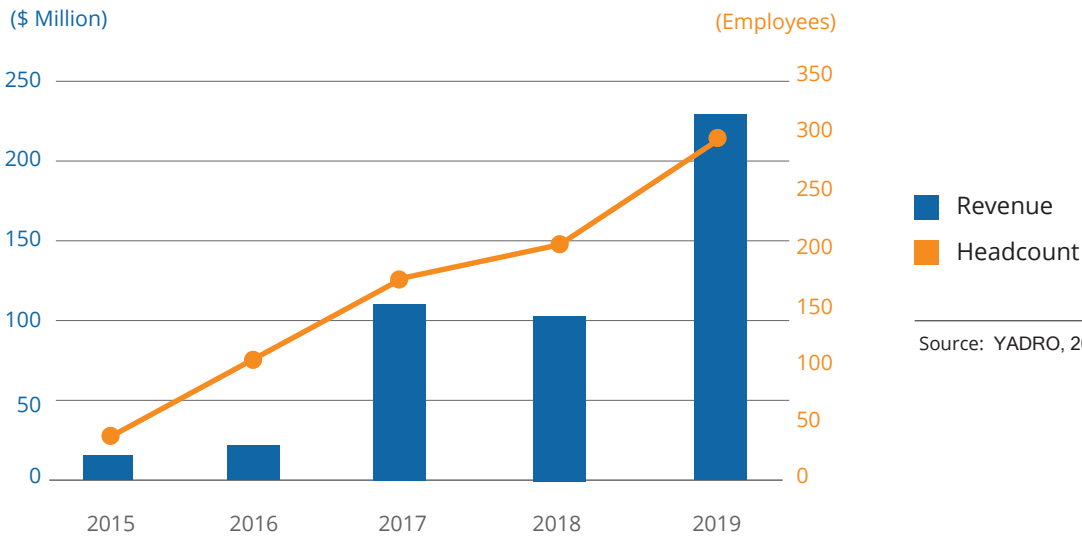
YADRO's emergence has been nothing short of spectacular. The company officially launched its VESNIN and TATLIN product lines of RISC system-based servers and storage platform in September 2017. The results of 2019 showed YADRO placed second in the Russian enterprise external storage systems market in terms of vendor revenue and was the clear leader in terms of capacity delivered\*. Also, in 2019, it was the leading vendor in Russia of CISC- and RISC-based servers which are typically used for mission-critical applications\*, and was the third-largest vendor by market value in the overall server market in Russia\*.



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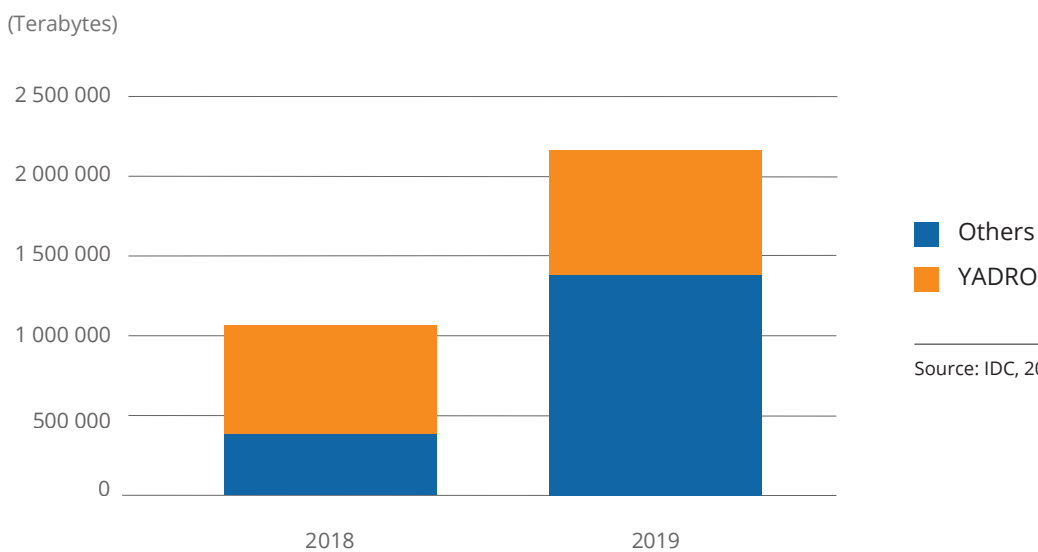
\* Source: IDC Quarterly Enterprise Infrastructure Tracker, Q4 2019

