Unique Intelligent Solutions
RTI is a company leading in design and manufacturing of high-tech products such as complex radar systems, control centres, data management, comprehensive security systems, decision support systems and situational awareness facilities for government agencies and private organisations. We also offer stationary, portable, vehicle mounted, on-board air and space communication systems including cutting edge solutions for UAV as well as a broad range of other high tech products.

Our mission is to prevent the world and humanity from potential global stability crisis by developing innovative solutions and utilising unique technologies in early warning and decision support systems. Our products include both unique tailored systems as well as standardised equipment that offer our clients reliable solutions for defence, tracking and security tasks wherever required. At RTI we have always been focused on the future. Today, our R&D groups are working on new solutions, offering new-generation products to shape future market needs.

We can also be proud of our past. For over 100 years RTI has not only designed and supplied high tech products but has also maintained the best traditions of the Soviet research and design institutions that gained prominence through the dedicated work of legendary Soviet designers and researchers. As an experienced company, which weathered several historical cycles we continue to meet highest standards and stay committed to the most demanding clients and partners, striving to excellence in everything we do.

DEAR FRIENDS,

Over 100 Years of Innovation

Pavel Laptaev
Chief Executive Officer
1916
Automotive repair facility was set up in Moscow. These would later be converted into the country’s first light tanks design center which was later reorganized into NPK NIIDAR.

1916
P. Lebedev from Institute of Physics of the Russian Academy of Sciences sets up Laboratory No 11 which would later become Radio Engineering Institute named after Academic Minz.

1946
Moscow radio factory is opening a branch in Saransk. By the early 1990s the Saransk TV factory achieved a monthly output of 20 thousand TV-sets.

1952
Yaroslavl Brake Factory renamed into Yaroslavl Radiofactory.

1952
Inception of the Radio Technology and Information Systems Concern. The share capital of the new holding includes shares of Radio Engineering Institute, NPK NIIDAR, NPK VT & SS, Vimpel-Sistema.

1976
Moscow radio factory is opening a branch in Saransk. By the early 1990s the Saransk TV factory achieved a monthly output of 20 thousand TV-sets.

2000
RTI Systems Concern is appointed to be the lead provider of technical and designer supervision of the ground-based radars of the space missile defense forces.

2001
The Voronezh-M new-generation radar begins field trials in Lekhtusi. The Concern acquires R.S.S. SPEZTMONTAZH.

2007
The National Crisis Management Center of Ministry of Emergency Situations of Russia designed and built by RTI Systems Concern goes into operation.

2011
RTI Group is established.

RTI History (20th century)

RTI History (21st century)
RTI is a private Russian group of companies focused on research, development, manufacturing and support of advanced technology solutions such as radar systems, command and control systems, situational control centers, communication equipment and electronics. RTI has its own R&D capabilities and well-equipped manufacturing facilities with over 10,000 staff comprising researchers, designers, engineers and highly skilled specialists.

**What We Are Today**

RTI has its own R&D capabilities and well-equipped manufacturing facilities with over 10,000 staff comprising researchers, designers, engineers and highly skilled specialists.

**Corporate Governance**

**RTI Group Overview**

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<tr>
<td>RTI Systems Concern</td>
<td>NPK VTiSS</td>
<td>NMIEME (Molecular Electronics Research Institute)</td>
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<tr>
<td>Radio Engineering Institute</td>
<td>MTU Saturn</td>
<td>Micron</td>
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<tr>
<td>NPK NIIDAR</td>
<td>Saransk Television Factory</td>
<td>RTI Microelectronics, a subsidiary of RTI Group and the State corporation Rostec, in conjunction with Russian Electronics JSC and Concern Sozvezdie JSC (subsidiaries of Rosatom) agreed to set up a joint venture to manufacture microelectronic components. The parties will together contribute controlling stakes in a total of 18 companies specializing in design and manufacture processes in the area of microelectronics.</td>
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<td>R.O.S. SPETZEKHMONTAZH</td>
<td>Saransk Television Factory</td>
<td>Yaroslavl Radioworks</td>
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<td>Radio-Technical Information and Information Systems</td>
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**> Key Customers**

RTI’s key customers include the Ministry of Defense of Russia, Ministry of Internal Affairs of Russia, Ministry of Emergency Situations of Russia, Federal Security Service of Russia, Ministry of Education and Science of Russia, Ministry of Agriculture of Russia, Russian Space Agency, Federal Aviation Service, state unitary company Moscow Urban Transport, Russian Railways.

