German Science System

Institutions

DFG
Universities
Helmholtz
Max-Planck
Leibniz
Fraunhofer

Institutions #

117
15
80
84
58

Funding (federal:state in %)

58:42
0:100
90:10
50:50
50:50
90:10

(1) Basic public funding only 30 %
The 'Excellence Initiative' aims at both

• to promote top-level research
• and to improve the quality of German universities and research institutions,

by

• making a significant contribution to strengthening science and research in Germany also in the long term,
• improving its international competitiveness,
• and raising the profile of the top performers in academia and research."

The German Government and the states (Länder) have authorized the German Research Foundation (DFG) and the German Council of Science and Humanities (Wissenschaftsrat, WR) with the execution of the Excellence Initiative.
Excellence Initiative Process

Two-stage process, draft proposal and final proposal, evaluated by international review panels.


Three lines of funding:

- Graduate schools to promote young researchers (~ 1 M€/y)
- Clusters of Excellence to promote world-class research (~ 5 M€/y)
- Institutional strategies to promote top-level university research (20 - 25 M€/y), so called 3rd line

Two rounds of funding: first round announced in 2005, winners selected in October 2006:

“Elite Universities”: TU München

(3rd line) LMU München

Universität Karlsruhe (TH)

Second round announced in 2006, final funding decisions in October 2007:

“Elite Universities”: Universität Freiburg Universität Konstanz

(3rd line) FU Berlin RWTH Aachen

Universität Heidelberg Universität Göttingen

These are the nine so called “Elite Universities”.

Karlsruhe won in all 3 promotion lines

1: Cluster of Excellence
   DFG-Center for Functional Nanostructures (CFN)

2: Graduate Schools
   Karlsruhe School of Optics and Photonics (KSOP)

3: Promotion of Top-Level University Research
   Concept for the Future of the Universität Karlsruhe (TH)

   – The foundation of Karlsruhe Institute of Technology (KIT)
German Science System

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KIT: Major steps after the decision

21 November 2006:
Meeting of ministers (cornerstones fixed)

End of May 2007:
Full concept for KIT (structured process, BCG support, 150 employees involved)

June 2007:
Approval by University and FZK supervisory boards, and by Intl. Advisory Board

December 2007:
Signature of the foundation contract (not yet a merger)

February 2008:
Public information about the decision of the ministries for a merger (KIT Law)

Aim for early 2009:
University and Research Center Karlsruhe merge into KIT
Inauguration of KIT, February 22, 2008
Starting point: two missions, two legal entities
Universität Karlsruhe (TH) and Forschungszentrum Karlsruhe GmbH

1 Basic Funding (federal/state in %)

federal funded research (Helmholtz)
→ program oriented research
→ + third party funding: EU, BMBF, industry,

90:10¹

research and teaching on behalf of the State
→ + third party funding: DFG, EU, BMBF, industry, etc.

0:100¹
KIT: two missions, merger to one legal entity

- program oriented research (Helmholtz)
- project funded research (DFG, BMBF, EU, industry, foundations…)
- Research and studies
- Teaching and academic education

Natural sciences and technical engineering
KIT – One legal entity, two missions, three tasks

One entity

Two missions

Three tasks

research
education
innovation
KIT represents a unique opportunity

Forschungszentrum Karlsruhe GmbH

Universität Karlsruhe (TH)

10 programs
27 institutes
3,700 employees
€318M budget

11 faculties
118 institutes
4,000 employees
€250M budget
18,500 students

Natural sciences and technical engineering

excellent overlap and complement great synergies
KIT – One legal entity, two missions, three tasks

One entity

Two missions

Three tasks

- research
- education
- innovation
11 Faculties of the University Karlsruhe (TH)

- Mathematics
- Physics
- Chemistry and Biosciences
- Humanities and Social Sciences
- Architecture
- Civil Engineering, Geo- and Environmental Sciences

- Mechanical Engineering
- Chemical and Process Engineering
- Electrical and Information Technology
- Computer Sciences
- Economics and Business Engineering
KIT – One legal entity, two missions, three tasks

One entity

Two missions

Three tasks

research
education
innovation
Research Center Karlsruhe (FZK)

1956 Foundation as Society for Construction and Operation of Nuclear Reactors
1963 Society for Nuclear Research Karlsruhe
1978 Nuclear Research Center Karlsruhe GmbH (KfK)
1995 Research Center Karlsruhe – Technology and Environment
2002 Research Center Karlsruhe – Member of the Helmholtz Association

Areas of Engagement:
- Structure of Matter
- Fusion Technology
- Sustainability
- Nuclear Safety
- Atmosphere and Climate
- Conversion of Energy
- Nano- and Mikrosystems
- Nanobiology
- Scientific Computing
- Synchrotron Research

