Shvabe Holding

Shvabe

Shvabe

Holding today

Shvabe is a Russian innovative holding company operating in the field of optical science and electro-optical instrument making.

Today, Shvabe is a part of Rostec State Corporation and unites leading enterprises of the optical industry in Russia, ensuring the entire cycle of creating the latest electro-optical and laser equipment (from fundamental and exploratory researches to mass production) in the best interests of the defense industry and most civilian industries in Russia.

Over **18 000** employees

83 Doctors of Science

410 Candidates of Science

Historical background

Holding dates back **to 1837**, when **Theodor Shvabe's** company, which manufactured and sold high-precision optical instruments, was founded in Moscow.

The company had the highest reputation and was the supplier of the Court of His Imperial Majesty.

Shvabe is proud of its history, carefully preserves its traditions and considers using the experience of the past combined with modern technologies and innovative solutions to be the most important condition for its future development.

The document is a property of Shvabe Holding

Holding enterprises

Moscow
POLYUS Research Institute of M.F. Stelmakh
RD&P Center “Orion”
MZ “SAPPHIR”
Scientific and Production Association "Optica"

St. Petersburg
Vavilov State Optical Institute
Research and technological institute of optical materials
all-Russia scientific center "S.I. Vavilov State Optical Institute"

Krasnogorsk
Krasnogorsky Zavod

Lytkarino
Lytkarino Optical Glass Factory

Sergiev Posad
Zagorsk optical and mechanical plant

Vologda
Vologda optical and mechanical plant

Yekaterinburg
Urals Optical & Mechanical Plant

Novosibirsk
Novosibirsk Instrument-Making Plant

Krasnoyarsk
JSC Germanium

Kazan
State Institute of Applied Optics
Shvabe – Tech Lab

Switzerland
Shvabe –
Zurich GmbH

Germany
Shvabe –
Munchen GmbH

Belarus
LLC “Shvabe”

China
Shvabe Opto-Electronics
(Meizhou) Co., LTD

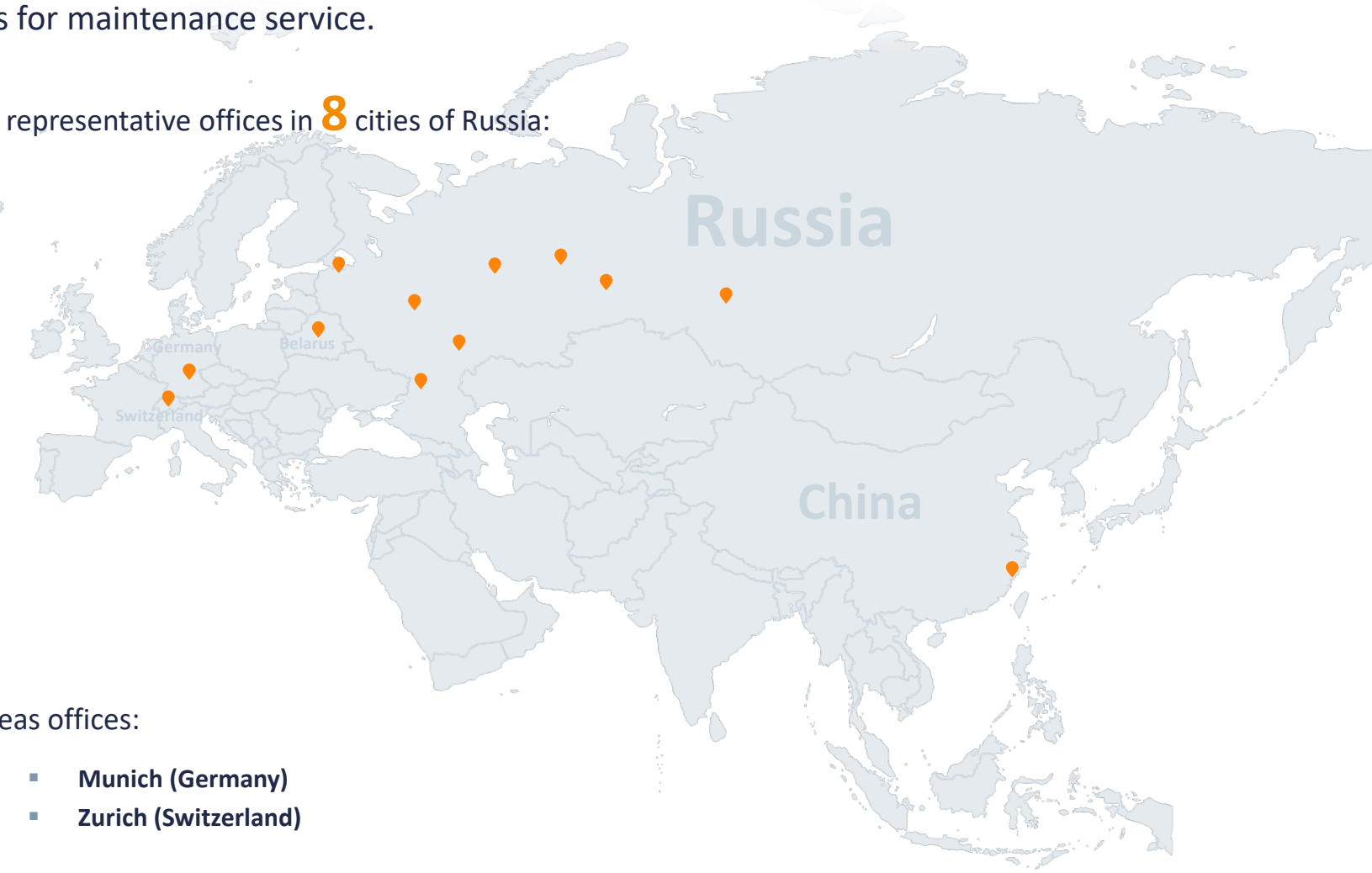
The document is a property of Shvabe Holding

Shvabe sales network

Holding has a branching network of subsidiaries responsible for the retail and wholesale distribution of products, as well as for maintenance service.

Currently, Shvabe has representative offices in **8** cities of Russia:

- **Yekaterinburg**
- **Kazan**
- **Moscow**
- **Novosibirsk**
- **Perm**
- **Rostov-on-Don**
- **Samara**
- **St. Petersburg**



Holding has **4** overseas offices:

- **Minsk (Belarus)**
- **Meizhou (China)**
- **Munich (Germany)**
- **Zurich (Switzerland)**

The document is a property of Shvabe Holding

Export geography of Shvabe products

Today, Shvabe products are exported to 95 countries.

The document is a property of Shvabe Holding

Holding Technologies

Holding develops and implements **79** unique technologies, including for a universal combat tracked vehicle platform, a promising aviation complex of front-line aviation, aerospace facilities, super-power lasers and optical materials.

Laser systems and complexes	Optical materials and technological equipment	Optical and optoelectronic devices and systems	Photodetectors, element base	Thermal Imaging Modules, Channels, Devices
16 technologies	**23** technologies	**16** technologies	**14** technologies	**10** technologies

Machining production

Optical production

Turning-milling machining center

Galvanic production

Microelectronic production

The document is a property of Shvabe Holding

Holding Competence Centers

ELECTRO-OPTICAL SYSTEMS (EOS) FOR ARMORED VEHICLES, SPACE, AVIATION AND FLEET

- EOS for Air Forces
- EOS for Army
- EOS for Navy
- EOS for Space Forces

MEDICAL EQUIPMENT

- Resuscitation equipment
- Neonatal equipment
- Respiratory equipment
- Ophthalmological equipment
- Cardiology equipment
- Therapeutic equipment
- Diagnostic equipment
- Gynecological equipment
- Surgical Instruments

OPTICAL MATERIALS AND TECHNOLOGIES

- Aspheric diffractive elements
- Optical coatings
- Highly transparent quartz glass
- Optical glasses
- Large and special optics
- Laser and optical ceramics

LASER SYSTEMS AND COMPLEXES

OPTICAL SCIENCE

ENERGY-SAVING LIGHTING EQUIPMENT

- Office and household lighting
- Information signs
- Industrial and special purpose lighting
- Lighting navigational aids
- Street and traffic lighting

PHOTO-INTEGRATED DEVICES

- Portable photo and video equipment
- Instruments for optical measurements and geodesy
- Surveillance systems
- Spectrophotometers
- Binoculars and scopes

Technopark "Shvabe": the development of laser and optical technologies in Russia

On 25 of August 2016, by order of the Government of Moscow, **JSC Polyus Research Institute** (company of Shvabe Holding) was assigned with a status of a Technopark.

Technopark specializes in laser and optical technologies.

In total, **24** residents are located on the territory of the Technopark of Shvabe Holding.

The total number of Technopark staff is over **2,000** people.

The main areas of Technopark activities are creation and production of**:**

- laser range finders, locators, target designators, gyros;
- sensors for ground-based measurement systems of space-rocket complexes;
- semiconductor lasers and photodetectors for optical communication systems;
- laser systems to control traffic safety;
- laser apparatus for the treatment of oncology disease;
- software;
- telecommunication systems;
- fiber optic systems.

