DLR Technology Marketing

Innovation2gether
Innovation2gether
Joint action for market success

Innovation through science-industry partnerships: the motto of DLR Technology Marketing.

We act as contact partners for innovation-oriented enterprises, operating on the interface between science and industry, between product ideas, innovations, and markets, always with a focus on the needs of our industry clients. Our team of scientists, mathematicians, engineers, economists and lawyers advises clients about all relevant questions that fall within DLR’s technological expertise, placing particular emphasis on the development of product-oriented technologies. We are available throughout the entire process from the concept stage to the successful launch of a technology on the market – nationally as well as internationally.

Our ultimate goal is for both sides to benefit: as our partner, you will find that our expertise and technologies can provide answers to your questions about future products and market opportunities. Cooperating with us will not only give you the benefit of having access to our expertise and technologies, but will also enable you to respond rapidly to the innovation needs of other participants in the market (time to market). Moreover, you will be able to protect market segments by taking out licenses. The ability to take the lead and to develop and secure a market is a crucial advantage in a competitive environment.

For its part, DLR stands to benefit from the market success of its expertise and technologies through issuing licenses. Furthermore, any feedback we receive from industries and markets will be incorporated into future research and development activities – this is how we strengthen our role as technology creators and drivers of innovation in industry.

Thus, we create visible progress by science to benefit industry and society.
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Your way to success

From an idea to a marketable product

We accompany and support enterprises during the entire innovation process and along the entire output chain, the objective being to accelerate the transfer of DLR expertise and technologies to market. In every phase we can capitalise on our own knowledge about trends and future markets to underpin the process of innovation and related research and development activities. You, as our business partner, will benefit from better chances of success on the journey from an idea to a marketable product.

All technologies, markets, business partners and customers have their own specific needs and requirements. This is why, throughout the entire collaboration process, we value individuality and customised processes as crucial factors of success.

You have:
- Product ideas
- Urgent technology-related questions and issues
- A need for solutions
- A need for market development

We offer the following capabilities related to DLR technologies:
- Knowledge and experience in science, technology and business management
- Integrated research and development processes
- Effective marketing strategies

Shared development of ideas based on DLR technologies:
- Trend, market and competition analyses
- Idea workshops
- Technology and resources consistency reviews
- Evaluated product ideas
Making our partner’s product launch a success
- Support in
  - Setting up production
  - Developing the quality of products and services

Joint development of a marketing strategy
- Patent protection
- Communication strategy
- Sales planning
- Minimising economic risks

Implementation of innovation projects
- Functional specification
- Technology validation with a functional demonstrator in an application-oriented environment
- Minimising technical risks

Joint development of solutions
- Cooperation models
  - Strategic innovation partnership
  - Opportunity/risk partnership
  - Foundation of a new company with shareholding
- Setting up innovation projects
  - Development planning
  - Financing

Support in:
- Setting up production
- Developing the quality of products and services
An eye on the future
Turning opportunities into competitive advantages

Global competition and ever-shorter product life cycles confront companies with increasingly difficult challenges. For long term market success, companies must continually keep an eye on the market requirements and consumer behaviour today and tomorrow.

21st century megatrends act as innovation drivers. They influence the way in which ideas are found and fleshed out – the first steps in the development of future marketable applications. Being demand-oriented, our mega-trend analyses are much more sensitive to the innovation needs of end-users and business partners than the classical technology transfer used by other research organisations.

We analyse the characteristics and requirements set by megatrends and future markets very early in the value chain that extends from the idea to the marketable product, supplying our cooperation partners with thoroughly researched information about potential future applications based on DLR technologies. By tapping into this knowledge resource, market opportunities can be swiftly uncovered and strategically translated into competitive advantages using these technologies. Consequently, by teaming up with cooperation partners from industry we accelerate the innovation process while simultaneously increasing and sharing our value creation capabilities.

DLR offers inspiration to potential business partners who are searching for product and/or service ideas to be developed jointly. Similarly, we pair up with partners to develop solutions for existing or imminent problems such as a decline in the attractiveness or competitiveness of an existing product or to open up new markets for DLR technologies.

