



## **TECHNOLOGY INNOVATIONS FOR OUR CUSTOMERS**

In 2021, SIBUR entered the industrial IT solutions market with two proprietary hardware/software solutions geared around AR and IIoT.

SIBUR announced a large-scale digital transformation programme in 2017. Digital solutions began to be rolled out across almost all areas of the Company's activities. Many big data, machine learning, digital development and communication technologies solutions were launched locally at SIBUR's production sites in 2019. As early as 2020, the economic impact of digitising business processes amounted to RUB 8 billion, while according to analyst estimates, implementing the entire portfolio of digital projects will translate to around RUB 59 billion of economic impact over the next three years.

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THE DELOITTE INDUSTRY 4.0 SURVEY OF 361 EXECUTIVES FROM 11 COUNTRIES FOUND THAT 94% OF RESPONDENTS CONSIDER DIGITAL TRANSFORMATION TO BE THE TOP STRATEGIC PRIORITY AT THEIR ORGANISATION

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The Deloitte Industry 4.0 survey of 361 executives from 11 countries found that 94% of respondents consider digital transformation to be the top strategic priority at their organisation. SIBUR's success in this area caught the eyes of other market players from outset. The new stage in building SIBUR's capabilities was to introduce its own digital products internationally.

### **A lighthouse for the digital revolution**

Back in 2018, when SIBUR was just beginning to try out digital technologies, there were simply no off-the-shelf out-of-the-box solutions on the market that could meet all the Company's needs. For high-tech equipment, the situation was almost identical. Company specialists were handed the task of creating smart, yet hard-wearing equipment.

"All petrochemical enterprises have similar production tasks and corporate network landscapes, so our Industrial IoT solutions can be rolled out to any petrochemical production site," said Vasily Ezhov, IoT Product Owner at SIBUR. "On top of this, they are well-suited to the needs of metallurgical and mining enterprises. Many companies in the industrial sector currently look towards SIBUR as a digital lighthouse. We were the first to automate non-critical operating processes, and through us, our colleagues see that the 'digital revolution' is not just a nice phrase, it is truly a complete overhaul of all processes at the enterprise, unlocking new tools and new opportunities. Our customers are not so interested in software or hardware, but rather in specific use cases for how these solutions could be deployed. And unlike other market offerings, our solutions are forged directly on the shop floor."





*The launch of SIBUR's proprietary product into the international market will allow other enterprises to sidestep the need to invest in the costly development of their own digital technologies.*

SIBUR Digital's IIoT products bring together unique equipment created directly for the harsh conditions of Siberian and Far Northern production sites, and software that even a lay person could use. But most importantly, SIBUR Digital gives the client the opportunity to adopt advanced business processes at their enterprise and take their manufacturing to a whole new level.

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The launch of SIBUR's proprietary product into the international market will allow other enterprises to, on the one hand, sidestep the need to invest in the costly development of their own digital technologies, and on the other hand, to save hundreds of millions of roubles, which they would still be wasting over the two or three years needed to develop their own solution. In addition, once integrated into their own platform, the customer pays for the SIBUR system as a service. Any subsequent additions, updates or new business solutions implemented for the product will be automatically sent out to the partner.

## **The Internet of Things for people**

According to forecasts by international analysts, global spending on IIoT platforms will grow from USD 1.67 billion in 2018 to USD 12.44 billion in 2024, reaching a CAGR of 40% over seven years. Manufacturing is set to become the largest market for IoT platforms. Deloitte expects that IIoT-based predictive maintenance solutions will reduce factory equipment maintenance costs by 40% and deliver an economic benefit of USD 630 billion annually by 2025. At the same time, the global market for IoT sensors is expected to exceed USD 68 billion by 2024, with a CAGR of 40%. Looking at the Russian IoT market, Rostec estimates it at RUB 41.6 billion.



*SIBUR's IIoT platform enables users to control devices on an IoT network across all levels.*

To implement our own IIoT solution, the specialists at SIBUR Digital developed a new line of equipment: the ExT temperature sensor, the ExB Bluetooth beacon to help employees navigate the shop floor and the ExV vibration monitoring system. They are designed with all the necessary explosion protection in mind, i.e. they cannot become a source of ignition and are able to withstand temperatures between  $-56^{\circ}\text{C}$  and  $+50^{\circ}\text{C}$ .

SIBUR's IIoT platform enables users to control devices on an IoT network across all levels. It collects and processes data from sensors, and transmits them to a corporate database, where they are then used in advanced analytics models to build forecasts and optimise process conditions. Another feature of the platform is its user-friendly interface. Despite the product's complexity, working with it is as simple as managing a smart home.

"SIBUR now boasts the largest network of IoT devices among industrial companies in Russia," explained Vasily Ezhov. "We can replicate our solutions very quickly because they are so intuitive to use. Plant teams are able to independently grow the network, without the need for integrators or programmers."