More than

337 mln RUB

Holding investments in Technopark for 5 years in a row / 2016-2021 /

More than

74 thousand m^2

total area of various facilities Technopark

about

25 thousand m^2

urban potential of the territory

The document is a property of Shvabe Holding

Scientific potential of Shvabe Holding

Holding cooperates with **20** specialized universities of Russia on issues related to personnel training.

At the enterprises of "Shvabe" there are **11** specialized departments of Russian universities.

30 scientific papers have been defended in the dissertation councils of the enterprises of the Holding in 2016-2018

On the basis of the Shvabe enterprises there are a postgraduate study and dissertation councils for the defending of scientific works in **7** specialties:

RD&P Center “Orion”

- 05.27.01 - Solid-state electronics, radio-electronic components, micro- and nanoelectronics, devices on quantum effects (engineering sciences);
- 05.11.07 - Optical and optoelectronic devices and complexes (engineering sciences);
- 01.04.10 – Semiconductor Physics.

POLYUS Research Institute of M.F. Stelmakh

- 05.13.01 - System analysis, management and information processing;
- 05.11.07 - Optical and optoelectronic devices and complexes;
- 05.27.03 - Quantum Electronics

Vavilov State Optical Institute jointly with Research and technological institute of optical materials all-Russia scientific center "S.I. Vavilov State Optical Institute"

- 01.04.05 - Optics (physicomathematical sciences; engineering sciences).

The document is a property of Shvabe Holding

Partner projects with scientific organizations

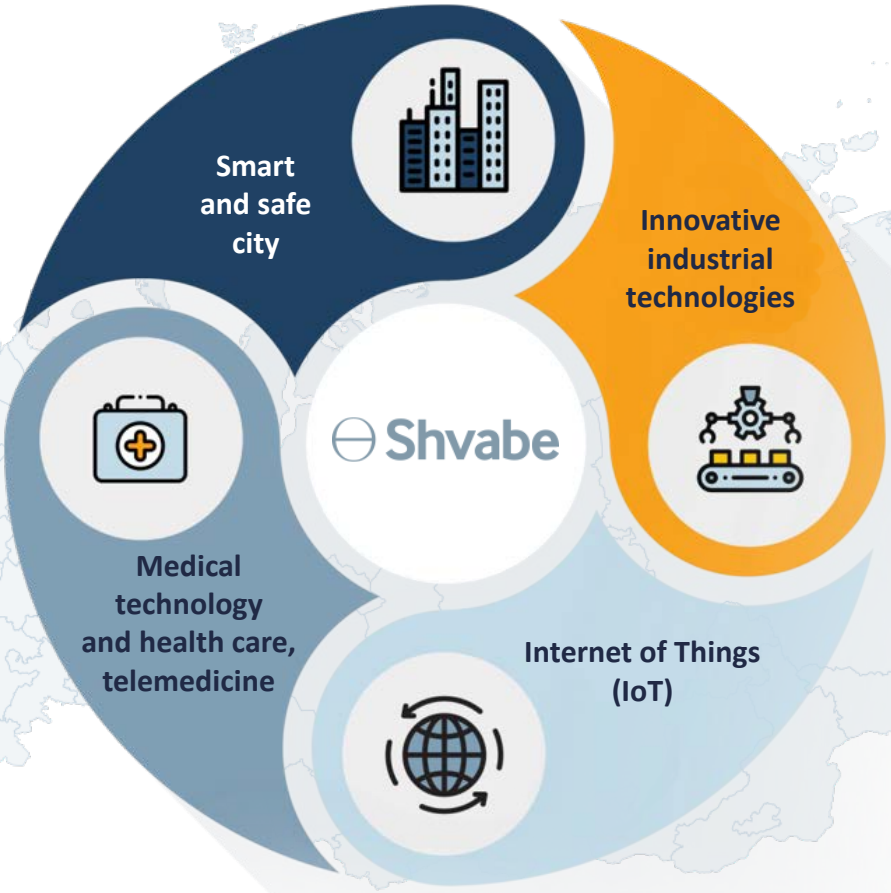
Lomonosov MSU Medical Research and Education Center

National Medical Research Center named after V.A. Almazov

Perm Federal Research Center

Irkutsk National Research University

Federal Center of Neurosurgery of the Ministry of Health of Russia (Tyumen city)



Peter the Great St. Petersburg Polytechnic University

Russian National Research Medical University named after N.I. Pirogov

South-Russian State Polytechnic University named after M.I. Platov

Ural Federal University named after the First President of Russia B.N. Yeltsin

The document is a property of Shvabe Holding

Directions of development of scientific cooperation

Cooperation with the scientific community and development funds will ensure the development of competencies and efficiency increase of R & D.

	ORGANIZATIONS	COOPERATION AREAS
Fundamental researches	▪ Russian Academy of Sciences ▪ Russian Foundation for Fundamental Research ▪ Russian Science Fund ▪ Separate research institutes in fundamental sciences ▪ Russian Quantum Center	▪ Monitoring of scientific research, close to the creation of technologies interesting for the Holding ▪ Participation in scientific events ▪ Participation in the adaptation of the results of fundamental research for applied purposes
Applied researches	▪ Advanced Research Foundation ▪ Russian Science Fund ▪ Branch Scientific Research Institutes ▪ Moscow Institute of Physics and Technology ▪ Moscow State Technical University named after N. E. Bauman ▪ M.V. Lomonosov Moscow State University ▪ Moscow Engineering Physics Institute ▪ Peoples' Friendship University of Russia ▪ I.M. Sechenov First Moscow State Medical University ▪ Institutes of the Russian Academy of Sciences	▪ Monitoring of scientific researches related to creating interesting technologies ▪ Purchase of patents on promising topics ▪ Attracting scientists to collaborate on technology creation ▪ Outsourcing part of R & D ▪ Participation in the ongoing developments and initiating of the new ones
Technology and product development	▪ Foundation for Assistance to the Development of Small Enterprises in the Scientific and Technical Sphere ▪ Skolkovo Foundation ▪ Russian Venture Company ▪ State corporations ▪ Startups ▪ Technoparks ▪ Innopolis ▪ "Anchor" customers ▪ Regional bodies of state support of small business, entrepreneurship	▪ Technology scouting ▪ Performing contests for finding new ideas ▪ Attracting experts from development institutions to conduct examinations of the Holding's projects and assist in writing technological foresight ▪ Acquisition of teams with required competencies ▪ Attracting buyers to develop unique technical solutions ▪ Synchronization with "anchor" clients ▪ Search for promising companies through cooperation with government agencies, small businesses

The document is a property of Shvabe Holding

Shvabe

Holding global projects

“Smart City” project

Items	Development proposals
"Smart House"	▪ LED lamps for lighting rooms. ▪ Smart electricity meters. ▪ First aid equipment.
"Smart City" ▪ "Bright City" ▪ "Safe City" ▪ Housing and communal services infrastructure management ▪ Smart Quarter - Smart Technologies for Facility Management Companies	▪ Energy efficient street lighting. ▪ Indicator lights. ▪ Energy efficient solutions for traffic control and management (traffic and pedestrian traffic lights, LED traffic signs). ▪ High-tech devices and integrated solutions for video surveillance and remote visualization, identification and detection. ▪ Survey satellite equipment for monitoring and management of infrastructure utilities.

"Bright and safe street"

The document is a property of Shvabe Holding

“Smart City” project

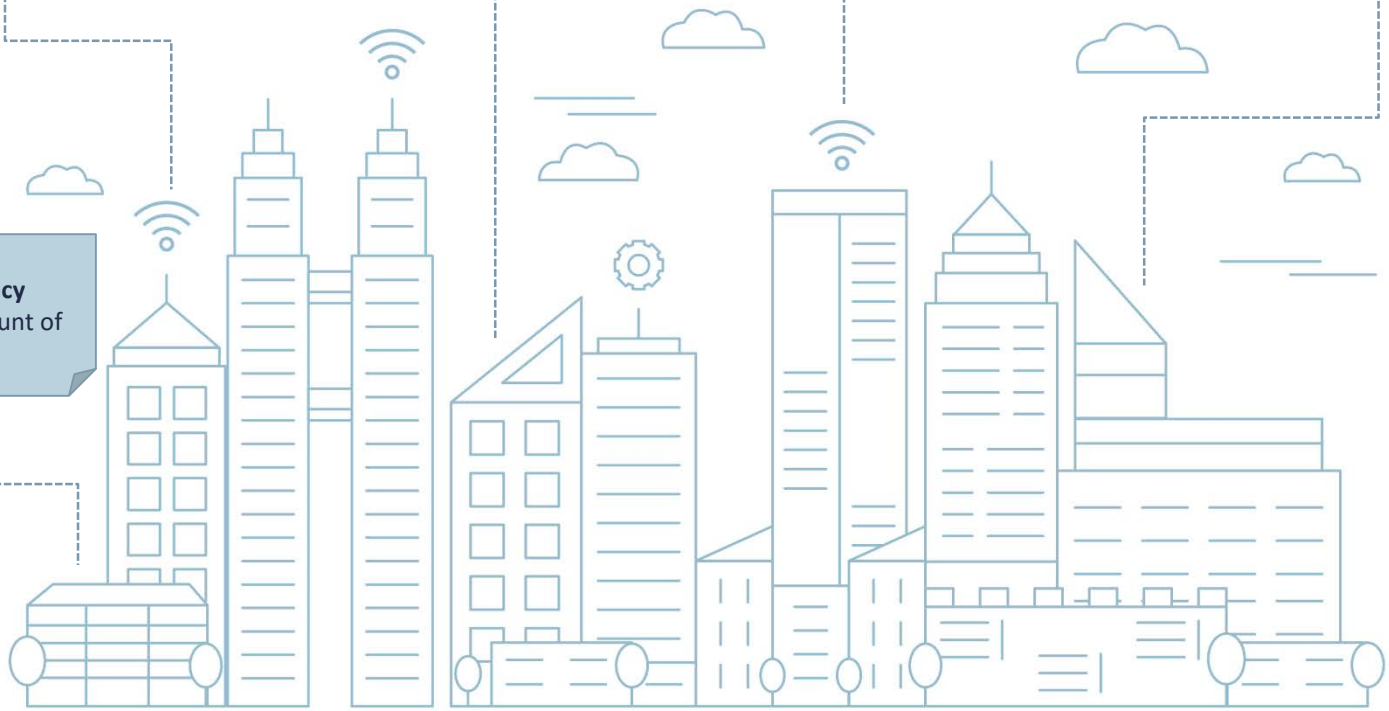
Automation of engineering systems
Automation and supervisory control of all engineering systems of buildings and structures