Climate change and environmental protection
Taking a new approach to energy and resources as a response to global warming and resource depletion
Using alternative energy sources in association with energy storages and making product lifetime cycles more sustainable
Driving disruptive innovations in energy efficiency and distributed energy supply

Mobility
Mankind’s growing need for mobility: increasing mobility barriers and traffic congestion
New lightweight affine vehicle concepts, traffic infrastructures and energy efficient drive systems
Upgrading of existing and development of new transport infrastructures

Urbanisation
Rapid growth of mega-cities
Development of appropriate infrastructure system solutions (buildings, traffic routes and local leisure facilities)
New residential, working and lifestyle options

Simplicity
Simplification and automation of everyday tasks; use of electronic assistance and robotics
Ubiquitous artificial intelligence through a progressive IT revolution
New device interfaces modelled on neurology
Research and development under one roof

Testing technologies for risk reduction

By combining research activities and technology development under one roof, DLR ensures that market requirements are considered at an early stage of the process. Because research findings are rapidly turned into market-oriented developments, time to market is significantly reduced.

Once the compatibility of a development partner in terms of technology and resources has been established, we do everything in our power to make the partnership successful. Together, we develop ideas for products and services. If these fall within any of DLR’s fields of technological competence and if the market forecast turns out favourably, we will develop, together, a project plan covering the material and financial implementation of our shared innovation project.

Within the framework of each project, we validate the functionality of the technology with the aid of a function demonstrator before its development to maturity. We begin by defining the requisite properties and functions in a set of specifications. Next, we build and validate the function demonstrator on the basis of these criteria. If the demonstrator proves to be capable of performing the requisite technical functions, the product can be developed to maturity and launched on the market by our industry partner and, if requested, with DLR’s aid.

In this way, a company’s technical development risk can be kept to a minimum.

Safety & Security

Quest for greater safety: accident prevention (e.g. collision avoidance) and natural disasters, safe geographical orientation

Quest for greater security: protection from growing conflicts between rich and poor, terrorism and piracy

Quest for supply security: supply of drinking water, food and energy, waste management

Health

Greater awareness of ways and means to prevent ill health and suffering

Advanced hygiene technologies and deployment of robotics in operating theatres

Mitigation of physical defects by innovative implants and mobility aids

Leisure

Growing importance of leisure, relief of and recovery from stress, conscious pleasure

Quest for more exiting leisure activities (innovative leisure parks, sports equipment and virtual reality)

Increasing correlation between sports, health awareness, adventure and entertainment
Methodical marketing

Road-to-Market

Once a technology has successfully passed the validation process within an innovation project, we will help you develop a marketing strategy and continue to offer our guidance throughout the entire process until the product has matured. The actual market launch will be left entirely to yourself as our business partner.

The core of our marketing strategy is a special portfolio methodology called Road-to-Market. The name says it all: with Road-to-Market, we evaluate the market potential of DLR technologies at an early stage. Developments that appear promising with regard to their future technical feasibility and market success will be included in the portfolio. We systematically research and analyse the existing application potential.

The results of Road-to-Market provide DLR, as well as our industry partners, with important clues for further improvements in technologies and strategies for the development of new markets. In consequence of this knowledge lead, you will not only benefit from competitive advantages and faster market access in, medium, and long run. DLR began employing Road-to-Market in a variety of contexts as far back as 2005.

DLR applies for patents on its own inventions as a matter of principle. This includes ensuring appropriate protection abroad. To work the market consistently, our policy is to develop DLR technologies continually and in adherence with demand. DLR does this to increase the utility and benefit of its technologies while at the same time helping our business clients fully capitalize on them. Our licences are offered on generally accepted market terms. Taking out a DLR licence gives you the option of securing existing markets and developing new ones.

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<th>Technology attractiveness</th>
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Sample technology evaluation (technology attractiveness)
Cooperation models

Successful together

No innovation without a business partner. Innovation by our definition is the application of an idea successfully launched on the market in the shape of a product, a service or a technology. Together with our business partners we develop technologies and new skills which have originally emerged within DLR from their initial concept through to market maturity. Launching products, services, or technologies on the market is the exclusive responsibility of our business partner. This is how DLR technologies and skills can further unfold their value creation potential and benefit society at large.

Because all technologies and potential cooperation partners have their own individual requirements, we offer you a variety of cooperation models and can advise you in these choices.