**Figure 1. YADRO: Revenue and Headcount, 2015–2019**



Source: YADRO, 2020

**Figure 2. The Russian Enterprise Storage System Market**



Source: IDC, 2020

## THE SUCCESS FACTORS: FINANCIAL SUSTAINABILITY

For any enterprise customer, the financial stability and reliability of their suppliers are massively important since they are typically making investments that imply service and support for over several years.

Over the last half decade, there have been numerous Russian ventures in the area of enterprise networking, storage, and servers



which focused on customers in the government sector. According to Russian government rules, these customers are required to purchase Russian-made products from Russian-owned manufacturers. Despite this apparent emerging market opportunity, many of these vendors have faced challenges in scaling their businesses beyond a core technology or a first significant government contract. Typically, they have lacked key competencies, production facilities, and working capital. YADRO is different.

The foundations of YADRO's outstanding growth in 2018 and 2019 came from its OEM business, which was set up in early 2014. Though established as a revenue generating venture, it had a broader strategic function. YADRO's OEM business has been a platform on which it has built in-house experience in creating and supplying enterprise-ready infrastructure solutions. The company's engineers benefitted from the experience of collaboration with global technology companies. Also, this business has enabled YADRO to earn customer trust both through acting as a reliable business partner, but also as a source of products with innovative features focused on transformational workloads.

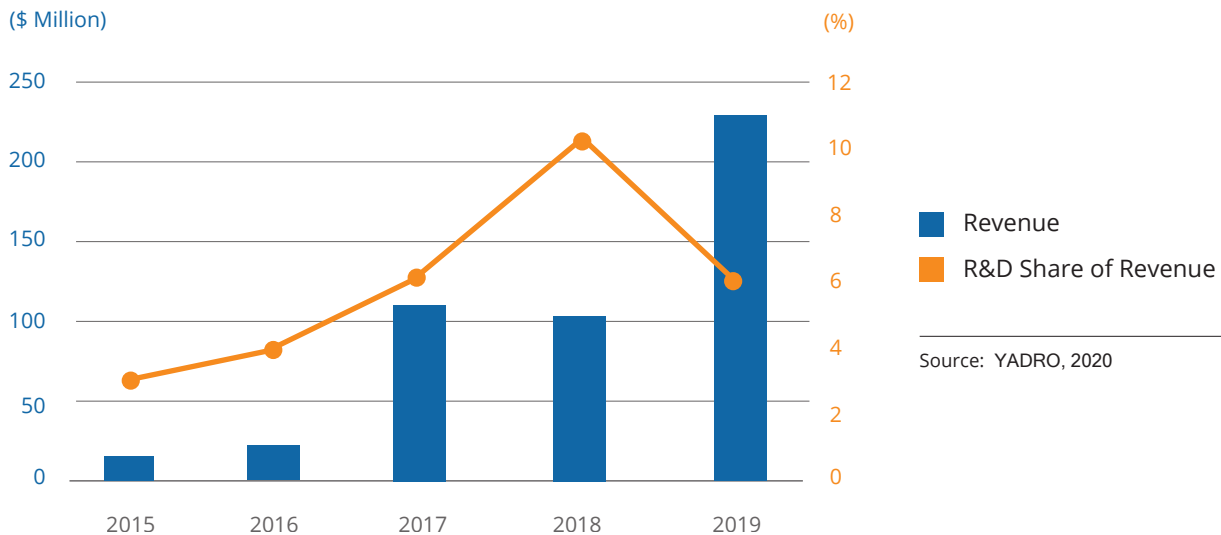
Today, YADRO is a technology partner of IBM, Dell, and Intel (among others), supplying infrastructure solutions under its own brand. The YADRO-branded business was geographically diverse and profitable enough to enable the company to invest into and nurture its own R&D initiatives. These initiatives have resulted in a rich product portfolio including the VESNIN (server) and the TATLIN (enterprise storage) original YADRO-designed product lines, and the more recent VEGMAN standard architecture server launched in Q2 2020.