Infrastructure facilities automation
Boiler rooms, PBH, CHSS, DHP, ACU, etc.

Monitoring and management
Global supervisory control

Energy Accounting Systems
Accounting and quality control of consumed resources

Energy efficiency
Reducing the amount of energy used



The document is a property of Shvabe Holding

“Intelligent Transport System” project

A new high-tech system for passenger transport automation has successfully established itself in various cities of Russia. It provides full control over the work of personnel and rolling stock, contributes to improving the quality of passenger service and reducing various costs by automating the payment process and travel management. The introduction of the complex led to **increase in the share of non-cash payments** in public transport up to **70%** and provided **100%** coverage of welfare beneficiaries..

Thanks to the competences of LLC SPETSDORPROEKT, Shvabe Holding modernizes, develops and ensures the smooth operation of the Intelligent Transport System (ITS) of the city of Moscow.

It consists of:

- **2 703** traffic lights,
- **3 596** road detectors,
- **177** display panels,
- **2,526** tele-surveillance cameras,
- **45** meteorological stations.

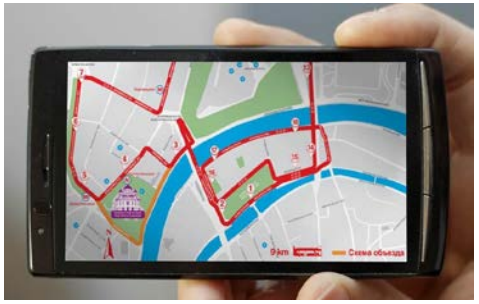
In order to ensure the operability of ITS, LLC Shvabe-Moscow produced and supplied more than **3,500** traffic lights and auxiliary equipment.

In general, Shvabe and SPETSDORPROEKT are carrying out systematic work to promote innovative ITS solutions in **24** regions of Russia.

The document is a property of Shvabe Holding

“Intelligent Transport System” project

- The system for informing road users.
- Management of traffic light objects and ATCS.
- Photo and video recording of traffic violations.
- Monitoring and control of the parking space.
- Information and analytical support of the local government



- Management of all services of the city transport complex.
- Ensure the adoption of operational measures to regulate the traffic situation.
- Real-time interaction with the special services of the city / region: Ministry of Internal Affairs, Ministry of Emergency Situations, Federal Security Service, etc.
- Monitoring and traffic management of passenger urban transport.
- Control over the movement of freight transport.

Interaction with road users

Creating an integrated traffic management system

Introduction of an automated traffic control system

Informing regional administration (automated workplace of the Governor)

Creating a single center of traffic management in partnership with

АО «КОНЦЕРН «АВТОМАТИКА» СПЕЦДОРПРОЕКТ Швабе РОСЭЛ

The document is a property of Shvabe Holding

“Bright City” project

Shvabe Holding successfully implements a **life cycle contract with Nizhny Tagil** for the design, construction and subsequent maintenance of an intelligent outdoor lighting system.

The project is scheduled to install:

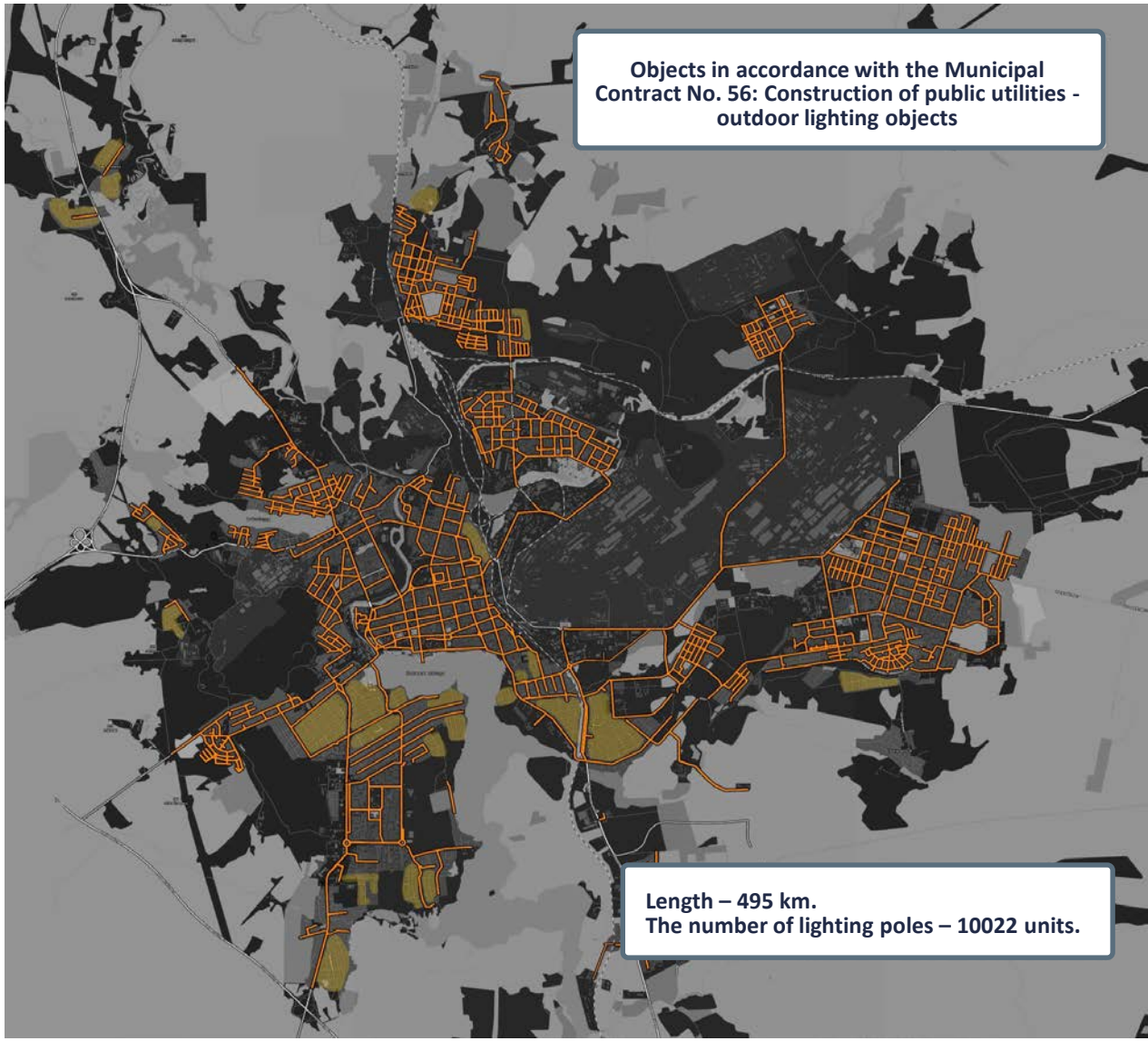
- **10 022** new outdoor lighting poles;
- **16 461** lamps;
- **13 230** light points.

The total length of the network - 495 km.