Science2Business – strategic innovation partnerships

A strategic innovation partnership aims at jointly preparing and realising future applications. The Science2Business transfer model used for this purpose begins at the “innovation front end” i.e. in the build-up to the innovation process. At this stage, we identify opportunities which are then developed jointly and systematically into innovation projects. The purpose of these projects is to test DLR technologies to be turned into future commercial applications. A long-term strategic cooperation between DLR and its partner company, each with their own complementary set of skills, will generate plenty of innovation potential driven by the objectives of both partners.

Dr. Thomas Strang
Managing Director, Intelligence on Wheels GmbH

“Our goal was to prevent train collisions more effectively. Such an approach requires fresh, innovative ideas and looking beyond current rail technology. At DLR, with its high safety standards, we found the adequate technology. We further developed the technology, optimising and refining it for rail transport. The result has been a win for safety, due in particular to its independence from systems already existing within the rail infrastructure. In order to fill in the gap between the functional demonstrator and the final product, we took advantage of the opportunities that DLR Technology Marketing had to offer. Our spin-off, Intelligence on Wheels, works closely with DLR; our success corroborates that we made the right decision.”

Dr. Markus Knapek
Managing Director, ViaLight Communications GmbH

“The foundation stone for our company ViaLight was laid at the DLR Institute of Communications and Navigation. The technological expertise for free-space optical communication in space and in the atmosphere was generated as part of the research conducted there. As employees of the DLR Institute of Communications and Navigation, and with the support of the Helmholtz Association and DLR Technology Marketing, we founded ViaLight Communications GmbH in order to develop, build, and commercialise relevant products for customers. Today, having won numerous awards for its innovations, the company is a worldwide market leader for laser communication terminals for stratospheric networks and optical ground stations. In addition, the company is also working on links for satellite communication based on existing terminals. With ViaLight’s growing portfolio, the compatibility of terminals and ground stations has enabled network solutions that were previously inconceivable.”
Cooperation models

Opportunity / risk partnerships

Nothing ventured, nothing gained. DLR’s innovation projects permit business partners to play an active role in a technology’s transfer to market and thus to participate in its success. In developing an innovation from an invention or a product idea, both partners run a calculable risk – the company involved as well as DLR. For our business partners, the risks and costs associated with development shrink considerably because we continually keep our knowledge updated, develop function demonstrators, generate market studies, evaluate technologies under market aspects, and identify customers.

Both partners equally participate in a project through material and/or financial contributions. In proportion to their contribution, business partners may commercially utilize DLR’s research and development results based on a licence arrangement. Business partners in turn help to position DLR technologies on the market once they have reached maturity.

Holger Vogel
Managing Director, IQ wireless GmbH

“In 2001, we began to serially produce a DLR system for the early detection of forest fires in the state of Brandenburg. Since then, we have worked continuously and very closely with DLR in developing the system for implementation worldwide. Currently, the system monitors more than 5.5 million hectares of forest in 10 countries across the globe. In 2012, we were honored, together with DLR, by the American Space Foundation. Cooperative research projects with DLR in the area of satellite communication and civil protection have given us the opportunity to apply our knowledge and abilities to larger and internationally relevant projects.”

Dr. Hans-Jürgen Bigus
Chief Executive CEO, Hirschmann Laborgeräte GmbH & Co. KG, Eberstadt

“Together with DLR, Hirschmann Laborgeräte GmbH & Co. KG holds a patent on solar receivers for use as modules in solar water purification plants. Currently, Hirschmann is producing this solar technology for a young company that intends to launch it on the market. This is how Hirschmann has succeeded in entering the sector of solar-chemical technologies which rid the environment of industrial waste water that is difficult to purify.”
Spin-offs

Once DLR is convinced of its own technology’s market potential, it may support the setting up of new companies which will then serve the market.

Particularly in the start-up phase, young companies making high-tech products are confronted with great challenges. Often their financial resources are limited at a time when extensive investment in plant and equipment is needed to exhaust a technology’s potential of economic success and safeguard the survival of the company in the long run. This is why we offer start-up companies the use of our equipment and facilities at market terms until the enterprise has established itself on the market and consolidated its economic situation.

A business partner who is convinced of the market potential of a product idea or technology, and who believes that setting up a spin-off company will produce lasting success, can acquire an interest in such a spin-off, and possibly join it as a co-partner. As the spin-off will thus be infused not only with capital but also with the business partner’s technical and entrepreneurial expertise, it will develop more quickly, and its chances of business success will increase.

