DLR
German Aerospace Center

- Research Institution
- Space Agency
- Project Management Agency
Locations and employees

7400 employees across 32 institutes and facilities at 16 sites.

Elements of leadership training in and for science management
Training project managers

Newcomers, project members

- Basic training project management
- PM Portal: effective use of DLR-specific tools
- MS project

Work package / subproject managers

- Advanced training project management
- Projectivity
- Simulation training
- Managing and persuading without hierarchical authority

Project leaders

- Intensive training project management
- Projects using third party funds: administration and order management
- Contract design in research and development
- Risk management
- Export control/ questions of liability in the science environment
- Financial and contractual handling of EU projects
- Communication and cooperation in projects
- Problem solving/decision-making according to Kepner-Tregoe

Project managers

- Preparation Certification
- Claim management
- Multi-project management
- PM Days exchange if experiences
Training young managers

Module 1  Personnel management though efficient communication
Leadership tasks; demands placed on managers, conversation skills, conflict management, staff appraisals with target agreements, meta-communication

Module 2  Leadership and team management
Leadership strategies and styles, employee motivation, deepening conflict management, chairing meetings, managing teams

Module 3  Staff responsibility
Full legal foundation, developing efficient relations with the relevant administrative departments

Module 4  Business management processes in the DLR
Planning and control processes, strategy development, the basics of marketing and distribution, quality management, order management
Details for Module 3 staff responsibility

Teaches basic knowledge about personnel management in the science centre tailored to the specific needs of the DLR.

- Legal foundations: TVöD, employment law, job evaluation, classification and upgrading, equal opportunities / diversity, safety at work and liability,
- Personnel management: personnel planning, recruitment, attracting staff, retaining staff, introductions, promoting, staff development, career development, succession planning, knowledge management
- Particular responsibility of managers when dealing with special circumstances such as underperformance, addiction, health management etc.
- Information about efficient collaboration with the relevant departments
Requirement profile for managers

Expert knowledge
- Expert knowledge, special skills
- Product/industry/market experience
- Professional breadth and flexibility
- Analytical ability

Management competence
- Presentations, moderation, discussion leader
- Project management
- Planning and managing change processes
- Analysis and decision-making
- Negotiations and acquisitions
- Self and time management

Social competence
- Empathy
- Openness to/appreciation for other things and people
- Interpersonal and communication skills
- Ability to work in a team
- Conflict skills and ability to reach consensus
- Fairness and reliability

Leadership competence
- Flexible and cooperative leadership
- Ability to motivate and persuade
- Ability to coordinate and integrate
- Employee development
- Ability to plan, organise and make decisions
- Ability to delegate

Strategic/entrepreneurial competence
- Visionary thinking
- Creativity and determination
- Feel for developments
- Focus on the market and the competition
- Networked thinking
- Interdisciplinary and intercultural focus

Personnel development
- Individual building blocks/trainings

Organisational development
- Team workshops

Educational programmes
- Seminars, training and further training
All seminars can be conducted as team-oriented training – specifically tailored to the problems of the organisational unit.

Workshops on team development or on strategic and/or organisational change processes are tailored to target group and problem and accompanied by professional moderators.

We recommend internal work shadowing in networking, maintaining contacts to the relevant scientific community, participation in negotiations and acquisition activities.
Examples of manager training

- Negotiating using the Harvard Concept
- Creating successful work relationships
- Intercultural specialisation
- Appraisal interviews – leading with target agreements
- Self, time and task management
- Press and media work

- Writing job descriptions in accordance with TVöD
- Labour law and liability
- Efficient staff selection
- Basics of patent protection and copyright
- Planning, management and controlling

- Strategy development
- Change management – management during change processes
- Management assessment using the EFQM model
- Research framework programmes / funding administration / acquisition of third party funds
- Marketing and acquisition
Special support programmes

**Talent management:** two-year support programme to retain talents and prepare them for a key position – access via proof of potential using analyses and selection processes
Max. 25 participants

**Mentoring programme:** one-year support programme for junior employees in periods of change about to take on more responsibility – core element: relationship marked by exchange of experiences with an experienced and high-ranking manager
Max. 12 participants
Further training

Further training courses of the Center for Science & Research Management (ZWM)

Master’s programme in science management at the University of Speyer

Helmholtz Management Academy
ご清聴ありがとうございました。

Thank you very much for your attention!