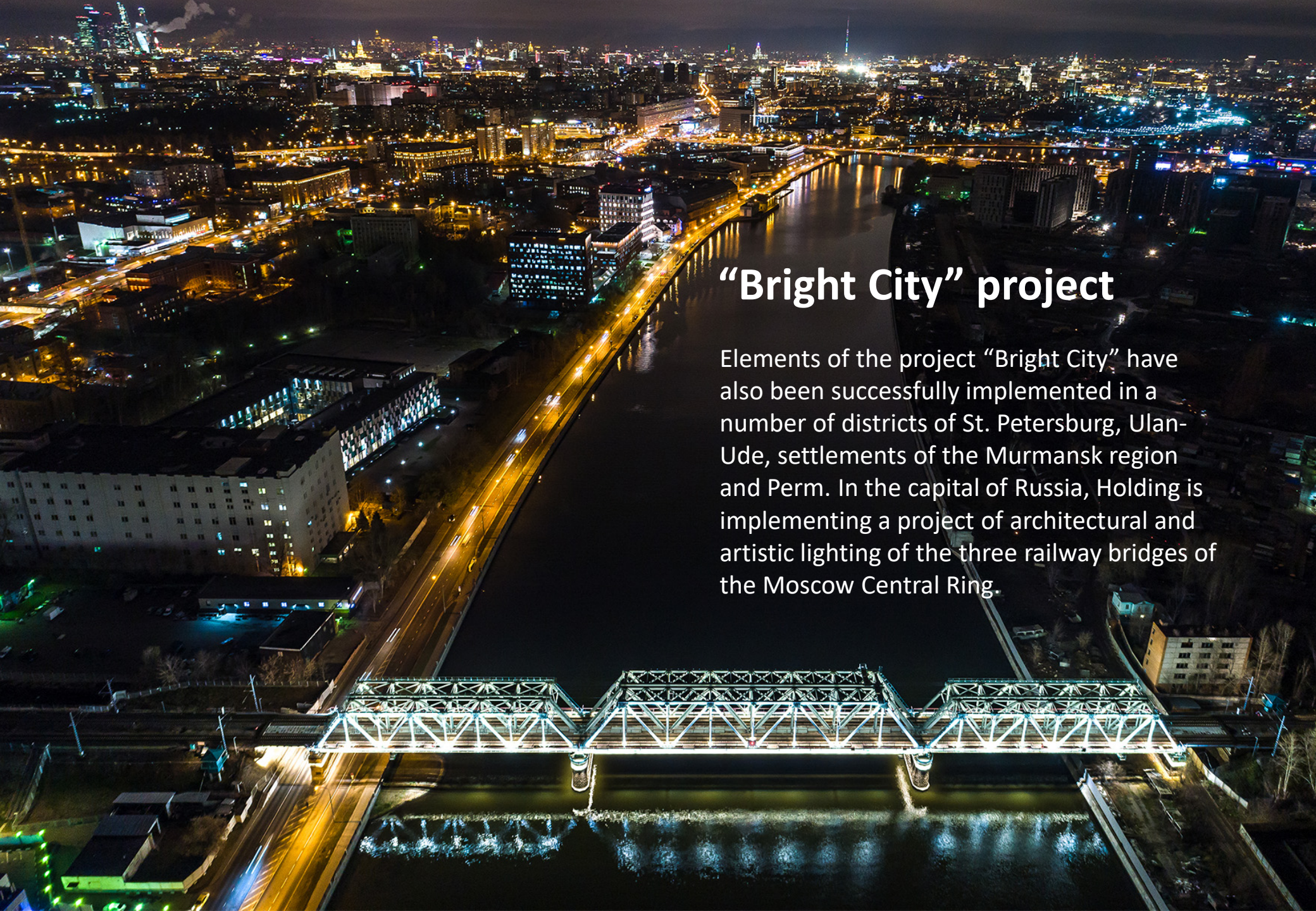
“Bright City” project

The project will allow the city in the long term:

- **40%** reduction in electricity costs and operation of the lighting system;
- reduce the level of crime and vandalism by **1,5 - 3** times;
- **30-40%** reduction in the number of traffic accidents.



The document is a property of Shvabe Holding



“Bright City” project

Elements of the project “Bright City” have also been successfully implemented in a number of districts of St. Petersburg, Ulan-Ude, settlements of the Murmansk region and Perm. In the capital of Russia, Holding is implementing a project of architectural and artistic lighting of the three railway bridges of the Moscow Central Ring.

“Safe City” project

Shvabe Holding has implemented a pilot project in Moscow to create a surveillance system. About **1,200** video cameras with a face recognition system and the function of real-time police notification were installed in public places, on transport, near crucial infrastructure and government buildings in the capital of Russia. Shvabe products in the field of road safety are proving to be effective in all regions of Russia and abroad. The automated remote traffic management system allows you to **optimize traffic flows**, increase the traffic capacity of roads by **23%** and increase the attractiveness of public transport by **15%**.

“Interactive City” project

The first **high-tech pedestrian navigation complexes** were installed in Yekaterinburg. The innovative device in the form of a stele contains a tourist map with signs of nearby streets, public transport stops, cultural and entertainment facilities. It is distinguished from the existing analogues by an emergency communication button with operational services. In addition, the complex is equipped with a system of round-the-clock audio and video recordings for monitoring public space, as well as a Wi-Fi and USB access point for charging gadgets.

The document is a property of Shvabe Holding

“Digital Health” project

In 2018, Holding became one of seven members of the **National Consortium “Digital Healthcare”**, which was created for the development and implementation of digital technologies in the Russian Federation health care. Within the framework of the project, a diagnostic system is being created for conducting mass health diagnostic programs in mobile and stationary institutions.

Goals :

- introduction of advanced digital technologies in the field of health care on the territory of the Russian Federation;
- ensuring the growth of the global competitiveness of Russian companies in the field of information and communication technologies;
- creating of promising products and services to ensure competitive supply in the digital healthcare market.

Solved problems:

- improving the quality and availability of medical services for the population;
- reducing the cost of medical services.

Telemedicine and remote medical care:

- Diagnostics.
- Pre-hospital counseling.
- Rehabilitation.
- Selection and correction of medical practice.
- Difficult clinical cases, including emergency situations.
- Analysis of research results.

Digital systems in healthcare:

- EGISZ - federal level.
- EMIAS - regional level.
- MIS - medical institution.

Mobile medical services:

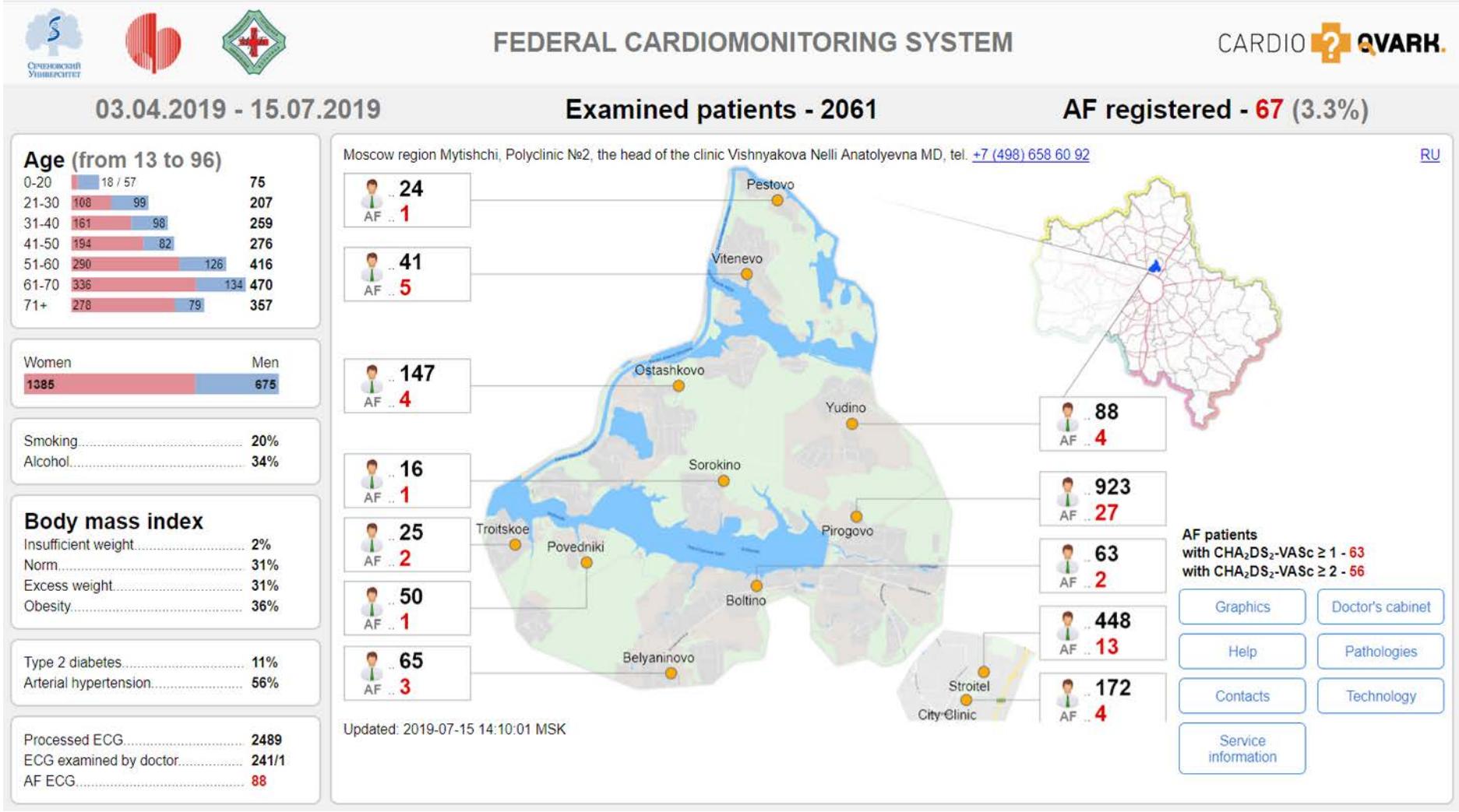
- Devices for health monitoring, diagnosis and patient care.
- Device for maintaining a healthy lifestyle.
- Wearable mobile systems.