A diverse mix of YADRO revenue streams is equally important to its business sustainability. The Russian enterprise IT market is prone to periods of crisis which can paralyze the work of companies focused exclusively on the Russian market. Similarly, the size of the country provides an opportunity to win comparatively large bids, but contract payment terms and conditions can be challenging at times. YADRO's OEM business provides a sustainable source of revenue that does not depend entirely on the often volatile Russian market and is not subject to the cash flow challenges of the IT projects market. This diversity enables YADRO to remain financially secure during all phases of the customer-delivery process – while simultaneously investing its own human and financial resources into areas such as presales, product design and testing, as well as logistics.



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**Figure 3. YADRO Annual Revenue and R&D Investment**



## THE SUCCESS FACTORS: NEW MARKET TRENDS AND CHALLENGES

The last five years has been a period of massive transformation for the IT teams at some of Russia's largest corporations. At companies such as the Russian Savings Bank, Russian Railways, MegaFon, and Rostelecom, digital initiatives have greatly increased the importance and the internal profile of IT operations. Business functions have taken a much greater stake in IT strategy – which in turn has driven changes in the ways these organizations interact with suppliers.

At these large enterprises, there has been a strategic, orchestrated effort to bring in-house many IT processes that were previously outsourced to external suppliers. This process has given business decision makers a much clearer picture of what they need from their IT infrastructure and in turn has driven increased demands on suppliers for more customized solutions – often leading to demand for solutions with open architectures. This demand for more customized hardware solutions optimized for specific workloads, combined with a generally more complex solution environment, has also driven the demand for access to hardware vendor service personnel. In a mission-critical environment, these service professionals are very valuable due to the fact that the cost of system downtime is extremely high. YADRO has product

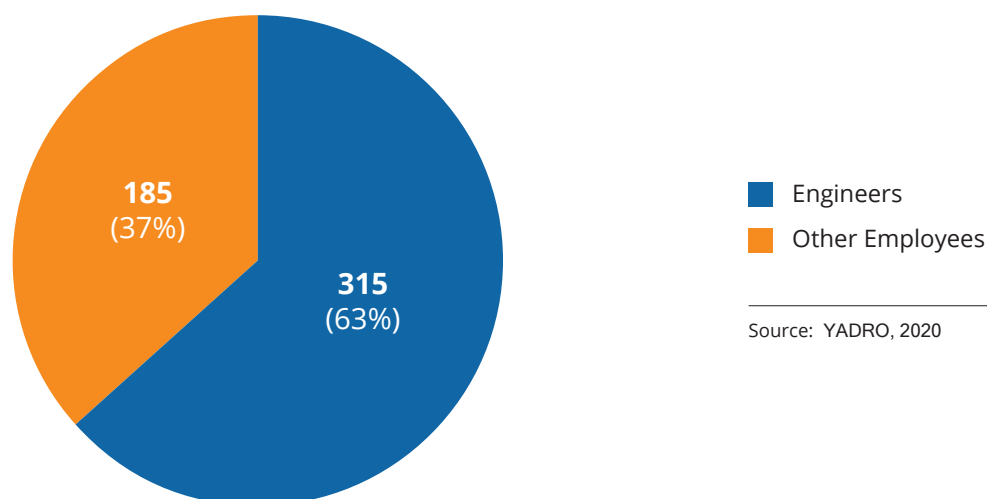


YADRO has product specialists and experts that can devote proportionally much more time to customer issues than can the global hardware manufacturers – especially if issues need to be resolved on site.