Vielen Dank für Ihre Aufmerksamkeit!
Below you find additional information about the DLR.
German Aerospace Center (DLR)
Guiding Principles – Vision

• DLR – one of Europe’s leading public research institutions, setting trends in its aeronautics, space, transport and energy business areas
• DLR – in its space agency function, a force that shapes European space activities
• DLR – the umbrella organisation for the most effective and efficient project management agencies and offices
Guiding Principles – Mission

• To explore Earth and the Solar System; to conduct research into the preservation of the environment, into mobility and into public safety, and to address societal questions on behalf of public customers

• To bridge the gap between basic research and innovative applications and to transfer knowledge and research results to industry and the political sphere through mediation and consultation as well as through the provision of services

• To shape Germany’s space commitment and represent its interests internationally as a governmental function

• To make a significant contribution towards enhancing Germany as a science and business location as well as to stimulate growth in the European region

• To train young scientists in order to enhance Germany's innovative capability
Guiding Principles – Approach

- Discipline-oriented institutes to support scientific work
- Matrix structure of programmatic control and technical management
- Support in the design of framework conditions for legal and public policy
- Operation of large research facilities and infrastructure for DLR’s research activities and missions as well as for customers and partners
- Consistent system of strategy, management and quality assurance
- Job-tailored, demand-oriented personnel management and systematic employee development
- Realisation of equal opportunities and support of work-life balance
- Contractually regulated partnerships with universities, industry, other research organisations and public customers
Core Competences

Technology- and Product-specific Areas

- Design of aircraft, satellites, and launch systems as well as subsystems in motor-vehicle engineering, manufacturing and power generation
- Concept design of transport, guidance, navigation and traffic-control systems
- Development and operation of remote-controlled and surveillance systems
- Development and operation of remote-sensing as well as data capture, transmission, processing and evaluation systems
- Research into combustion and efficient energy conversion
- Design of support systems to maintain the health of people in a mobile society
- System optimisation to reduce emissions and improve environmental sustainability
- Investigation of the entire process and value-added chain covering the development, construction, and operation of complex satellites
Core Competences

Aeronautics
Space Research and Technology
Transport
Energy
Space Administration
Project Management Agency

Interdisciplinary Areas

- Development of new materials and production methods
- Methodology development, numerical simulation, experiment validation and evaluation
- Design and operation of large research facilities
- Coordination and management of interdisciplinary projects involving science, politics and industry
- Research policy consultation
Main Aspects of the Overall Strategy

• Pursuit of leadership by assuming the role of architect while emphasising autonomy and maintaining a reserved attitude towards concepts of overarching institutional integration within the European framework
• Powerful growth in the Transport and Energy business areas based on great political and public demand
• Wider scope for the two cross-discipline fields of defence technology and security research
• Greater emphasis on DLR’s activities in its four R&D business areas, which are of importance to Germany as a business location, without any fundamental change in its portfolio of basic research, application-related activities and the operation of large-scale facilities
Key areas and guidelines of the German Space Program

• Consistent focus on benefit and demand as a contribution to the solution of societal tasks and for the development of new, commercially viable research areas

• Pooling forces in Europe to promote European space industry and science in global competition

• Cooperation and competition as well as concentrating on key thematic areas and core fields
  Aims: best science and commercial perspectives

• Improving efficiency by rationalisation in European networks and by increasing competition
Core Goals

- Continuously enhance DLR’s scientific excellence
- Strengthen the position of Germany’s economy and science in global competition through enhanced support for Europe as an aerospace location
- Increase the leverage of the transport and energy business areas
- Enhance the utilisation of research results in innovations for the aeronautics, space, transport and energy sectors
- Enhance the visibility of governmental functions
- Involve Project Management Agency more extensively in Germany and Europe
# Executive Board

<table>
<thead>
<tr>
<th>Name</th>
<th>Responsibilities</th>
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<tbody>
<tr>
<td>Prof. Dr-Ing. Johann-Dietrich Wörner Chairman</td>
<td>Overall strategy and development</td>
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<td>External relations</td>
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<td>Corporate Communication</td>
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<td>ESA Council</td>
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<tr>
<td>Klaus Hamacher Vice Chairman</td>
<td>Human Resources, Finance, Corporate Organisation</td>
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<td>Quality Assurance and Infrastructure</td>
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<td>Technology Marketing</td>
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<td>Information technology</td>
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<td>Project Management Agency</td>
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<tr>
<td>Dr. Gerd Gruppe</td>
<td>Space Administration</td>
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<td></td>
<td>National/ESA program</td>
</tr>
<tr>
<td>Prof. Dr. Hansjörg Dittus</td>
<td>Space Research and Technology: research, programs, projects, technology transfer</td>
</tr>
<tr>
<td>Prof. Rolf Henke</td>
<td>Aeronautics: research, programs, projects, technology transfer</td>
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<tr>
<td></td>
<td>Approved Design Organisation</td>
</tr>
<tr>
<td>Prof. Dr-Ing. Ulrich Wagner</td>
<td>Transport and Energy: research, programs, projects, technology transfer</td>
</tr>
</tbody>
</table>
Program Management

Program Directorates

- Aeronautics
- Space Research and Technology
- Energy
- Transport

Institutes and Facilities

Know-how, Research facilities

Service and resource agreements

Resources

Projects

Programs
### DLR bodies

#### General Assembly

#### Senate
**Chairman:** State Secretary of the Federal Ministry of Economics and Technology (Herkes)

#### Executive Board

<table>
<thead>
<tr>
<th>Chairman</th>
<th>Vice Chairman</th>
<th>Space Administration</th>
<th>Space Research and Technology</th>
<th>Aeronautics</th>
<th>Energy and Transport</th>
</tr>
</thead>
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<tr>
<td>Prof. Dr. Wörner</td>
<td>Hamacher</td>
<td>Dr. Gruppe</td>
<td>Prof. Dr. Dittus</td>
<td>Prof. Henke</td>
<td>Prof. Dr. Wagner</td>
</tr>
</tbody>
</table>