The platform is based on the wireless and energy-efficient LoRaWAN protocol, which provides excellent coverage in industrial environments. It uses unlicensed spectrum and allows sensors to be installed at a good distance from base stations. ISA100.11 and WirelessHART can also be leveraged. Devices are managed by a local enterprise server that stores all collected data. At sites with a pre-existing corporate network, the product is plugged directly into the company's corporate data warehouse. This architecture of the system means it operates independently from telecom operators, and the network can scale almost indefinitely, even in the most inaccessible areas.





*SIBUR currently offers one of the most promising industrial AR systems.*

## Through AR glasses

According to a study by TMT Consulting and Huawei, the Russian VR and AR market weighed in at RUB 1.4 billion in 2020, growing by 16% over the year. The study also foresees a RUB 7 billion market by 2025, but TAdviser IT media outlet and the IT company CROC are even more bullish. According to their estimates, the Russian AR/VR market will grow at least 6x by as early as 2023, hitting RUB 9.2 billion.

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TO IMPLEMENT OUR OWN IIOT SOLUTION, THE SPECIALISTS AT SIBUR DIGITAL DEVELOPED A NEW LINE OF EQUIPMENT: THE EXT TEMPERATURE SENSOR, THE EXB BLUETOOTH BEACON TO HELP EMPLOYEES NAVIGATE THE SHOP FLOOR AND THE EXV VIBRATION MONITORING SYSTEM

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SIBUR currently offers one of the most promising industrial AR systems. It stands out against the competition for its depth of integration into industrial processes and its versatility, meaning the product is compatible with any production chain. SIBUR's solution has a fully developed enterprise user role model, which allows it to be implemented at any production site, where it works in full compliance with information security, planning and control standards, without the need for additional resources to maintain it.

The system consists of glasses and a proprietary media platform. The glasses can be worn or attached to a helmet to free up the specialist's hands and allow them to see both the glasses' display and the production equipment at the same time. The work is carried out by an on-site operator, while up to five experts can connect remotely in its videoconferencing mode, whether they are SIBUR employees or any other external vendor, i.e. suppliers of equipment or services. The glasses can project into the operator's field of view equipment documentation or a digital pointer to highlight specific important areas. The experts assisting the operator in their work or monitoring their course of action can save photos of the process, and the system uses encryption to safely record the entire session for

future use; for example, as training material. The glasses are specially designed to be used in gas hazardous environments and are well protected against dust and moisture, which allows them to be operated in any conditions. They also boast at least two hours of battery life in severe frost.



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SIBUR's Tobolsk enterprises served as pilot sites for our AR platform. ZapSibNeftekhim has also started to actively use the remote support option to facilitate the processing of new grades of polypropylene and polyethylene. During the widespread lockdowns of 2020, AR solutions helped SIBUR to ensure uninterrupted operations and consult remote experts, regardless of their location. Igor Klimov, Managing Director at SIBUR, points out that a single online session through the proprietary AR platform can deliver savings between several hundred thousand and a million roubles. Not only does it cut down on business travel, it also allows us to make on-the-fly decisions informed by expert insights.

Employees from SIBUR's Technical Service function make full use of the benefits the product brings. They use the AR system to remotely advise customers on how best to process Company products. The team sends AR glasses to the client and helps them to set up the equipment, sidestepping the need to physically visit the site themselves.

The technology significantly reduces the cost and time required for SIBUR's customers. AR glasses are already used on a regular basis to service equipment for our customers in Russia and the CIS, and will soon be rolled out across China, Europe and Turkey.



“We initially developed AR as a remote expert capability to handle internal tasks at our enterprises, but then we started using it for maintenance and repairs, as well as quality inspections,” said Georgy Prutkovsky, AR Product Owner at SIBUR. “It then became clear that the product could successfully handle the technical service function’s tasks, and it helps us to fine-tune equipment for our products. Our clients no longer need to wait several days for SIBUR’s expert to arrive; instead, they can set up an AR session and get immediate assistance.”



*Employees from SIBUR’s Technical Service function make full use of the benefits the product brings (Photo: Georgy Prutkovsky, AR Product Owner at SIBUR).*

PolyER was one of the first companies to try out all the functionality of our AR platform. SIBUR sent them its glasses while they were testing a new grade of polypropylene, allowing our advisers to be remotely present during the manufacturing of test batches of food packaging and tape made of PP, PET and PS.

“SIBUR’s representatives were able to observe the tests with their own eyes and help our operator to set the process parameters,” said Oleg Yakimov, Chief Production Engineer at PolyER. “The most convenient thing is that these glasses leave your hands free. Everything is voice activated, and you can communicate with partners at the same time. This technology saves time and allows us to always keep in touch – I think it’s the future.”