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As a solution vendor and hardware manufacturer, YADRO appears to have benefited from this trend of constantly changing customer requirements. It has been able to offer a level of product customization that would be impossible for a traditional global vendor. Moreover, in a period of major transformation for enterprise IT departments, this high technology vendor has been able to assist its customers with the transition from legacy architectures toward more open and modern platforms.

**Figure 4. YADRO Workforce Composition as of October 1, 2020**



**Table 1. Top Five YADRO Customers**

MegaFon
Russian Railways
Rostelecom
VTB
VimpelCom

Source: YADRO, 2020

## THE SUCCESS FACTORS: THE EMERGING SUPPLIER ENVIRONMENT

YADRO's success comes at a time when the Russian enterprise IT supplier landscape is undergoing its most radical change since the early 1990's. Global systems vendors – which traditionally dominated the Russian market for decades – have found their ability to compete compromised by pressures both at home and abroad.

The devaluation of the Russian currency in late 2014 halved the value of the Russian hardware market in an instant. For many suppliers, this resulted in a commensurate reduction in local footprint and marketing investment. The introduction of economic sanctions on Russia by the US and EU also tended to make many multinational players more risk-averse in their operations in Russia. This in turn meant that it became more difficult for them to meet the sometimes quite specific purchasing requirements of large Russian customers.

The market for non-x86 architecture servers represents a relatively small and declining segment for most vendors globally. These systems now represent only a small segment of overall sales in most countries of the world. Most of the demand is for upgrades and enhancements, with the market for new systems now very small. This makes it uneconomical to host this expertise inside Russia.

Pressure is also coming from newly introduced Russian regulations which are impacting the vendor landscape. With gradually increasing levels of assertiveness, Russian ministries have been developing and implementing regulations that require public sector customers and state-owned organizations to purchase products made in Russia, based on Russian IP, and supplied by Russian-owned companies. 'Import substitution' has effectively closed parts of the domestic market to global vendors and thus placed further pressure on their ability to leverage corporate resources to defend their market positions in Russia.

In 2014, this environment presented YADRO with an opportunity to address and fill this market niche, and then in subsequent years to build a significantly sized business around it. Customers

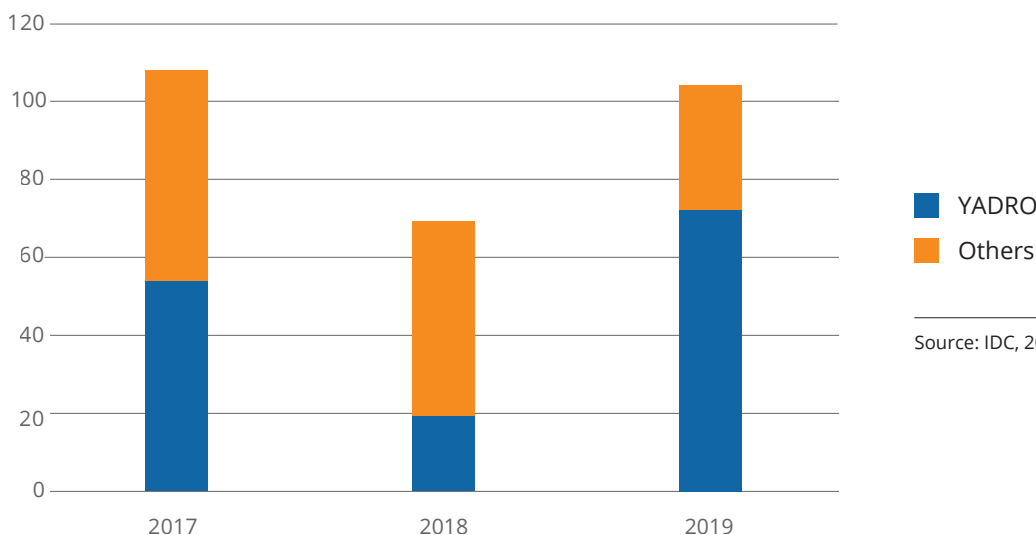


Addressing Russian local market needs and legislation requirements, YADRO has successfully leveraged the opportunity to support and develop mission-critical server platforms for Russian-owned enterprise suppliers by fulfilling their growing need to become compliant.