Analytical medical services:

- Analysis of public health.
- Analysis of the activities of hospitals.

The document is a property of Shvabe Holding

Introduction of a cardiac monitoring system



https://fsk.cardioqvark.ru

The document is a property of Shvabe Holding

Physiotherapeutic arterial blood pressure corrector

Increases the effectiveness of drug therapy and is recommended as an **independent means** of preventing cardiovascular diseases.

The use of "ABP-051" corrects the functional state of the organism, in order to increase the overall resistance of the organism and its adaptation reactions to specific factors and tolerances to the physical and emotional stress of the working process.

EFFICIENT AND SAFE CORRECTION METHOD:

- **of blood pressure**
  high and low
- **of functional state**
  stress, disadaptosis

ABP 051

Registered **as a medical device**
in the Russian Federation and the EU

Product license № РЗН 2016/3776 , 31.03.2016
EC Certificate № 1942/MDD , 01.09.2017

The document is a property of Shvabe Holding

“Equipping of perinatal centers” project

Shvabe Holding takes an active part in the federal target program (FTP) on equipping 32 new perinatal centers with neonatal equipment in 30 regions of Russia. In 2017, centers were put into operation in Bryansk, Nazran, Makhachkala, Penza and Ulyanovsk. In 2018, centers were opened in Yakutsk, Petrozavodsk, Arkhangelsk, Smolensk, Tambov, Gatchina, Pskov and Ulan-Ude.

Shvabe has already delivered about **1,600** pieces of equipment to **15** perinatal centers as part of this FTP, among them in 2018 Holding supplied medical equipment to **11** perinatal centers to the sum of more than **570** million rubles.

The document is a property of Shvabe Holding

Perinatal centers equipping geography

- Bryansk
- Pskov
- Nazran
- Makhachkala
- Ulyanovsk
- Ufa
- Arkhangelsk
- Petrozavodsk
- Penza
- Yakutsk
- Smolensk
- Tambov
- Gatchina
- Ulan-Ude
- Orenburg

The document is a property of Shvabe Holding

Modular centers of nuclear medicine “Shvabe”

The project to create modular centers for nuclear medicine is being implemented as part of a comprehensive program to increase the availability of medical care for the population of Russia on the basis of the Decree of the President of the Russian Federation V.V. Putin of 07.05.2018 “About the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024”.

Effect of the usage of modular centers for the health care system:

- increasing the availability of medical services;
- minimization of equipment acquisition costs;
- the possibility of using public-private partnership mechanisms in which the investor (Shvabe JSC) invests, produces, manages and ensures the operation of the complexes, and the state pays for the medical services provided at the CMIF tariffs.

Advantages of modular centers:

- compatibility with the general health care system through the use of digital medicine methods;
- the possibility of transporting the object to a new place with the subsequent operation.

February 2018
The beginning of the project "Modular Center of Nuclear Medicine"

2018
Term of creation of a turnkey modular center

2019
Launch of the first modular center

Up to 12 000 patients

modular center admission rate per year

The document is a property of Shvabe Holding

Mobile medical complexes “Shvabe”

Basic usage principles of the complexes:

- complexes are transported according to a predetermined schedule between the settlements in which medical services are provided;
- diagnosis based on the analysis and images obtained are carried out centrally in the central district hospitals and regional clinical hospitals.

Variants of equipment sets
(based on the chassis of KAMAZ PJSC):

- village first-aid station;
- mobile ambulance stations;
- complexes "Children's Health", "Women's Health", "Men's Health";
- mobile systems MRI, CT;
- complexes for medical examination, occupational health examination, etc.

3-6 months terms of creation of standard turnkey complexes

The document is a property of Shvabe Holding

“Digital water utility” project

The project is implemented on the basis of the technological platform integrator VODOKANAL 4.0. This automated full-cycle production and technological complex combines digital technologies, technical and organizational solutions and well qualified personnel.

The composition of the platform VODOKANAL 4.0:

- Algorithms of management processes and diagnostics of production and transport.
- Hardware and software complex.
- Technology of production and technological complex maintenance.
- The unique technology of customer service.
- Training center for staff training.

The document is a property of Shvabe Holding

“Digital water utility” project

Goal:

- Providing drinking water to all consumers living in small towns and rural settlements.

Solved problems:

- Replication of local water supply systems of any volume in a short time frame.
- Centralized management of water disposal systems, hot water and heat supply.

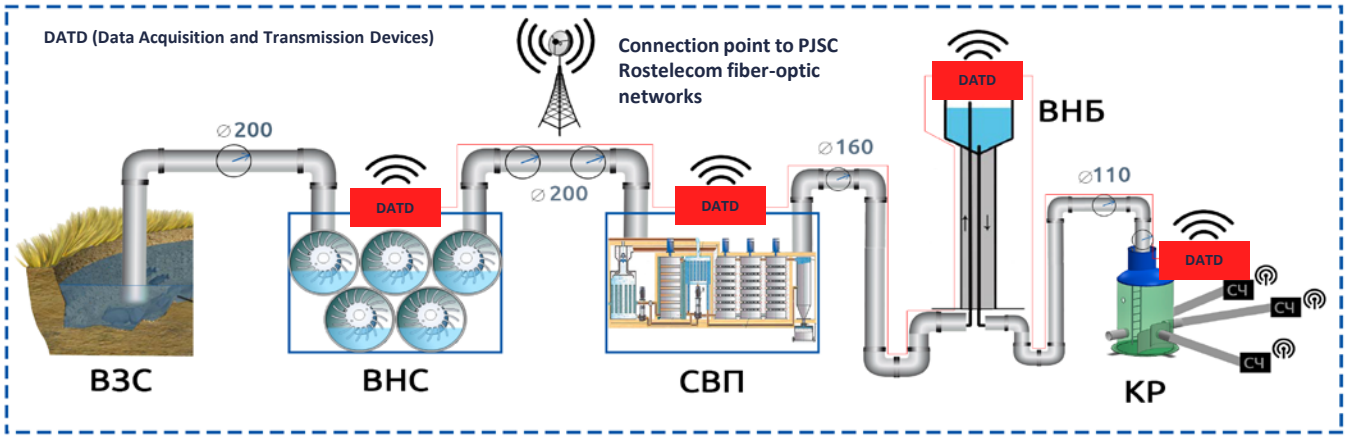
Platform equipment:

- Water treatment systems.
- Pump group.
- Measuring-and-recording apparatus and metering devices.

New products for the platform:

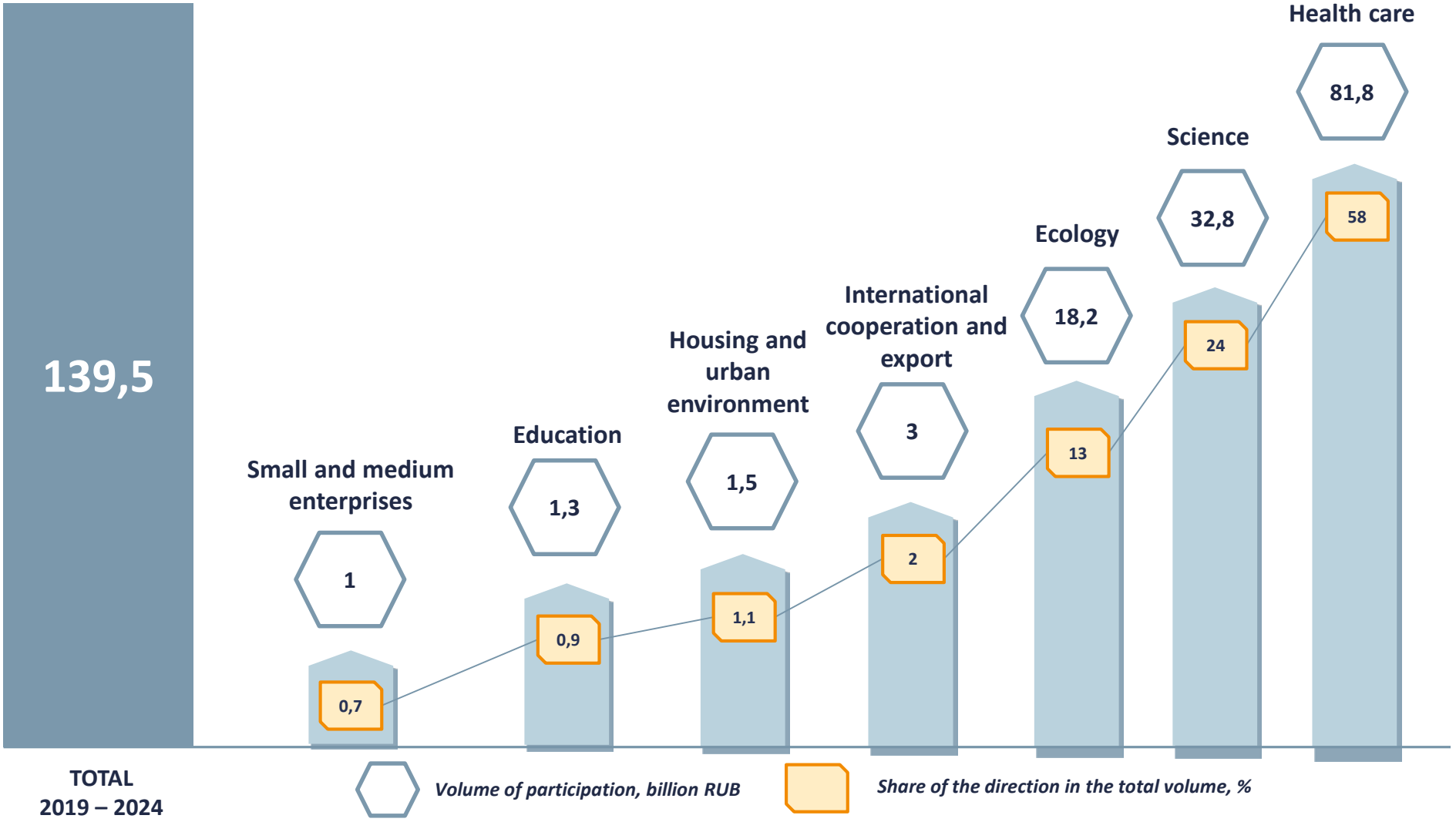
- Optical fiber.
- Elements of automation.
- Complexes for rapid assessment of drinking water quality.