- **Strategy and International Relations**
- **DLR offices in Brüssel, Paris, Washington and Tokio**
- **Corporate Communications**
- **Political and Economic Relations**
- **Executive Office**
- **Capital Expenditure Management**
- **Program Coordination Security Research**
- **Education/ Outreach**
- **Diversity and Equal Opportunities**

- **Finance and Corporate Controlling**
- **Human Resources and Legal Matters**
- **Management of Sites**
- **Technical Infrastructure**
- **Corporate HR Marketing**
- **Internal Auditing and Joint Venture Management**
- **Technology Marketing**
- **Quality and Product Assurance**
- **Information and Communication Technology**
- **Project Management DLR**
- **Project Management Agency Aeronautics**

- **Program Directorate**
- **Project Directorate**
- **Office of Management and Budget**

- **Cluster, Institutes and Facilities Space**
- **Cluster, Institutes and Facilities Aeronautics**
- **Cluster, Institutes and Facilities Energy and Transport**

- **Program Directorate**
- **Space Research and Technology**
- **Institute Development Space**
- **Institute Development Aeronautics, Energy and Transport**
- **Program Directorate**
- **Aeronautics**
- **Energy and Transport**

update: 29.04.2013
Total income 2013 – Research, operations and management tasks: €800 Mio. (excluding trustee funding from the Space Administration / DLR Project Management Agency)

- Space Research and Technology: €315 Mio.
- Aeronautics: €103 Mio.
- Transport: €77 Mio.
- Energy: €60 Mio.
- Other income / earnings: €36 Mio.

All values in € million
Financing of DLR and research funding 2013 (planned)

All values in € million

Space Administration
- German ESA contributions BMWi /BMVBS: 272
- National Space Program incl. management: 766

Project Management Agency
- Institutional funding R&D: 165
- Third-party funding R&D: 1217
- Project Management Agency in DLR incl. management: 400

Research and Operations
- Aeronautics Project Management Agency incl. management: 400

without settlement of cross-financing
Human Resources Development and Development of Young Talents

• Further development of human resources policy instruments for employee motivation
• Systematic development and recruitment of young talent
• Communicating the fascination of research and technology to the next generation
• Representation in European organisations and promoting staff exchanges with industry and other national and international partners
Participation in the Helmholtz Association

• Success in obtaining program-oriented funding
• Added value from support of the Helmholtz Association
• Helping to shape the organisational development process

HELMHOLTZ GEMEINSCHAFT
National and International Networking

Customers and partners: Governments and ministries, agencies and organisations, industry and commerce, science and research

World

Europe

Germany

Deutsches Zentrum für Luft- und Raumfahrt
Research Areas

- Aeronautics
- Space Research and Technology
- Transport
- Energy
- Defence and Security
- Space Administration
- Project Management Agency
Aeronautics

Knowledge for Tomorrow
DLR Aeronautics

• Optimisation the performance and environmental compatibility of the entire aircraft system
• Expanding the range of helicopters to all weather conditions
• Efficient and environmentally-friendly aircraft engines
• Safe, environmentally-friendly and efficient air traffic (flight control, flight operations)
Goals and Strategies of Aeronautics

Primary goals

• Further development of civilian transport systems from the perspectives of efficiency/economy, safety and environmental compatibility
• Technological contributions towards assuring the capability profile of the German armed forces

Fundamental strategic components

• Orientation with the European research agenda for civil aviation
• Research into the complete air transport system and all its major components
• Carrying out specific defence-related research work, making greatest possible use of synergies with civilian themes
• Strategic cooperation with the most important German and European partners from research and industry
# Aeronautics Portfolio

## Air Transport Systems

### Strategic Research Agenda

Including: efficiency, environment, security

### System evaluation and optimisation

<table>
<thead>
<tr>
<th>Aircraft</th>
<th>Airframe</th>
<th>Systems</th>
<th>Propulsion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concept design/evaluation [Virtual Aircraft (Digital-X)]</td>
<td>Materials and structures, Physics of flight</td>
<td>Flight systems, Cabins, Human-machine interface</td>
<td>Materials and construction techniques, Flow machines, Combustion and emissions</td>
</tr>
</tbody>
</table>

### ATM and airport research

- Arrivals and departure management
- Flight guidance automation
- Weather forecasting and monitoring
- Taxiing management
- Intermodal transport
- Wake vortices

### Tools and processes

Numerical simulation, experimental simulation, airborne simulation

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[www.DLR.de](http://www.DLR.de) • Chart 36 • Standard presentation • Jan. 2012
Resources in Aeronautics 2010 (planned) Total resources € 215 million