such as the Savings Bank of Russia, Russian Railways, VTB Group, and Gazprombank all have significant installations of these mission-critical servers and have significant demand for supporting these platforms. The business value of the workloads these servers support is usually enormous when compared with the value of the legacy equipment they run on. YADRO, with its experience as an OEM partner to vendors supplying these systems, was in a position to help these customers both support and develop their mission-critical server platforms. In addition, YADRO was able to do this in a way that fulfilled the growing need for Russian-owned suppliers to become compliant.

**Figure 5. CISC- and RISC-Based Server Market in Russia**

(\$ Million)



Source: IDC, 2020

## THE SUCCESS FACTORS: STRATEGIC PARTNERSHIPS

Despite the Russian government's strategy of replacing foreign-made products and services with Russian alternatives the fact remains that the majority of Russian customers are today reliant on a vast array of foreign technologies – many of which are unlikely to be replaced in the foreseeable future. In the area of IT systems, technology partnerships and alliances are an essential element of the business strategy of any vendor.

The level of international collaboration possible today has also provided YADRO with opportunities that would not have been

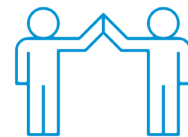


available in the relatively recent past. By leveraging the open-source philosophy and the advantages of open technologies and by contributing to the shared technological communities and consortiums an emerging company can compete with traditional technology giants.

Part of YADRO's rapid growth can be attributed to an intelligent partnering strategy. Being an active contributing member of many industry communities and partnering with global technology leaders has shaped YADRO's ability to innovate, and the company believes that it provided a platform of invaluable skills, experience, and contacts when it came to engineering its own branded products.

The most important of such partnerships has been with IBM. Since its inception, YADRO has been a major supplier of non-branded IBM systems and components as part of the vendor's OEM program. As an OEM partner, YADRO supplies IBM-manufactured products and integrates them into its own products which it subsequently supports. Work practice with IBM engineers enabled YADRO to build its own experience and expertise in system design. It also enabled the Russian vendor to build trusted and close relationships with the hundreds of Russian customers that continue to use older IBM processor-based systems.

One specific IBM initiative was particularly important in YADRO's development – the OpenPOWER Foundation. The OpenPOWER Foundation is a joint initiative of IBM, Google, NVIDIA and a number of other companies. As part of the OpenPOWER consortium founded in 2013, IBM first published reference designs of computing system elements based on the POWER architecture, and subsequently, in 2019, opened the POWER processor command architecture, thereby enabling an entire ecosystem of partners to develop their own server and network products as well as storage systems. YADRO has been one of the key members driving the OpenPOWER community by contributing to it (YADRO's CTO is the Chairman of the Board of Directors of the OpenPOWER Foundation). YADRO's flagship VESNIN server line was designed based on open specifications and at the time of its release was the world's first OpenPOWER enterprise class high-performance 4-socket server\*.