Autonomous automated production and technological complex



The document is a property of Shvabe Holding

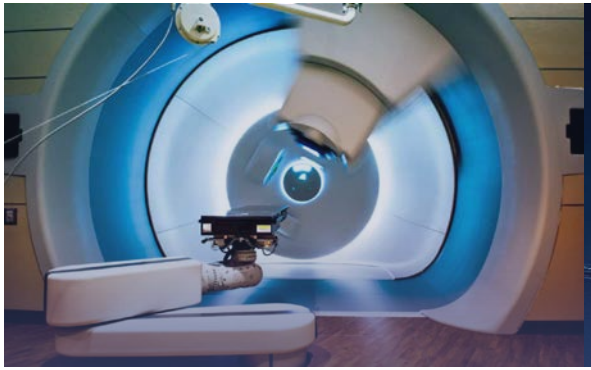
Prospects for participation in national projects



The document is a property of Shvabe Holding

Significant promising projects

Centers for proton therapy of oncological diseases

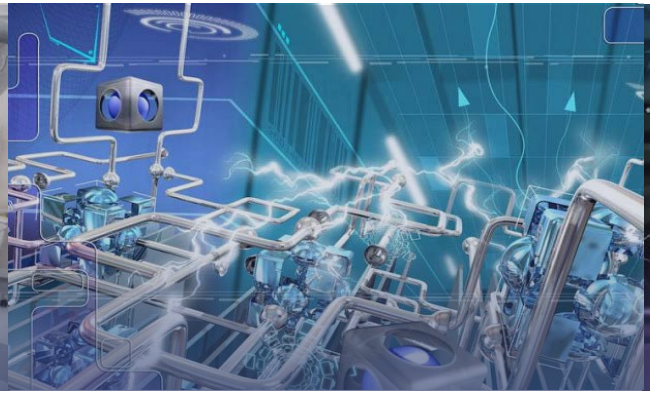


Participation in the Federal Target Program "National System of Chemical and Biological Safety"

Organization of production of components for wind power generators

Construction and equipment of hospitals in the regions of the Russian Federation

“Digital water utility“ project



Project for the creation and operation of ITS in the regions of the Russian Federation

The document is a property of Shvabe Holding

Shvabe

CIVILIAN PRODUCTS

- Medical equipment
- Lighting
- Surveying equipment
- Microscopy
- Astronomical Optics
- Water treatment systems
- Observation equipment
- Scopes
- Optical materials
- Photodetectors

Holding for health industry

Holding produces more than **200** items of high-tech medical products

Neonatal equipment

- Neonatal infrared heater.
- Incubator-transformer.
- Heater for newborns.
- Neonatal table.
- Respiratory support apparatus for newborns.
- Transport Incubator.

Equipment for anesthesiology and resuscitation

- Artificial lung ventilation apparatus for newborns.
- Transport monitor.
- Multifunctional device for inhalation anesthesia.
- Respiratory humidifier.

Ophthalmology equipment

- Computerized automatic perimeter.
- Fundus-camera.
- Automatic lensmeter.
- Slit lamp.
- Automatic chart panel.
- Auto refkeratometer.
- Workplace of the ophthalmologist.

Equipment for cardiology

- Defibrillator monitor.
- Cardio station.
- Cardiometer MT.
- Automatic external defibrillator.
- Cardiographic electrodes.
- Highly sensitive fetal monitor.

"Digital Health" Equipment

- Infrared digital thermometer.
- Smart scales.
- Tonometer.
- Pulse Oximeter.
- Blood glucose meter
- Blood pressure corrector.
- Cardio Monitor CardioQVARK.
- Software and hardware complex for the driver.

The document is a property of Shvabe Holding

The development of lighting equipment

Holding produces more than **300** items of energy-saving lighting equipment.

Lighting for housing and public utilities	Administrative office lighting	Street lighting	Highway lighting	Lighting navigational aids
				
Line of LED lamps for lighting corridors, staircases and entrances	Line of energy efficient fixtures for various types of premises: offices, commercial premises, municipal institutions.	Line of lamp and LED street lamps, the components of the secondary optics, power supplies.	Development of an intelligent street lighting system using automated control systems and energy efficient lighting.	Line of traffic and pedestrian traffic lights, traffic signs with LED lights, light-optical modules and signposts.

Architectural lighting

	Luzhnetsky bridge	Danilovsky bridge	Dorogomilovsky bridge
Before installation			
Implemented project			

The document is a property of Shvabe Holding

Holding for civilian optical instrumentation

Surveying equipment

The new generation of high-precision devices of the Holding has a wide range of functions and capabilities, supports the main navigation satellite systems - GLONASS, BEIDOU, GPS and GALILEO.

Microscopes

The holding's product line includes binocular stereoscopic microscopes of the MBS series, digital MIS, as well as a laser measuring and information complex MIM-340, which has one of the best resolution indicators in the world.

Astronomical telescopes

Holding produces a wide range of amateur telescopes and accessories for them (eyepieces of three lines (symmetric, wide-angle and super-wide-angle), Barlow lenses, eyepiece guide, planetary eyepiece, two-inch diagonal mirror, light filters, etc.).

Water treatment systems

Water treatment systems are capable of cleaning from 80 to 50,000 liters / hour of suspended matter, colloids, bacteria, viruses, various compounds, organic substances and dissolved salts. They also carry out its subsequent storage and distribution under pressure in the water supply network of the consumer.

Visual observation devices

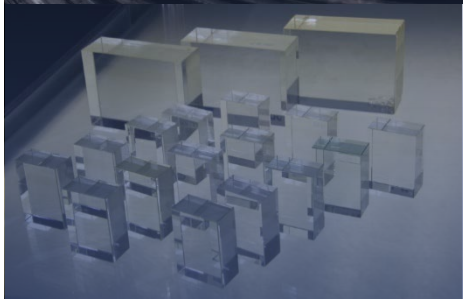
Holding develops and manufactures hunting scopes (day, thermal, collimator, night), IP video cameras, quadcopters, SWIR cameras, video surveillance systems, binoculars, monoculars, telescopes.

The document is a property of Shvabe Holding

Holding for the development of the optical industry

Holding produces more than **300** items of optical materials.

Optical glass	Colorless and colored optical glass, light glasses, special glasses (kurtz-flint), large-sized blanks of optical glass.
Optical materials with special properties	Laser glasses, chalcogenide glasses, sitalls, glasses with special optical characteristics, radiation-resistant glasses.
Products from optical materials	Fiber optics based on ultra high purity special glasses for transmitting light and image.
Large Mirrors from Astroscall	Space-based super-lightweight mirrors for optical-electronic complexes (OEC) of Earth remote sensing (ERS); Mirrors for surface and sea based OEC, designed to detect fast moving objects, tracking and aiming.
Optical elements (OE) for various devices	Optical elements (lenses, prisms, plates, mirrors), laser gyro enclosures, elliptical reflectors.
Large OE and blanks	Mirrors from astrositall for ground based OEC, intended for the study of deep and near space; Astrositall blanks for the manufacture of optical elements.
Large-sized OE for giant laser systems	Active disk elements of the optical path mirror, Pockels cells, optical path lens optics.
Large-sized lens and catadioptric optical system	Large-sized catadioptric objective for OEK space observation, telescopes, collimators with a visualization system; large-sized ERS lenses.
Silicon Carbide Products	Large-sized mirrors for ground-based and space-based telescopes, mirrors for optical-electronic ERS, mirrors for special super-power lasers; armor elements for equipping personnel and armored vehicles; canisters for the burial of radioactive waste.



The document is a property of Shvabe Holding

Large-sized Optics

Shvabe has manufactured high-precision optical components with diameters from 500 to 4000 mm for telescopes in more than **80** international projects over the past 25 years. The large-sized optics of the Holding are installed in Brazil, Great Britain, Germany, Greece, Egypt, India, Italy, China, Russia, USA, Thailand, Chile, South Korea, and also on the Canary Islands.