Institutional funding, civilian (HGF)
Institutional funding, defence (BMVg) (approx. 30 % space and transport)
Third-party funding

All values in € million
Facilities – Aeronautics

- Research aircraft
- Cockpit simulators
- Tower simulator
- Compressor, combustion chamber and turbine test beds
- Autoclaves
- Material and structural test facilities
- Ground vibration test facility
- Wind tunnels*

* Predominantly under the auspices of German-Dutch Wind Tunnels (DNW)
Space Research and Technology

Knowledge for Tomorrow
DLR Space Research and Technology

- Space exploration
- Zero gravity research
- Earth observation
- Communication and navigation
- Space transport
- Technology of space systems
Goals and Strategies of Space Research and Technology

Primary goals
Development of space flight for the benefit of society

• Scientific knowledge:
  Research into the Earth, the universe and conditions in space

• Commercial applications:
  Internationally competitive commercial applications

• Space flight for public service functions:
  Meteorology, environment, resources, civilian and defence security

Fundamental strategic components
Development and deployment of key technologies

• Infrastructure:
  Launchers, platforms, instruments/sensors, ground segments

• Application:
  Methodology development, potential applications
DLR Space Research and Technology – Earth Observation

Focus:
• Sensors: SAR, Lidar, IR, optical, aircraft-based sensors
• Ground segments: Satellite control, payload ground segments
• Application areas: Land, atmosphere, sea, risks/disasters

Highlights:
• TerraSAR-X: in operational use since beginning of 2008
• TanDEM-X: launch 2010
• EnMAP: phases C/D since 2008

Future:
• Optical high-resolution national satellite mission, HiROS
• GMES operational…
Focus:

- Satellite communications: optical communications, transmission standards (DVB-S2/RCS), applications/services
- Navigation: Galileo operation and operational support, applications (including indoor navigation)

Highlights:

- Galileo Control Center
- LCT application on TerraSAR-X and NFIRE

Future:

- Development of GALILEO II technologies
- Safety-of-life applications
- Combination of communications, navigation and earth observation
DLR Space Research and Technology – Space exploration

**Focus:**
- Exploration of the solar system
- Search for extrasolar planets

**Highlights:**
- Mars Express: high-resolution measurement of the Martian surface
- Venus Express: research into the atmosphere around Venus
- Cassini: exploration of Saturn and its moons
- COROT: Search for extrasolar planets
- Dawn: NASA asteroids mission
- Rosetta: ESA comet lander mission

**Future:**
- ‘Mission to Mars’ – ExoMars
- Participation in moon missions (national, European, or international)
DLR Space Research and Technology – Research under Space Conditions

Focus:
• Research under conditions experienced in space
• On sounding rockets, parabolic flights and the International Space Station
• In the fields of life sciences and materials science

Highlights:
• Biological radiation experiments on the ISS (Matroshka)
• Research under microgravity on parabolic flight campaigns and sounding rockets
• Bed rest studies for development of methods to prevent muscle and bone wastage

Future:
• Utilisation of ISS/Columbus
• Studies with the new ESA short-arm centrifuge
Focus:
- Ariane ‘Next Generation Launcher’ research
- Propulsion systems – research and test
- System analysis, innovative materials and simulation

Highlights:
- Flight experiments with SHEFEX (sounding rocket)
- Upper stage propulsion unit: altitude simulation
- Materials: innovative thermal protection

Future:
- European ‘Future Launcher Preparatory Programme’ (FLPP)
- Ceramic propulsion unit
DLR Space Research and Technology – Technology of Space Systems

Focus:
- Servicing in space – robotics
- Future space systems – satellite technology, verification and operation

Highlights:
- Robotics missions: ROKVISS, on-orbit recovery (OLEV)
- Satellite missions: on-orbit technology verification program

Future:
- Exploration technology, compact satellites
Planned Total Revenues for Program Themes
Basic Financing and Third-Party Funding 2010

All values in € million

- Earth observation: 82 million
- Communication / Navigation: 21 million
- Research under space conditions: 19 million
- Space exploration: 45 million
- Technology of space systems: 95 million
- Space transport: 26 million
Facilities – Space Research and Technology

- Research aircraft
- Infrastructure for receiving, refining and distributing data
- Wind tunnels
- Mobile rocket base, MORABA
- Control centres
- Research test beds
Transport
Challenges in Transport

• Achieving sustainable mobility with balance between
  • economy
  • society
  • ecology

by

• ensuring the mobility of people and goods
• protecting the environment and resources
• improving safety
Characteristics of Transport

- Systematic approach
- Concrete prospects for applications
- Multiple synergy utilisation through integration of
  - 3 transport institutes
  - 21 aerospace institutes
  - 2 energy institutes
- Strategic cooperation with partners from science and commerce
Portfolio of Transport