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\* Source:

[https://openpowerfoundation.org/?resource\\_lib=kns-group-llc-yadro-company-vesnin](https://openpowerfoundation.org/?resource_lib=kns-group-llc-yadro-company-vesnin)

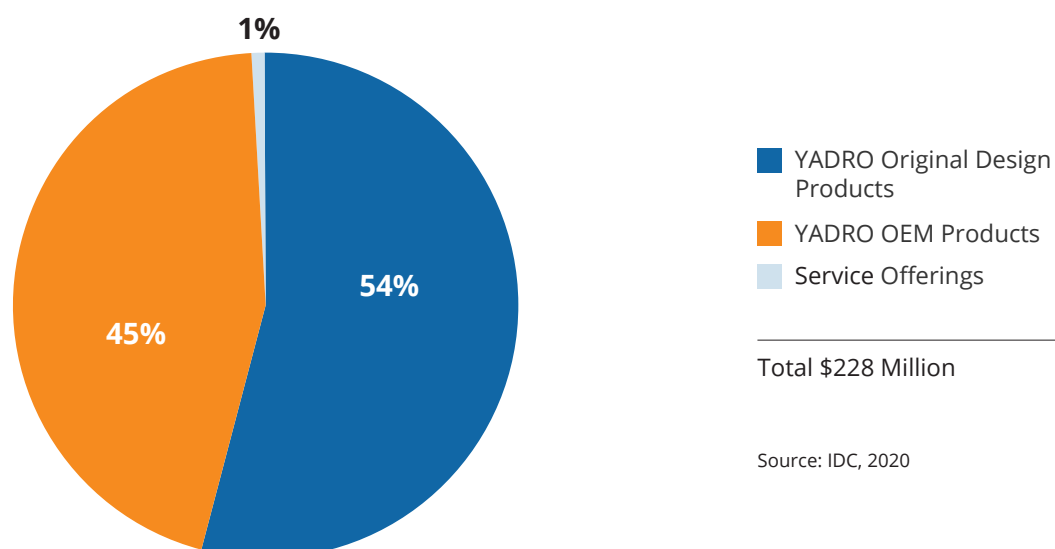
**Table 2. YADRO's Strategic Technology Partnerships**

	2017-2018	2019-2020
Technology Partners	Suse, IBM, Western Digital, Seagate, Samsung, Micron, Broadcom (Avago, LSI, PLX, Emulex), Molex, Compuware, HGST, MSI, Amphenol	Redhat, Suse, Veritas, Dell/EMC, IBM, Intel, VMware, Western Digital, Seagate, Samsung, Micron, Broadcom (Avago, LSI, PLX, Emulex, Brocade), Molex, Compuware, HGST, MSI, Amphenol
Technological Alliances and Consortiums	OpenPOWER Foundation, The Linux Foundation	Gen-Z Consortium, OpenPOWER Foundation, The Linux Foundation, SNIA, OpenCAPI, PCI-SIG, RISC-V

Source: YADRO, 2020

Technology partnerships are crucially important for any vendor of enterprise solutions, but other types of alliances have been equally important to YADRO's success. In 2019, YADRO announced a strategic partnership with MegaFon, a leading Russian telecommunications company. This agreement has marked the beginning of cooperation between the two companies and their work on joint initiatives. In 2019, this involved a four-way agreement with Intel and Dell Technologies covering the supply of x86 architecture servers to the Russian market on an OEM basis.

**Figure 6. YADRO Revenue Split, 2019**



YADRO also has a strategic relationship with Rostec – a hugely influential government corporation including over 700 separate entities and government organizations. The two partners have collaborated on a number of technology projects. The most significant one was the rollout of solutions aimed at implementing the technical requirements of federal laws 374 and 375 – the ‘Yarovaya laws’ (see below).

## THE SUCCESS FACTORS: INVESTMENT INTO CRITICAL SKILLS

Bringing a new enterprise-ready product like a server or a storage system to the market demands considerable developer resources. Therefore, investing in engineering resources has been one of the success factors from the very beginning of the YADRO story.

From its foundation, YADRO has prioritized recruiting high-quality engineers with strong experience in enterprise infrastructure. The company has also placed an emphasis on creating a company structure and a culture where engineers are motivated to create innovative solutions with a meaningful business impact.

Today, YADRO employs over 315 engineers who have been drawn from local and global R&D teams of leading enterprise vendors.