In 2017, a large-sized Shvabe lens, built with unique lenses with a diameter of up to 80 centimeters, was installed at Pico dos Diaz Observatory in Brazil. A high-precision instrument allows detecting fragments of space debris, as well as measuring the trajectories of their movement in different orbits — right up to geostationary ones — to prevent spacecraft from approaching it.

In 2018, at the Big Azimuth Telescope (BTA) in the Special Astrophysical Observatory of the Russian Academy of Sciences (SAO RAS) in Karachay-Cherkessia a 6-meter mirror, modernized in Shvabe, was installed. The enterprise of the Holding, thanks to high-precision processing technologies, increased by **1.5** times the observation range of the mirror, created in 1974.

The document is a property of Shvabe Holding

Holding in the best interests of Russian Railways

Lighting navigational aids and infrastructure

Resource-saving LED lighting devices:

- low power consumption;
- no phantom effect;
- vandal resistance;
- operating temperature range: from -60 to + 60 ° C;
- service life - 100,000 hours.

Speed indicator "Green line"

It is installed at the traffic light to create a light signal in the form of a green rectangle indicating the train speed when received on a side track.

Complex equipment of railway platforms and stations with energy-saving lighting.

Table for train carriages with built-in wireless charger
The table is made of modern composite materials. Options: button to call the conductor, built-in illuminating.

Equipment to control the movement of locomotives

Pyrometric equipment for contactless thermal control systems for BUKS of rolling stock on railways

The absolute temperatures of the BUKS were measured at V = 225 km / h on the Sapsan trains.

The speed of controlled trains up to 400 km / h, the range of measured temperatures: from - 40 to + 150 ° C.

Locomotive path scanning system

Scanning the path of the locomotive to detect obstacles; issuing an alarm when an obstacle or foreign object is detected; management of the movement of the composition when moving along dead-end paths; issuing control signals when moving on the labels.

The system of fixing the passage of the composition of the control point.

The document is a property of Shvabe Holding

Holding in the best interests of the Ministry of Education of the Russian Federation

“School procurement” project

Entrance area

- Interactive stand with the schedule of classes, event posters, alarm button, the possibility of charging devices, Wi-Fi access point.
- Security system (video surveillance).

Multimedia, interactive devices

- A means of organizing a wireless network.
- Active speaker system.
- Lighting equipment.
- Screen.
- Projector with ceiling mount.

Sports complex and medical unit

- Set for orienteering and sports tourism.
- Inventory for shooting classes.
- Electronic gaming display.
- Medical office.

School rooms

- Physics classroom.
- Chemistry classroom.
- Natural Sciences classroom.
- Astronomy classroom.
- Computer science classroom.
- Technology science classroom.
- Health and safety classroom.
- AWS of the teacher.

Infrastructure

- Interior lighting.
- Street lighting.
- Architectural lighting.
- "Antigraffito“ covering for buildings.
- Automation of engineering systems and infrastructure facilities.
- Fire extinguishing capsule.

The document is a property of Shvabe Holding

Water treatment systems

Shvabe water treatment systems are designed for highly efficient water purification from open and underground sources from suspended matter, colloids, bacteria, viruses, various compounds (iron, manganese, copper, sulfur, phosphorus), organic substances (including oil products), dissolved salts (including salts stiffness) and others, as well as its subsequent storage and delivery under pressure in the consumer's water supply network.

Installations presented in the product line of the Holding have an innovative three-stage water purification system. At the first stage, mechanical filtration is carried out from various impurities up to 4-5 microns in size. Further, it is purified by the reverse osmosis method using a thin-layer composite membrane made using nanostructured electrode multifunctional materials of a new generation. Only water that has a small molecular size passes through this barrier. Various salt deposits, solids, bacteria and viruses are completely retained by the membrane. During the final stage, the water passes through the procedures of coal filtration and additional disinfection.

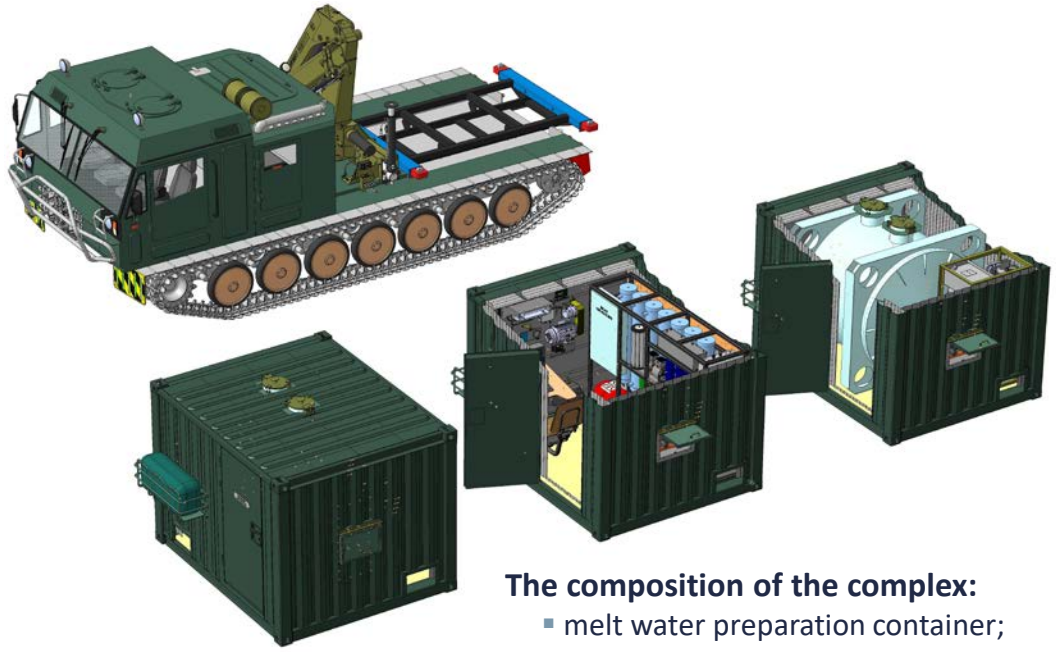
Depending on the modification, Shvabe systems are capable of cleaning from **80** to **50,000** liters of water per hour.
They can operate in a temperature range from -50 to + 50 ° C.
Among the advantages of the devices can also be noted: anti-vandal execution of the case, versatility, mobility, ease of installation and operation, short payback periods.

The document is a property of Shvabe Holding

Melt Water Treatment Systems

The development of the Arctic, where huge reserves of oil and gas are concentrated, is the most important State goal in Russia. That is why Shvabe Holding pays greater attention to this topic in its scientific activities. One of the new developments in this area is the station for the preparation and complex purification of melt water.

Melt water preparation and complex treatment station



The composition of the complex:

- melt water preparation container;
- clean water storage container;
- integrated water purification container .

Station benefits:

- the presence of two mobile autonomous modules provides the ability to prepare melt water at a distance from the water treatment plant;
- the use of a station already created as a water treatment plant (for example, SKO-15) will provide a highly unified development of the complex;
- if necessary, the complex will provide the possibility of obtaining industrial water with energy savings.

The document is a property of Shvabe Holding

“Shvabe” diagnostic devices

Enterprises of the Holding produce a wide range of analytical instruments that allow to explore the key properties of various products:

- the percentage of solids, density, mass fraction of the extract in alcohol-containing beverages;
- the proportion of aromatic hydrocarbons, octane and cetane number in motor fuel;
- the content of gluten, protein and moisture in wheat, rye, barley;
- oil content in sunflower, rape, flax;
- determination of the quality and grade of flour;
- the whiteness level of flour, sugar, chalk, starch, paper;
- the proportion of sucrose, glucose, fructose, maltose and lactose in clear solutions, as well as in products containing these substances.

The document is a property of Shvabe Holding

Showroom in Singapore

In September 2018, as part of the development of sales geography in the countries of South-East Asia, Shvabe entered into agreement with Russia-Singapore Business Council Trade House.

Products of the Holding's enterprises are currently being demonstrated on an ongoing basis in the Singapore Technopark at the site of the center for overseas promotion of Russian high-tech companies and the presentation of investment projects.