**> Other Areas**

N. Fedorov Dubna Machine Engineering Plant, Mednogorsk Electrotechnical Plant.
What We Do

> Radar Systems
Rapid deployment radars for early warning missile defense systems, space surveillance radar systems, over the horizon sky-wave and surface-wave radar systems, and a variety of other unique systems for detecting and tracking all types of air and space targets.

> R&D
The company’s R&D facilities ensure long-term innovative development of the company and achievement of its strategic goals. We prioritize innovative technologies as we design, upgrade and maintain land, sea, air and space surveillance systems. This includes new systems and solutions design through development, convergence and localization of the best-in-industry technologies. Our priorities include new data processing and analysis methods, research of the Terahertz band new-age communications, ionosphere and radio-photonic technologies.

> On-board air and space communication systems
Portable, wearable and vehicle-mounted land mobile communication systems, satellite communication equipment, airborne and stationary communications, command and control systems, airborne transponders and communication systems, maritime emergency and rescue systems.

> Command and Control Systems
Development of decision support systems, big data analytics systems, modeling solutions, situational control centers for the operators of strategic facilities, law enforcement agencies and other organizations. RTI obtains increasingly sophisticated technologies, particularly in detection, analysis and decision-making technology, in order to design and develop critical information systems. The company possesses competencies in the use of both standard and highly customized solutions certified for compliance with the most stringent information security and reliability requirements.
One of our key areas of expertise is the design of unique OTH long-range radar surveillance systems, many of which are unrivalled in the world. RTI offers design, manufacturing, construction and maintenance services for multifunctional radar systems, powerful long-range detection systems, space surveillance systems, as well as situational awareness, command and control and communication systems.

RTI owns Russia’s two first-class radar R&D centers that were behind the design of all the country’s best OTH and long-range surveillance radar systems: NPK NIIDAR (Research Institute for Long Range Radio Detection and Ranging) and Radio Engineering Institute. For over 50 years these research facilities designed and deployed the unique radar systems such as Dnestr, Dnepr, Daugava, Daryal, Duga, Volga, Don-2N. They were created to monitor the airspace over the entire territory of the USSR, to serve as part of the country’s early warning missile attack system and to track targets in space. All of the radar systems offered by RTI today are distinguished by high energy potential, electronic scanning of beam-forming signals, broad coverage sectors and high throughput capacity. High speed digital processing of information received by the system in real-time coupled with fully automatic operation mode enable our radar systems to supply decision-making centers with the results of radar surveillance continuously in 24/7 mode. All our radar systems have the capability to easily adapt to unfavourable external conditions and jamming environment while also being highly upgradable. New energy efficient technologies and effective use of new age VHF microelectronics in conjunction with modern digital radio equipment and computers allow us to design and deliver a whole new generation of radar systems. We offer highly prefabricated radar modular solutions delivered in containers that can be set up on site and capable to be rapidly deployed. We’ve done away with cooling systems that use liquid coolants and introduced high levels of automation to our designs when it comes to monitoring the functioning of all the key systems. This has allowed us to drastically reduce running costs and the number of required service personnel. In recent years RTI has designed, manufactured and delivered unique highly prefabricated long-range detection radar systems Voronezh-M and Voronezh-DM. These new radar systems are ranked as early warning missile attack system. New advanced products: Vitim, Podsolnukh-E and Laguna radar systems. Podsolnukh-E and Laguna are OTH surface-wave radars with detection ranges of up to 450 km, designed for air and sea surface radar surveillance as part of the littoral national security system. The Vitim radar is an air and space surveillance system.