The same approach applies to attracting other talent – such as professionals with purchasing and logistics expertise. In a commodity market, purchasing planning is critical as component shortages are common and can either destroy company profitability or make it simply impossible to meet customer requirements. It can be a complex process to formalize the requirements to a supplier and to document them all correctly. Moreover, without careful planning it may not be possible to scale projects quickly especially in time of major supply chain disruption as is currently being experienced due to the COVID-19 crisis.

## SUPPORTING TELECOM OPERATORS TO IMPLEMENT FEDERAL LAWS

Any analysis of the rapid rise and impressive scale of YADRO’s business must include its recent successes with Russia’s telecommunications operators.



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In 2016, Russian federal laws 374 and 375 set out a range of new national security measures including a requirement that all telecommunications operators and internet providers store the content of voice calls, data, images, and text messages for 6 months, and the metadata on them (e.g. time, location, and sender and recipients of messages) for 3 years. To comply, operators were required to set up a new, scalable and potentially heavily loaded storage infrastructure at a fairly short notice. Moreover, this storage infrastructure was required to be manufactured in Russia by a Russian manufacturer. Compliance with these federal laws generated nationwide demand for a product solution optimized for these quite specific requirements.

Though there was initially much interest from global US and Asia-based suppliers (this is an enormous initiative to support from the technology requirements, scale, and infrastructure standpoint), several parameters proved challenging for many of them. The regulatory adoption needed to commence in a matter of months, and the required solution needed to achieve a dramatically low cost per terabyte. It also had to be designed to enable simple installation and management given that there were tight budget constraints for the rollout and configuring services.

Finally, this was a politically high-profile undertaking – so the technology supplier needed to have flawless ‘Russian’ credentials and be able to address the pressure of enormous media attention.

YADRO, in partnership with Rostec, were major contributors to the implementation of this initiative at Russian telecommunications operators of all sizes. They were able to offer an original product design branded as TATLIN.ARCHIVE. This product could be scaled to store petabytes of data, a key functionality for operators required to store data for several years. But it was also able to fulfil performance, pricing, serviceability, and manageability requirements set out by each of the operators. It could also be quickly implemented at operators anywhere in the country.

The company attributes its success to four main factors:

1. It created a solution with a fairly low cost per terabyte which is around \$150 including all the supplementary infrastructure such as SAN, networking, and racks. This is about half the average cost of off-the-shelf solutions based on the same HDD technology visible in IDC research in Russia. It was significantly



TATLIN.ARCHIVE

lower than most commercially available solutions on the market from the established vendors.

2. It quickly designed and built a solution to address only the tasks required by this legislation while optimizing all feature stack which could impact manageability, serviceability, and cost.
3. It was able to swiftly propose an end-to-end proof of concept from design to production. YADRO built and demonstrated a system in a very short period of time which few of its competitors were able to do.
4. It was successful in creating a product line with a number of SKUs addressing the very different scale of solutions required by operators of different size.

The impact of this regulatory adoption on YADRO's business was considerable in 2018 and 2019. Having successfully rolled out these products to the largest telecom operators in Russia such as Rostelecom, MegaFon, VimpelCom (Beeline), and Orange, YADRO built considerable credibility with these customers.

Throughout 2019, this rollout helped YADRO build its customer base and enabled the company to demonstrate its competence and the reliability of its products. Moreover, such a huge multi-exabyte field installation proved a powerful validation of the reliability and maturity of the hardware and software fundamentals of the TATLIN storage platform. The sheer volume of these deliveries catapulted YADRO to its leading position in the enterprise storage systems market in 2019.

Moreover, the volumes of components it required also helped boost its standing with the global component vendors enabling the company to secure improved quotas in periods of product shortage and get into deeper technology collaboration with leading vendors.

## THE FUTURE

To date YADRO's growth strategy has been to leverage the engineering potential of its talented teams and to integrate this with investment in product development while keeping close relationships with key Russian enterprise customers. Having made a good start within the datacenter segment with its server



and storage platforms, YADRO's future strategy is to expand its product portfolio into new areas that will most likely generate large future demand volume. The company has identified private cloud infrastructure, networking equipment, and a whole range of products and technologies likely to be operating at the network edge: 5G, AI, and consumer devices.