<table>
<thead>
<tr>
<th>Transport Research Area</th>
<th>Mobility, environment, safety, economy</th>
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<tbody>
<tr>
<td>Terrestrial vehicles</td>
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<tr>
<td>• Road vehicles</td>
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<tr>
<td>• Rail vehicles</td>
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<tr>
<td>Traffic management</td>
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<td>• Road traffic management</td>
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<td>• Rail traffic management</td>
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<td>• Airport management</td>
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<td>• Sea traffic management</td>
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<td>• Traffic management for major events</td>
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<td>• Traffic management for disasters</td>
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<td>Transport systems</td>
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<td>• Transport development and the</td>
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<tr>
<td>environment</td>
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</tbody>
</table>
Resources in Transport (2007)

Total employees 330

- State funding: 220
- Third-party funding: 110
Resources in Transport (2007)

Total revenues €45 million

- State funding: 30
- Third-party funding: 15
Facilities – Transport

- Vehicles and simulators for driver assistance systems
- Vehicle propulsion test beds
- Aerodynamic test facilities for rail vehicles
- Test tracks and measurement vehicles for vehicle data acquisition
- Virtual traffic management control centre, Traffic Tower
- RailSiTe railway technology laboratory
- Bi-modal test vehicle, RailDriVE
Energy

Knowledge for Tomorrow
DLR Energy Research concentrates on:

- CO$_2$ avoidance through efficiency and renewable energies
- synergies within the DLR
- major research specific themes that are relevant to the energy economy
Goals of DLR Energy

**Sustainability of future energy supplies:**
- Supply security
- Economic viability
- Safety and reliability
- Efficiency
- Emissions avoidance
- Conservation of natural resources
- Strengthening of German and European industry
Energy Program Themes

• Efficient and environmentally compatible fossil-fuel power stations (turbo machines, combustion chambers, heat exchangers)
• Solar thermal power plant technology, solar conversion
• Thermal and chemical energy storage
• High and low temperature fuel cells
• Systems analysis and technology assessment
# Portfolio of Competences – Energy

## Efficient energy conversion

### Renewable energies

**Systems analysis and technology assessment**

<table>
<thead>
<tr>
<th>Fuel cells</th>
<th>Power plant technology</th>
<th>Concentrating solar systems</th>
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<tbody>
<tr>
<td>Materials</td>
<td>Combustion</td>
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<td>Manufacturing techniques</td>
<td>Turbo-machines</td>
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<td>Heat management</td>
<td>Gas turbine systems</td>
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<td>Heat exchangers</td>
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<td>Hybrid power plants</td>
<td>Solar gas turbines</td>
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<td>Fuel cells with alternative fuels</td>
<td>Solar gas turbines</td>
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<td></td>
<td>Heat storage</td>
<td>Solar hydrogen production</td>
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<td>Solar power plants</td>
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<td>Solar process heat</td>
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</tbody>
</table>

**Simulation/modelling**

- Solar gas turbines
- Solar hydrogen production
- Solar power plants
- Solar process heat
Key Figures

- Approx. 400 employees
- Approx. €35 million turnover
- Third-party financing approx. 50%
- Second largest research centre in Germany for non-nuclear energy
- Main activities based in Stuttgart, Koeln and Almeria (Spain)
Budget of Energy 2010 (planned)

Research areas:
- Combustion and Gas turbines
- Solar Research
- Energy Process Engineering
- Systems analysis and Management

(Source: Division Business Plan 2008)
Facilities – DLR Energy

- Combustion test beds
- Compressor and turbine test beds
- Fuel cell test beds
- Vacuum plasma injection equipment
- Test facilities for solar research
- High-performance computing
Defence and Security
DLR Defence and Security

• Coordination and management of interdisciplinary defence and security related activities in collaboration with partners from government, academia and industry

• Innovative organisational concepts for the development, testing and assessment of technologies as well as for the assessment of relevant defence and security applications
Management

DLR Defence and Security

DLR’s Defence & Security Program

Defence Research
- Aeronautical Platforms
- Satellites and Sensors
- Impact, Protection and Materials

Security Research
- Security and Dual-Use
- Maritime Safety and Security

Safety
Defence Research...

- contributes to satisfying demand and closing capability gaps of the German Armed Forces
- provides procedures and infrastructure in order to perform testing and evaluation demonstrations
- sustains and improves the research and technology analysis and assessment excellence of the German Ministry of Defence and subordinate agencies
- comprises about 35 multi and disciplinary projects, which are managed in three defence program lines
Security Research...

- contributes to recent and future capability profiles which directly support the following mission areas:
  - Security of citizens
  - Security of infrastructures and utilities
  - Intelligent surveillance and border security
  - Restoring security and safety in case of crisis

- coordinates the security research activities of the Helmholtz Centres

- manages the research activities of the DLR Research Network „Maritime Safety and Security“
Resources in Defence and Security 2013 (planned) Total € 42 million

- Institutional funding, security research (HGF)
- Institutional funding, defence research (German MoD)
- Third-party funding

All values in € million
Facilities – Defence and Security

• Research aircraft
• Unmanned Aerial Systems (UAS)
• Open-air laser test range
• Infrastructure for receiving, refining and distributing data
• Control centres
• Wind tunnels*
• Simulators
• High-Performance Computing (HPC) facilities