RTI research facilities and manufacturing companies are carrying out R&D activities to drive forward innovations for radar surveillance systems and develop solutions that will serve as pace-setters for years to come. RTI is the only company that is currently working on a new radio-photonic radar system in Russia.
01 The multifunction over-the-horizon multiple-based radar system
02 Podolskph-E OTH surface-wave radar system
03 Daryal long range radar system

01 Vitim radar system
02 Laguna OTH surface-wave radar system
03 Surok small size radar system
01 Konteyner OTH radar system
02 Voronezh-M highly prefabricated radar system
03 Voronez-DM decimeter band radar system
The system offers decision support through predictive and prescriptive analytics methods that make use of situational modeling, forecasting and decision support system. Other functions include contingency planning based on mathematically defined tasks and outcomes, interactive forecast map visualization, automatic generation of best course of action recommendations using an expert knowledge database, simulations to assess the effectiveness of proposed action plans.
The BRIZ platform gathers information and carries out monitoring and management in various fields and industries. The platform is intended for use as the foundation for distributed systems allowing various government agencies to operate in the same information space with the units and organization of different levels of hierarchy. The platform provides for task accomplishment for operational management, decision support, and operation control functions on the ground. A major user of the platform is the National Disaster Management Center of the Russian Ministry of Emergency Situations (EMERCOM) where it serves as a key tool for gathering and monitoring information from all the territorial branches of the EMERCOM.

The system offers protection for specific segments of the network or specific hosts against unauthorized access through vulnerabilities in the protocols of the OSI network model or in the software installed on the network computers. Firewalls block or allow traffic through by comparing its parameters against pre-set patterns. The system can be deployed as a device based on domestically manufactured components supplied by JSC MCIT. The system is compatible with Astra Linux and Linux.

This class of systems enable the use of existing CCTV and audio surveillance solutions to support organizational and technology efforts aimed at preventing crime, assassination attempts, theft and to create a safe urban environment in public and residential areas, ensuring that all utility and infrastructure facilities run smoothly and without interruptions. The audio monitoring system and the audio analytics tools analyze the audio feed in real time and further expand the capabilities of CCTV systems.

The system helps to create and maintain a database of classifiers, references, guides, and data dictionaries. The basic function of the system is to allow for classification documents, references and dictionaries to be created and made readily available to users. The system also allows for development of standards and guides aiming to create and maintain databases of standards and regulations and organize user access.

A software system for effective processing of all kinds of geographic data. The geo-platform consolidates geographic data from various external sources such as digital geographic data about specific areas, information about various databases and infrastructure. The system provides users with the capabilities of CCTV systems.

The system offers protection for specific segments of the network or specific hosts against unauthorized access through vulnerabilities in the protocols of the OSI network model or in the software installed on the network computers. Firewalls block or allow traffic through by comparing its parameters against pre-set patterns. The system can be deployed as a device based on domestically manufactured components supplied by JSC MCIT. The system is compatible with Astra Linux and Linux.

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Ground

The R-187 Azart portable subscription radio system with a transponder mode and a variety of radio frequency modulation modes, it is able to communicate with radio systems of other types and determine and transmit location coordinates.

The R-168MPAE subscription-based multichannel broadband VHF radio system is designed for use in command and control vehicles and is intended for deploying high-speed packet radio communications systems utilizing the time sharing to receive, transmit and compress information as well as to allow radio access to the radio net deployed using the system.

6th generation digital radio systems for transmission of encrypted voice, data, video and other information at the tactical command level via jam and hack proof channels.
Narrow and broadband radio systems for communication with various types of aircraft, radio beacon stations and emergency systems designed to help the search and rescue of aircraft crews in distress.

Broadband radio systems for high-speed data communication between different types of aircraft operating in a group while also communicating with a command center in real-time.

“Bozon” airborne radio systems, the new generation and upgraded short-wave and VHF radios R-862 and R-863 are designed to offer open and encrypted telephone radio communications between helicopters and aircraft and ground based control and command centers as well as to transmit and receive carrier telegraphy signals.

Emergency radio beacon stations and emergency radio systems (+ the R-855C photo radio system) installed on aircraft to facilitate search and rescue of crews in distress, provide information sharing with search and rescue services through a tamper resistant communication channel and transmit distress signals in the Cospas-Sarsat international satellite-aided search and rescue system.
Belozer» portable satellite communications terminals are designed to enable military operating in isolation from the main forces to communicate with HQ via satellite based transponders.

Dual-purpose on-board transponders that enable access for all stationary and mobile users of the earth bound segment of satellite communications on land, at sea and in the air.