In pursuance of this strategy, YADRO completed several investments and acquisitions in 2019 and 2020.

The acquisition of a controlling share in Syntacore microprocessor core developer will enable YADRO to be present in the rapidly growing market of semiconductor IP and specialized semiconductor solutions. This investment positions YADRO as a future provider of chips optimized for applications in the '5G era' such as IoT and AI. This is particularly important in Russia where there is a major focus on building a robust local digital ecosystem.

To bolster its capabilities in the area of private cloud solutions, at the end of 2019, YADRO purchased a controlling share in Digital Energy. The technology this company has developed will become the foundation for the next generation of YADRO hardware and software systems aimed for building private dynamic cloud environments.

Finally, in mid-2020, YADRO announced that it had purchased the notAnotherOne hardware design-house. This company is experienced in creating a variety of consumer devices: smartphones, AI-powered personal assistants, intelligent sensors and eco-systems of 'smart things', trackers and wearables. With this investment, YADRO's aim is to enable the development of a product portfolio for emerging and growing new niches (5G, IoT, and AI) and to deliver world-class UX/UI experience, form factor design, and usability.

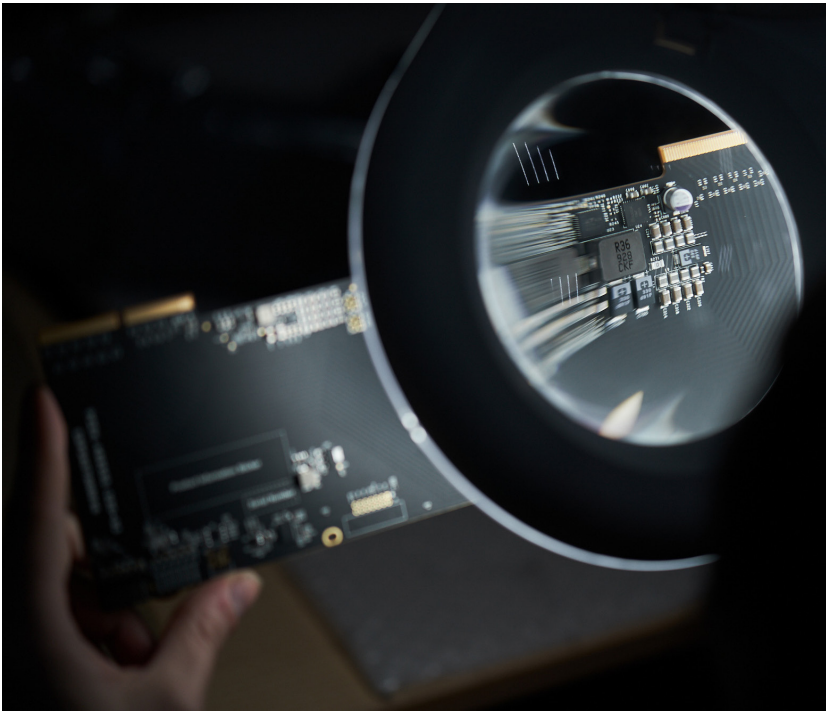
YADRO is confident that it will be able to replicate its recent successes in new markets, and that this will continue to fuel its impressive business growth. Furthermore, in broadening its market penetration, the company believes that it can exert a positive impact on the overall Russian IT industry and on the Russian economy.



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## IDC OPINION

YADRO rose from being a startup to one of Russia's largest enterprise infrastructure vendors in only three years. The company's business model has proved extremely well adjusted to the emerging customer environment in Russia. That said, though the Russian market environment provided excellent timing for such a venture, it is also necessary to account for strong financial foundations, intelligent staffing and alliances strategy as well as the sharp and accurate long-term product vision.



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