* Predominantly under the auspices of German-Dutch Wind Tunnels (DNW)
Space Administration
DLR’s tasks as the National Space Agency

• Defining German space planning on behalf of the federal government
• Representing German space-related interests in the international arena, in particular in ESA
• Tendering, award and support of space projects in the context of the National Space Program
Corner Stones and Guiding Principles of the German Space Program

• Systematic focus on benefit and need as contributors to the solution of social endeavours and to the development of new, commercially sustainable fields of research

• Pooling of strengths within Europe to sustain the European space industry and European science in the face of global competition

• Cooperation and competition, with concentration on thematic priorities and core fields
  Goals: Excellent scientific and commercial future

• Improving efficiency through increased competition and rationalisation within the context of division of labour across European networks
Goals of the DLR Space Administration

• Space as a solution for societal and institutional tasks
• Promoting the competitiveness of German space industry
• Concentrating on promising fields of application in which Germany has or can reach a top position
• Promoting globally recognised top-level German research
• Driving force in the development of the European Strategy for Space
• Supporting Germany’s leading role in Galileo and GMES
## Structure of the German Space Program

<table>
<thead>
<tr>
<th>ESA</th>
<th>NP</th>
<th>DLR</th>
<th>Other</th>
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<tbody>
<tr>
<td>ESA programs, EUMETSAT</td>
<td>National program</td>
<td>DLR / Helmholtz Association (HGF) R&amp;D programs</td>
<td>EU, BMBF programs, German Research Foundation (DFG), universities, Fraunhofer Society (FhG), HGF, Max Planck Society (MPG), public bodies, industry</td>
</tr>
</tbody>
</table>

### Application
- Communications
- Navigation
- Earth observation

### Technology
- Space transport
- Space station
- Technology of space systems

### Research
- Research under space conditions
- Space exploration
Resources and Total Budget (2011)

- Approx. 230 employees
- Conduct all space related activities on behalf of all federal ministries within the framework of the Space Activities Act

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orders from the Federal Ministry of Economics and Technology (BWMi)</td>
<td>32</td>
</tr>
<tr>
<td>Orders from other Ministries</td>
<td>1</td>
</tr>
<tr>
<td>Grant allocations – national program</td>
<td>237</td>
</tr>
<tr>
<td>Grant allocations – ESA program (incl. BMVBS)</td>
<td>717</td>
</tr>
</tbody>
</table>

All values in € × one million
DLR Project Management Agency
(Projektträger im DLR; PT-DLR)
Tasks

• The PT-DLR has specialised on services in the fields of research sponsorship, education sponsorship and project management.
• It acts for different German ministries, public facilities and private customers, at a national and international level.
• Within the scope of the project sponsoring system, it supports the ministries with the realisation of research sponsoring programmes. In doing this, the PT-DLR bears a high degree of responsibility for the funds allocated to project sponsorship.
• Research sponsorship by the PT-DLR – as opposed to institutional sponsorship – normally relates to the sponsorship of projects having short and medium term goals.
Scope of Services

• Conception of sponsorship key areas, preparing and deciding about sponsorship measures, political counselling
• Managing projects: Advising applicants, processing applications with regard to both administrative and specialist aspects, evaluating research concepts, organising external appraisals, handling running projects, verifying results and application
• Controlling: Project tracking regarding both administrative and specialist aspects, intermediate assessments and success evaluations, financing control, appraisal
• Support for international research cooperations, managing EU sponsorship programmes
• General management: Project coordination, branch office function, public relations, organisation of large events and expert conferences
Fields of activity

- Health research
- Job design and services
- Environment, culture, sustainability
- Education research, gender research
- New media in the economy
- Information technology

Cross-subject activities:
- International office
- European programme
- New fields of work (e.g. Years of Science Bureau, Innovation-oriented Research)
Resources

• Approx. 830 employees – the largest project management agency in Germany
• Managing sponsorship funds of approx. 950 million Euros per year (in 2010)
• Managing about 7,700 projects (in 2011)
• Locations in Bonn (approx. 630 employees), Cologne (approx. 100), Berlin (approx. 100)
• More than half of those occupied are academic employees, a further large part are contract clerks and office clerks (in the proportion 3 : 2 : 1). In addition, the PT-DLR is a company that takes on trainees.
Clients

• Federal Ministry of Education and Research (BMBF)
• Federal Ministry of Economics and Technology (BMWi)
• Federal Ministry of Health
• Federal Ministry of Family Affairs, Senior Citizens, Women and Youth

• Baden-Württemberg Foundation
• Ministry of Employment, Integration and Social Affairs of the State of North Rhine-Westphalia
• The New Eurasia Foundation (Russia)
Structure of the Organisation

- **Flat hierarchy** to promote competence and personal responsibility of the specialist organisational units.

- Supporting the **PT management** with a **leadership group**, made up of spokespersons from the organisational units.

- **Project management agency management (PT-M)** combines cross-department functions, such as public relations or information and communication management technology as well as all infrastructure-related tasks.