Dr. Thomas Heege

Chief Executive, EOMAP GmbH & Co.KG

“EOMAP is a privately owned company, which works as an earth observation mapping service provider for the offshore industry and for public agencies. The company provides worldwide monitoring of coastal and inland waters, with standardized satellite derived products such as water quality maps and oil indicators. As a leading provider of satellite derived bathymetric charts and benthic habitat maps, the company is currently expanding into the hydrographic markets of Australia, Asia, the Arabian Gulf, Europe and Central and North America. EOMAP’s software processors rely on standardized physical models and work independently of scale, sensor type and geographic location. The technology was originally developed by the German Aerospace Center and further developed by EOMAP since its foundation in 1996. EOMAP has participated in a variety of projects, e.g. the European FRESHMON GMES downstream project (coordination), the ESA Lakes Project, the ESA World bank project “Lake Titicaca”, the bilateral German-Vietnamese WISDOM project, national projects for the German Aerospace Agency, for DLR and for others.”
Taking stock of the last 20 years, we may say that our industry partners have indeed come to know DLR Technology Marketing as a competent partner for realising innovative products. In the following we have collated a number of chronological examples to show how our technologies originally from space, aviation, energy, transport and security have been doing very well on the market in a multitude of other sectors.

**Rocket burner for oil-fired central heating systems**
Rocket technology for the home – the blue-flame method developed by DLR has spawned a highly energy-efficient fuel-oil burner that is soot-free and extremely low-polluting.

**Digital aerial camera**
When digital aerial cameras were launched on the market, flight times shrank by 75 to 85% compared to that required by analogue cameras because all relevant spectral channels are recorded simultaneously. Moreover, these cameras permitted combining digital stereo and colour image information with local position data.

**Rapid switchable ball valve**
Originally developed as a highly sensitive control thruster for satellites, this electro-magnetically actuated ball valve meters infinitesimal quantities of fluids and switches within milliseconds.

**Crash absorber element**
Made of CFRP, this crash tube is installed in car steering columns. In case of a crash, it prevents the steering column from penetrating into the interior and progressively absorbs the impact energy.

**Disc laser**
More power output thanks to the improved cooling afforded by the discs geometry. Lasers of this kind combine the advantages of CO₂ and solid-state lasers. They can reach a power output of up to 16 kW.

**Wildlife rescuer**
The infrared wildlife finder detects animals (fawns, hares) hidden in meadows, saving their lives during the annual mowing season.

**Injection-moulding process for CFRP**
Fully automated process chain for mass-producing complex volumetric components with 3-D curved surfaces for the aircraft and automobile industries.

**Ceramic brake discs**
Originally, carbon fibre reinforced silicon carbide materials have been developed for thermal protection structures for reusable spacecraft. In brake discs for sports cars, low cost C/SiC materials are used, offering weight reductions of up to 50% compared to metal brake discs. Braking performance is superior in the whole temperature range and its high hardness leads to significantly increased service life.

**Space mouse**
Space mouse is a computer input device for controlling robots and objects in virtual spaces in three dimensions. Today, it is most frequently used in CAD applications and 3-D computer games.

**Rocket burner for oil-fired central heating systems**
Rocket technology for the home – the blue-flame method developed by DLR has spawned a highly energy-efficient fuel-oil burner that is soot-free and extremely low-polluting.

**Early warning system for forest fires**
Mounted on towers, this automated early warning system for forest fires reliably detects smoke in an area of 700 km² per sensor, day or night. Images are processed locally. When smoke is suspected, direction and distance data together with relevant images will be transmitted to a control centre, where further steps will be initiated.

**Smart farming sensor**
A laser-based sensor attached to a tractor determines the nutrient requirements of crops and computes the quantity of fertiliser required in real time.
A method developed by DLR uses anonymous position data from road users moving with the traffic. Supplied by mobile phones and tracking systems, the vehicle data is processed centrally to determine the fastest route which is communicated to satnav systems in real time.

Real-time traffic information for satnavs

The mobile and compact laser communications terminal provides high data rates of 10 Gbit/s for visual connections of 50 kilometres for air-to-ground links, but up to 1000 kilometres in space. The receiving station can be adaptively tracked and is therefore suitable for data connections by air (air-to-air and air-to-ground). In contrast to microwave radio links, the laser free-space communication is interference-free and tap-proof.