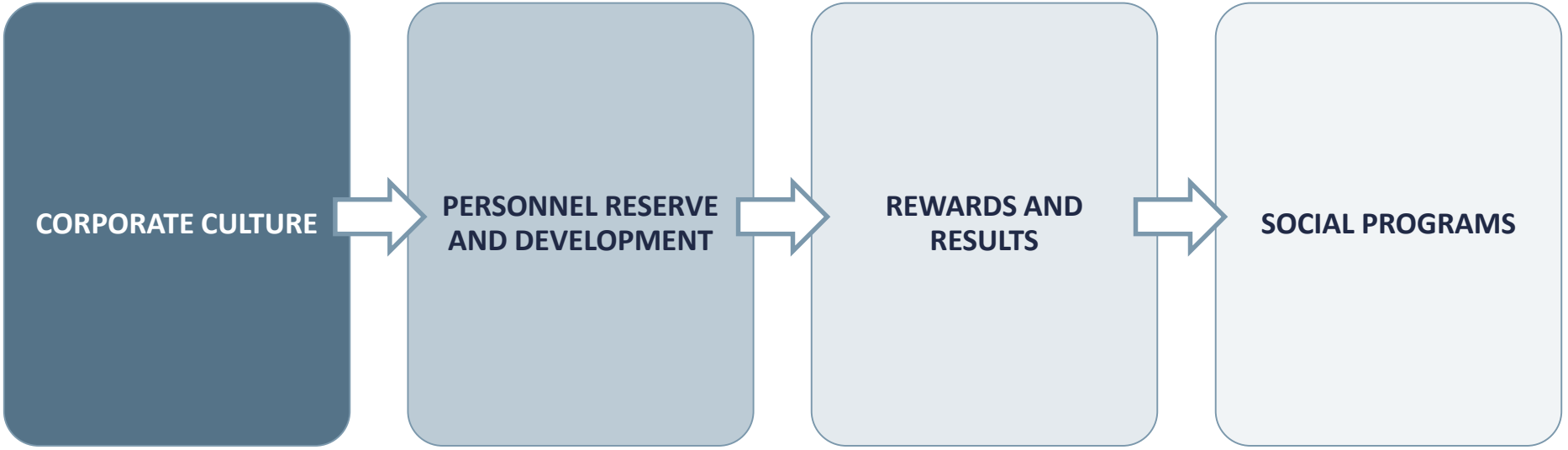
The showroom includes photographic equipment, Shvabe medical products for early diagnosis and prevention of various diseases, neonatal equipment, as well as “smart” technologies for the development of urban infrastructure.

The document is a property of Shvabe Holding

Human capital development

In the long-term strategy of Shvabe Holding, one of the priorities is the development of human capital - an HR program aimed at realizing the innovative potential of employees.

Development strategy of human capital of the Holding:

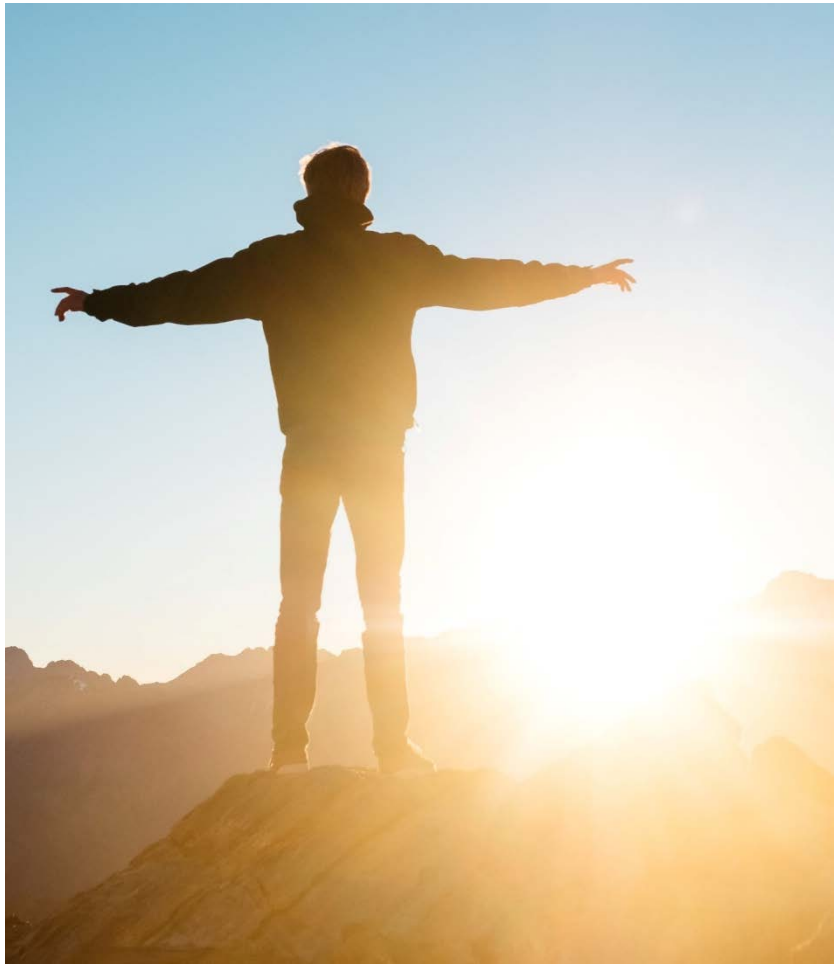


The main goal of the development of Shvabe corporate culture is to create a single community of employees who are able and willing to solve non-trivial tasks and work in a team for a common result.

The document is a property of Shvabe Holding

Basic principles of Shvabe corporate culture

Holding has a single corporate culture, which is built on the basis of the brand philosophy and development strategy of Shvabe.



Care. People are our main value and strength: we care for our employees, we value and respect them.

Traditions. We are proud of our history and the achievements of our opticians.

Development. Each our employee is unique and we create conditions for the development of his professional and creative abilities.

Leadership. We are active and ready to act as industry leader / expert.

Result. We have clearly defined our goals and confidently strive to achieve them.

Customer focus. We build long-term and mutually beneficial relations with our partners.

Innovation. New technologies and solutions allow us to change the future for the better and improve the quality of life of consumers.

Responsibility. We are a socially-oriented company and are actively involved in environmental and charitable projects.

The document is a property of Shvabe Holding

Corporate Training and Development

Personnel reserve

Shvabe team is a team of talented employees. The holding has developed and is implementing a long-term program for the development of a personnel reserve. It is aimed at the pinpoint disclosure of the innovative potential of employees in the aspect of scientific, technical and research and production activities. The identification and development of innovative personnel reserve is carried out through project activities.

Every year at least 15 million rubles are allocated for the training of specialists of Shvabe enterprises and organizations.

The document is a property of Shvabe Holding

Corporate Training and Development

Personnel reserve

Corporate sessions

Annual corporate sessions of the Holding are a platform for obtaining new knowledge and developing competencies in various areas of activity. Within the framework of such events, employees of Shvabe enterprises and organizations learn about the latest trends in their field, obtain relevant tools and skills for subsequent use in their work, share experiences and results of successful practices.

"Optical troops"

The project brings together specialists from various enterprises and organizations of the Holding into a single team to participate in military tactical games. During the events, employees not only work together to solve various combat missions, but also conduct field testing of state-of-the-art technology developed by Shvabe enterprises.

The document is a property of Shvabe Holding

Self-development and self-improvement

Shvabe sports movement

The holding pays special attention to the development of a unified sports movement. To participate in regional and federal sporting events, teams of the best employees of various organizations of the Holding are formed.

Shvabe Football Cup

One of the traditions of the Holding is the annual corporate mini-football tournament, which brings together all the organizations of Shvabe. Games traditionally take place on the territory of the current trophy holder.

The document is a property of Shvabe Holding

The continuity of generations

“ Generation Next”

The holding pays great attention to supporting the younger generation by organizing thematic contests, as well as developing cooperation with a number of leading children's technology parks and public organizations, which allows not only to introduce gifted children to modern professions in the world of optics, but also to involve them in design work as part of creating new products of Shvabe enterprises.

"Our kids"

We traditionally hold thematic art contests among the children of the employees of the Shvabe enterprises (June 1), giving school kits to our first-graders (September 1) and New Year's gifts to all children under 14 years old.

The document is a property of Shvabe Holding

The continuity of generations

"The Power of Light"

The corporate competition "The Power of Light" is a platform for the development and communication of talented children from 14 to 18 years old, passionate about the natural and technical sciences. The intellectual-educational event is professional oriented and is aimed at promoting optics among the younger generation.

The regional stages of the Power of Light contest are held in the cities where Shvabe enterprises operate, and the final is held at the head office of the Holding.

This allows to bring to the event schoolchildren and students from different parts of our country.

The best works of the contestants are identified in autonomous nominations devoted to optics, space topics, optical instrument making, etc. Thematic diversity makes it possible to attract children with a wide variety of interests.

The document is a property of Shvabe Holding

Social responsibility

“We are donors”

For many decades, Shvabe employees have been actively involved in the donor movement. Every year, donor days are held at our enterprises. Among our employees there are many honorable donors who donated blood more than 40 times. These people are our heroes and role models.

"Shvabe-Mercy"

Under the auspices of the Shvabe-Mercy charity foundation, employees of the Holding's enterprises actively provide targeted welfare assistance to children undergoing treatment in various medical institutions of the country, participate in actions to prepare and collect things for organizations sponsored by Shvabe.

The document is a property of Shvabe Holding

Partnership programs

Partnership with an association of doctors

Shvabe Holding maintains close cooperation with the professional community in the production of medical equipment, and actively supports initiatives to consolidate the doctors in our country. In particular, in May 2017, Shvabe signed a five-year partnership agreement with the Association of Doctors - Football Fans, uniting about 500 specialists from 19 regions of the Russian Federation.

As part of this cooperation, the Holding was able to contribute to the creation of a cohesive team of practicing doctors - epidemiologists, surgeons, oncologists, sports medicine doctors and other health care workers. Association teams - main (25+) and masters (45+) - have possibilities to participate in the most prestigious sport events. In 2017, under the flag of Shvabe, the masters team won first place in the 23rd international World Football Championship for doctors, and in 2019 the main team won gold at the 40th World Games for Medicine and Health.

The document is a property of Shvabe Holding

Thanks for attention!

Shvabe