- All activities relating to quality converge in the “**Quality Management and Quality Assurance division**”. The “Federal Ministry of Education and Research test centre for projects co-financed by the European Structural Fund (ESF)” is also located here. Its job is to check all projects that are sponsored in Germany within the scope of the ESF.

The Project Management Agency in the DLR was certified according to DIN EN ISO 9001:2000 in December 1998.
## Use of Budgetary Funds in 2010

<table>
<thead>
<tr>
<th>Field of activities</th>
<th>Projects</th>
<th>T-Euro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Research</td>
<td>2,046</td>
<td>264.100</td>
</tr>
<tr>
<td>Information Technology</td>
<td>1,684</td>
<td>213.000</td>
</tr>
<tr>
<td>Environment, Culture, Sustainability</td>
<td>1,260</td>
<td>126.800</td>
</tr>
<tr>
<td>Development of Work and Services*</td>
<td>709</td>
<td>46.800</td>
</tr>
<tr>
<td>Education, Empirical Educational Research*</td>
<td>615</td>
<td>70.900</td>
</tr>
<tr>
<td>New Media in the Economy</td>
<td>426</td>
<td>97.000</td>
</tr>
<tr>
<td>Equal Opportunities/Gender Research*</td>
<td>389</td>
<td>25.100</td>
</tr>
<tr>
<td>Humanities and Social Sciences</td>
<td>229</td>
<td>38.400</td>
</tr>
<tr>
<td>Integration*</td>
<td>217</td>
<td>22.900</td>
</tr>
<tr>
<td>Eurostars</td>
<td>89</td>
<td>6.170</td>
</tr>
<tr>
<td>Innovation-oriented Research</td>
<td>37</td>
<td>9.200</td>
</tr>
<tr>
<td>Office Science Years</td>
<td>27</td>
<td>7.900</td>
</tr>
<tr>
<td>International Bureau</td>
<td>10</td>
<td>20.100</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>7,738</strong></td>
<td><strong>948.000</strong></td>
</tr>
</tbody>
</table>

* co-financed by the European Structural Fund (ESF)
Aeronautics Project Management Agency
Aeronautics Project Management Agency

The Aeronautics Project Management Agency (Projektträger Luftfahrtforschung und -technologie; PT-LF) supports the Federal Ministry of Economics and Technology (BWMi) in the implementation of the Federal Space Research Program (‘LuFo’), as well as providing support to the states of Bavaria, Brandenburg and Hamburg, which supplement the Federal Program with their own funding programs.
National Space Research in the European Context

**EU**
- Improvement of **competitiveness** at **European level**
- Projects with major **socio-economic implications** for the **whole of Europe**
- Projects with **parts of the work in different European countries**

**National**
- Projects with the emphasis on **national core competences**, which have **industrial-political significance** for the whole of **Germany**
- **Joint projects** between industry, SMEs, higher education and large research institutes that extend across state boundaries

**Regional**
- Projects with the **focus** on the **regional supplier structure**
- **Improvement of regional frameworks** for innovation clusters:
  - Funding for **local research partnerships**
  - Funding for training of **qualified technical staff**
  - Funding for **higher education establishments** and **research institutions**
Tasks of the Aeronautics Project Management Agency

Coordination of national and European aeronautics research activities

- Member of the GARTEUR research network for aeronautics research in the civil and defence sectors
- Leadership of the EU research network AirTN for civil aeronautics research
- National Contact Centre for the 7th EU Research Framework Program

Supervision of aeronautics research activities at state and federal level

<table>
<thead>
<tr>
<th>State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bavaria</td>
</tr>
<tr>
<td>Brandenburg</td>
</tr>
<tr>
<td>Hamburg</td>
</tr>
</tbody>
</table>
Goals of the National Aeronautics Program

Main goals:

• Development of the technological basis required for a sustainable air transport system
• Safeguarding the technological competitiveness of the German aeronautics industry
• Ensuring an effective research infrastructure
Resources and Budget Managed

- 21 employees

<table>
<thead>
<tr>
<th>Programs</th>
<th>[All values in € million]</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>LuFo III</td>
<td></td>
<td>15.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LuFo IV, 1st call</td>
<td></td>
<td>65.0</td>
<td>50.0</td>
<td>30.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LuFo IV, 2nd call</td>
<td></td>
<td>40.0</td>
<td>55.0</td>
<td>95.0</td>
<td>60.0</td>
<td></td>
</tr>
<tr>
<td>LuFo IV, 3rd call (planned)</td>
<td></td>
<td>40.0</td>
<td>40.0</td>
<td>40.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LuFo Bavaria</td>
<td></td>
<td>6.0</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LuFo Brandenburg</td>
<td></td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
<td>5.0</td>
</tr>
<tr>
<td>LuFo Hamburg</td>
<td></td>
<td>6.0</td>
<td>6.0</td>
<td>6.0</td>
<td>4.0</td>
<td></td>
</tr>
<tr>
<td><strong>Total volumes</strong></td>
<td></td>
<td>97.0</td>
<td>102.0</td>
<td>110.0</td>
<td>144.0</td>
<td>100.5</td>
</tr>
</tbody>
</table>
DLR Site
Cologne