Laser Communications Terminal

Compared to conventional industrial robots, this type is not only distinguished by lightweight materials. More importantly, it features cognitive skills which make it versatile enough to assemble increasingly complex products. The robot is able to yield to external forces and adapt to changing working conditions.

Lightweight robot

The mobile and compact laser communications terminal provides high data rates of 10 Gbit/s for visual connections of 50 kilometres for air-to-ground links, but up to 1000 kilometres in space. The receiving station can be adaptively tracked and is therefore suitable for data connections by air (air-to-air and air-to-ground). In contrast to microwave radio links, the laser free-space communication is interference-free and tap-proof.

Laser Communications Terminal

Intricate and challenging surgeries can be performed more easily and safely with the space technology engineered medical robot. Its advantage is that it filters out the slight irregularities of human hand movements and reduces the scale of the surgeon’s movements with high precision. Numerous sensors ensure that any physical contact of the robot arm with its environment is relayed by force feedback to the input device of the operator in real time.

Medical Robot MIRO

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Laser Communications Terminal

The departure manager supports air traffic controllers in optimising departure sequences in airports. In this way, bottlenecks and delays can be warded off.

Departure manager

The potential-Seebeck microprobe serves to measure the homogeneity of various materials. It is particularly suitable for semiconductor quality inspections.

Potential-Seebeck microprobe

Based on the object-oriented Modelica programming language, the Alternative Vehicles software library contains a multitude of component models and vehicle architectures for simulating alternative drive technologies in ground-based vehicles, which can thus be quantified and optimised.

Modelica AlternativeVehicles library

3D Design optimization of industrial fans

Selected mathematical methods and algorithms, which originated in the design process of fans and compressors for large turbines and aircraft engines, have been adapted and transferred to industrial fans and other turbomachinery. These can be customised and designed aerodynamically to achieve high efficiency and reduce noise emissions.

3D Design optimization of industrial fans

Non-brittle. It is therefore ideal for industrial furnaces, the hardening and casting industry, as well as for high-temperature gas turbine components.

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Short-term thunderstorm forecast for air traffic

The product reliably determines the generation and propagation of thunderstorm cells using global satellite information (EUMETSAT). The data is updated at frequent intervals. An intelligent algorithm calculates a prediction of the spatial position and the state of thunderstorm cells up to one hour in advance. This leads to an increase of safety and efficiency in air traffic.

Short-term thunderstorm forecast for air traffic

Vibro-tactile feedback device for visually impaired people

VibroTac® is a bracelet with six integrated vibratory motors. It can guide the visually impaired or blind user to the target using haptic pulses. The integrated ultrasonic sensor accurately detects obstacles in the environment, warns the user and also supports navigation tasks within enclosed rooms. VibroTac is a useful addition to the user’s white cane and keeps the acoustic sensory channel free.

Vibro-tactile feedback device for visually impaired people

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Success stories

MIRO, the medical robot

During surgical procedures, the challenge often lies in accessing the surgical site. All procedures using surgical tools must be carried out with extreme care and precision. The space technology-engineered medical robot MIRO optimises the process by filtering out the slight irregularities of human hand movements and reducing the scale of the surgeon’s movements with high precision, thus making it safer.

The foundation of the medical robot originates from space technology: the DLR Institute of Robotics and Mechatronics successfully operates remote-controlled robots from Earth or from inside the International Space Station (ISS), giving the operator the feeling of being on site – in other words, being ‘telepresent’. These possibilities have been implemented in the medical robot MIRO. The surgeon sits in front of the console and MIRO’s robot arms follow the commands with utmost precision onto the patient, such as performing precise incisions, tightening screws, or sewing severed veins – all within a small space. The surgeon feels the robotic arm’s motions by force feedback, just as if the surgeries were performed manually – robot and human work together.

The MIRO robotic arm is lightweight, and its numerous sensors ensure that all physical contact with its environment is relayed by force feedback to the operator’s input device in real time. In minimally-invasive procedures, surgeons must insert long instruments through the smallest possible incisions made on the surgical site of the human body. MIRO technology supports the surgeon; the surgeon controls the operation on a computer console and can simultaneously see the endoscopic images in 3D and feel the instrument tips of the robot arm. For the surgeon, this means a more intuitive and more feedback-controlled surgery.

The DLR-developed MIRO was licensed to Medtronic, a large medical technology company in the United States. Medtronic will further develop MIRO technology for medical robots and launch it on the market.