The company offers multifunctional and radio systems for communication with sea and river going ships in the littoral zone or mounted on aircraft and helicopters, as well as radio beacon stations and emergency radio communications stations to aid in the search and rescue of crews in distress.

Sea

The ARB-MKS Afalina radio beacon station is designed for use by aviation and maritime search and rescue services to precisely pinpoint the location of craft in distress using the Cospas-Sarsat international satellite aided search and rescue system.

The R-620 radio system is designed for deploying high speed wireless data transmission networks and offering open, masked and encrypted broadband radio communication between stationary and mobile units at the tactical naval command level with elements of the system deployed on submarines, all types of surface vessels, shore installations to allow, among other things, for radio exchanges using international frequencies of the mobile maritime service and with aircraft.

Space

Production of space onboard equipment installed on various types of spacecraft for such purposes as: communications, remote earth sensing, scientific research.

Dual-purpose on-board transponders that enable access for all stationary and mobile users of the earth bound segment of satellite communications on land, at sea and in the air.

«Belozer» portable satellite communications terminals are designed to enable military operating in isolation from the main forces to communicate with HQ via satellite based transponders.
Radio-photonic technology allows for implantation of a number of functions that are either very hard or impossible to implement using only the transitional radio frequencies. This opens up a multitude of new opportunities in how to design new information and communication systems.
> Research and Analysis of the Earth’s Ionosphere

The ionosphere is comprised of partially ionized plasma. The condition of the ionosphere determines the performance of radio and radar systems depending on specific frequency range. The condition of the ionosphere most crucially affects the performance of radio equipment that uses the ionosphere for radio waves propagation. Such systems include short-wave radio communication systems and OTH radar systems.

None of the approaches used today to allow short wave radio systems adapt to changes in the ionosphere uses direct measurements of the radio wave propagation parameters to make changes to the ionosphere model used by the radio system. A system for monitoring the geophysical parameters is created to be deployed across the operation sector of the radio system; a center for collection and processing of measurement data is then set up; an infrastructure to exchange information between the radio system, monitoring system and data processing center.

> Exploring the millimeter and sub-millimeter bands of radiowaves

RTI is currently engaged in intense R&D efforts to develop solutions utilizing the millimeter and sub-millimeter range of electromagnetic waves (THz band) for communication, radio range finding, examination, health care purposes and other uses.

In 2014–2016 RTI launched a research project to develop very high power microwave impulse transmitters to make use of accelerators and laser devices in the terahertz range with a view to developing a new generation of very high power microwave impulse systems.

The technologies and systems the company has mastered and implemented are a clear indication that RTI is geared up to design and deploy state-of-the-art systems for communications, including satellite communications, non-invasive treatment and diagnostics, instrument assisted landing for civilian and military aircraft, passenger and luggage inspection, search and detection of explosives, image retrieval and processing.

RTI has developed technologies and acquired resources enabling it to design a broad range of THz- and mm-band systems, enabling the company to conduct research into the impact of THz radiation on biological organisms. The company developed a special system for synchronizing magnetron generators and a new method for using multi-channel phase control to feed a phased array antenna, and also a medical test bench currently used in preliminary research of the parameters to serve as criteria in assessing biological impacts, that has been successfully used to detect the impact of THz radiation on biological organisms. The company has designed new radiation absorbing materials for the mm-band and ad-hoc measurement chambers. A new system for scanning passengers and luggage to identify explosives is now under development.
RTI is a leader in design and manufacturing of high-tech military and dual-use radio-electronic equipment. The company’s quality management system (QMS) is an integral part of its overall management and is used to set quality improvement goals and develop processes to accomplish such goals. The introduction of the Quality Management System was a strategic move for RTI as it helps the company boost performance and provide a basis for sustainable development initiatives and programs aimed at improving customer’s satisfaction with the company’s products and services. An effective QMS gives RTI Group a competitive edge both in the domestic market and internationally, ensures its first ranking in manufacture of military and dual-use products.

RTI’s QMS meets the requirements of GOST R ISO 9001-2015 and the additional requirements of GOST RV 0015-002-2012, other military standards governing design, engineering, manufacturing, sales, maintenance and repair of military equipment systems.
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