Employees: 1400
Size of site: 550 000 m²

Research institutes and facilities:

- Institute of Materials Physics in Space
- Institute of Aerospace Medicine
- Institute of Propulsion Technology
- Institute of Materials Research
- Institute of Air Transport and Airport Research
- Institute of Solar Research
- Institute of Technical Thermodynamics
- High-flux-density solar furnace
- Simulation- and Software Technology
- Quality and Product Assurance
- European Astronaut Center
- Supersonic and Hypersonic Technologies
- European Transonic Wind Tunnel
- Microgravity User Support Center (MUSC)
- DLR Project Management Agency
DLR Site Augsburg

Employees: 15
Size of site: 750 m²
Research institute:

- Institute of Structures and Design
- Institute of Composite Structures and Adaptive Systems
- Institute of Robotics and Mechatronics
DLR Site
Berlin

Employees: 460
Size of site: 20 123 m²

**Berlin-Adlershof**
Research institutes and facilities:
- Institute of Planetary Research
- Institute of Transport Research
- Optical Information Systems Facility
- Marine Remote Sensing Group of the DLR Remote Sensing Technology Institute
- System Conditioning department of the DLR Institute of Space Systems
- Technology Marketing
- DLR Project Management Agency

**Berlin-Charlottenburg**
Research institutes and facilities:
- Propulsion Acoustics Department of the DLR Institute of Propulsion Technology
- DLR Project Management Agency

**Berlin-Mitte**
Facilities:
- Representative Office of the Executive Board
DLR Site
Bonn

Employees:
630 (Project Management Agency)
200 (Space Administration)

Building area: 30 000 m²

Bonn-Oberkassel
• Space Administration
• DLR Project Management Agency
• Aeronautics Project Management Agency

Bonn-Bad Godesberg
• DLR Project Management Agency
DLR Site
Braunschweig

Employees: 1 050
Size of site: 170 000 m²
Research institutes and facilities:

- Institute of Aerodynamics and Flow Technology
- Institute of Composite Structures and Adaptive Systems
- Institute of Flight Guidance
- Institute of Flight Systems
- Institute of Transportation Systems
- DLR Design Office
- Flight Operations
- Simulation and Software Technology (SISTEC)
- A section of the Cologne Institute of Air Transport and Airport Research
- Technology Marketing
- Training
- The Engineering Systems House (ESH)
- German-Dutch Wind Tunnels (DNW), Braunschweig low-speed wind tunnel
DLR Site
Bremen

Employees: 42
Size of site: 12 782 m²
Research institute:

• Institute of Space Systems
DLR Site
Goettingen

Employees: 450
Size of site: 55,945 m²
Research institutes and facilities:

- Institute of Aerodynamics and Flow Technology
- Institute of Aeroelasticity
- Institute of Propulsion Technology, Turbines department
- The Engineering Systems House (ESH)
- Technology Marketing
- Aeronautics Program Management
- Training - Cooperative State University
- German-Dutch Wind Tunnels (DNW), "Goettingen and Koeln" business unit
- DLR_School_Lab Göttingen
- Central Archive in DLR
DLR Site
Hamburg

Employees: 54
Building area: 2 900 m²

Hamburg - Gross Borstel:
• Institute of Aerospace Medicine, Department of Aviation and Space Psychology

Hamburg - Harburg:
• Air Transport Concepts and Technology Valuation
DLR Site
Lampoldshausen

Employees: 235
Size of site: 37 500 m²
Research institutes:

• Institute of Space Propulsion
• Field office of the Institute of Technical Physics
DLR Site
Neustrelitz

Employees: 60
Size of site: 86 600 m²
Research institutes and facilities:

- Institute of Communications and Navigation
- Remote Sensing Technology Institute
- German Remote Sensing Data Center
- Technology Marketing
DLR Site
Oberpfaffenhofen

Employees: Approx. 1600
Size of site: 245 000 m²
Research institutes and facilities:

- Microwaves and Radar Institute
- Institute of Communications and Navigation
- Institute of Atmospheric Physics
- Remote Sensing Technology Institute
- Institute of Robotics and Mechatronics
- German Remote Sensing Data Center
- Space Operations and Astronaut Training
- Galileo Control Center
- Flight Experiments
DLR Site
Stade

Employees: 18
Size of site: 18 600 m²
Research institute:

- Institute of Composite Structures and Adaptive Systems
DLR Site Stuttgart

Employees: 560
Size of site: 25 860 m²
Research institutes:

- Institute of Structures and Design
- Institute of Vehicle Concepts
- Institute of Technical Physics
- Institute of Technical Thermodynamics
- Institute of Combustion Technology
DLR Site Trauen

Employees: 6
Size of site: 800 000 m²
Research institutes:

- Institute of Propulsion Technology
DLR Site
Weilheim

Employees: 24
Size of site: 356 000 m²
Facilities:

• Space operations and astronaut training