But that is not all of DLR’s research on medical robotics. The DLR Institute of Robotics and Mechatronics is already successfully working on new features for the robot arm of the future. One such development is the ability to perform certain operations semi-autonomously – for example, not only performing high-precision incisions or handling larger areas of tissue, but also tying knots with high sensitivity and precision when stitching – independent from the surgeon.

With the market launch of MIRO via a licensee, DLR’s research expertise will be transferred to the economic market for the benefit of patients.

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In the manufacturing industry, the demand for high-powered lasers is growing. Especially for material processing, the beam must be of good quality to permit precise focusing. If the wavelength of the beam is short, it will be absorbed by the material to a higher degree so that it can be guided more flexibly, which is a particular advantage in welding, for example. Conventional high-powered lasers comply with these requirements only to a limited extent because they cannot combine good beam quality and high power with high efficiency. Beam quality was particularly compromised by the large amount of heat generated within the lasers.

In 1992, the disc laser was developed in a joint project by DLR and Stuttgart University. The challenge was to combine the advantages of CO₂ lasers – high beam quality and high efficiency – with the short wavelength of solid-body lasers. The base material chosen was ytterbium-doped YAG which promised very high efficiency and could be efficiently pumped by laser diodes. The laser-active medium was given the shape of a disc. Its large surface permits the medium to be cooled very effectively, which improves both the quality of the beam and the power output.

High-powered disc lasers may be used for welding and cutting as well as, in the pulsed version, for drilling and structuring metallic as well as non-metallic materials, such as ceramics and semiconductors.

A joint research project led by the German Federal Ministry of Education and Research was supported by Siemens and Zeiss who supplied some of the components, such as laser diodes and laser crystals. In 1996, the power output of the disc laser rose to 220W, which prompted many laser manufacturers to take out licenses and add the concept to their own development portfolios.

The first manufacturer to present a 20W disc laser for medical applications at the 1997 laser exhibition in Munich was Jenoptik. The company has sold more than 11,000 disc lasers to date. For industrial machining purposes, TRUMPF began marketing lasers with a power output of 1 kW and more in 2001. Since then, the company has sold more than 700 disc lasers with a power output between 1 kW and 16 kW. Meanwhile, more than 25 laser manufacturers have become licensees.
DLR fields of competence

DLR’s research portfolio ranges from basic research to the development of innovative applications and products for tomorrow. The resulting broad spectrum of interdisciplinary expertise produces synergies that benefit many more industrial sectors than one would expect, reaching far beyond DLR’s five main research areas, namely aeronautics, space, transport, energy and security. DLR’s technological expertise includes robotics, power and propulsion engineering, telecommunication and navigation, remote sensing and materials science, to name but a few.

Find out more about our services and do not hesitate to contact us. There are many solutions that we can offer you today and we should be pleased to assist to you in finding any further problem solutions and services you may need.
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Would you like to know more? Do you have any questions? If so, give us a call or send us an e-mail.

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DLR at a glance

DLR is the national aeronautics and space research centre of the Federal Republic of Germany. Its extensive research and development work in aeronautics, space, energy, transport and security is integrated into national and international cooperative ventures. In addition to its own research, as Germany’s space agency, DLR has been given responsibility by the federal government for the planning and implementation of the German space programme. DLR is also the umbrella organisation for the nation’s largest project management agency.

DLR has approximately 8000 employees at 20 locations in Germany: Cologne (headquarters), Augsburg, Berlin, Bonn, Braunschweig, Bremen, Bremerhaven, Dresden, Goettingen, Hamburg, Jena, Juelich, Lampoldshausen, Neustrelitz, Oberpfaffenhofen, Oldenburg, Stade, Stuttgart, Trauen, and Weilheim. DLR also has offices in Brussels, Paris, Tokyo and Washington D.C.

DLR’s mission comprises the exploration of Earth and the Solar System and research for protecting the environment. This includes the development of environment-friendly technologies for energy supply and future mobility, as well as for communications and security. DLR’s research portfolio ranges from fundamental research to the development of products for tomorrow. In this way, DLR contributes the scientific and technical expertise that it has acquired to the enhancement of Germany as a location for industry and technology. DLR operates major research facilities for its own projects and as a service for clients and partners. It also fosters the development of the next generation of researchers, provides expert advisory services to government and is a driving force in the regions where its.