Employees: 3,700
Budget: 318 Mio. €
KIT bodies

KIT supervisory board
- suggested chair: Prof. Mlynek
- members not yet decided

KIT executive board
- chair
- education
- research
- innovation
- finances
- personnel

KIT senate
- professors
- sci. employees
- administration/ technical staff
- equal opportunity commisioner
- deans/ programms/ centers
- Students representatives

KIT administration and infrastructure
Karlsruhe Institute of Technology – three tasks

Research

Education

Innovation
Research at KIT

- Two approaches: “bottom-up” and “top-down”

- „bottom up“ - fields of competences / areas of competences
  - Bundling of resources
  - Availability of a broad range of competences
  - Communication platform for the exchange of know-how
  - Starting point for new projects
KIT-Portfolio: 29 Fields of Competence in 6 Areas

**Matter and Materials (6)**
- Elementary and Astroparticles
- Condensed Matter
- Nanoscience
- Microtechnology
- Optics and Photonics
- Applied and New Materials

**Earth and Environment (3)**
- Atmosphere and Climate Research
- Disaster Management and Risk Reduction
- Environmental Engineering and Sustainable Urban Development

**Applied Life Sciences (4)**
- Biotechnology
- Toxicology and Food Science
- Health and Medical Engineering
- Cell Biology

**Impact on Society (3)**
- Conservation of Cultural Heritage, Forming of Identity and Integration in Europe
- Business and Economics
- Interaction of Science and Technology with Society

**Information, Communication, and Organisation (6)**
- Cognition and Information Engineering
- Communication Technology
- High-Performance and Grid Computing
- Algorithm, Software and System Engineering
- Organisation and Service Engineering
- Mathematical Models

**Systems and Processes (7)**
- Fluid and Particle Dynamics
- Chemical and Thermal Process Engineering
- Fuel and Combustion
- Systems and Embedded Systems
- Power Plant Technology
- Product Life Cycle
Research at KIT

- Two approaches: “bottom-up” and “top-down”

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  - Starting point for new projects

- „top down“ – KIT centers and KIT focuses
  - Strategic approach
  - Increase of international visibility
  - Answer to requests of major interest
### Thematic and managerial bundling of KIT research and resources

#### KIT Centers(1)
- Energy
- Nano and Micro Scale Science
- Elementary Particle and Astroparticle Physics
- Climate and Environment

#### KIT Focuses(1)
- Adaptive embedded systems
- Applied and New Materials
- Mobility
- Optics and Photonics
- Human and Technology

(1) Names and exact definition of Centers and Focuses are under development

#### Step 1: establishment by January 1, 2008

Concept planned for 2008 (target concept)
Thematic and managerial bundling of KIT research and resources

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<thead>
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Step 1: establishment by January 1, 2008

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Concept planned for 2008 (target concept)
# KIT center for Energy

## Topics
- Energy conversion
- Renewable energy technology
- Energy storage and distribution
- Efficient energy use
- Fusion technology
- Nuclear technology
- Energy systems analysis
- Energy and society

## Data
- **Budget:** ~ 100 M€
- **Personnel:** 1100 FTE
- **Involved Institutes:** FZK: 17 (large)
  - UKA: 40 (small)
- **Structural units:**
  - **Helmholtz-Programs:**
    - Nuclear safety research
    - Nuclear fusion,
    - Efficient energy conversion
    - Renewable energies
    - Energy systems analysis
  - **SFB:**
    - SFB 606: Instationary combustion:
      - transport phenomena, chemical reactions, technical systems
- **Programs/Projects:**
  - COORETEC
  - COOREFF
- **Additional structures:**
  - School of Energy
  - Rolls-Royce URC
- **Research infrastructure:**
  - Tritium Lab
  - HELOKA;
  - TOSKA;
  - HDT-Facility
  - bioliq®-Pilot plant, etc.

**Status:** Implementation January 1st 2008.
Karlsruhe Institute of Technology – three tasks

Research

Education

Innovation
KIT School of Energy:

School of Energy

- Nuclear Technology
- Fusion Technology
- Renewable Energies
- Energy Conversion
- Efficient Energy Usage
- Storage and Distribution of Energy
- Energy Systems Analysis

Departments Programs
- Physics
- Electrical Engineering and Information Technology
- Chemistry
- Mechanical Engineering
- Nuclear Technology
- Fusion Technology
- Rational Energy Conversion
- Sustainability and Technology
- NanoMicro
- JRC-Institute for Transuranium Elements (ITU)
- Commissariat à l’Energie Atomique (CEA)
- EnBW
- Westinghouse
- GeoforschungsZentrum Potsdam (GFZ)
- University of Heidelberg
- University of Stuttgart

External Partners
Education and promotion of young researchers

- Improvement of the student/professor ratio by integration of FZK employees
- Interdisciplinary programs of undergraduate and graduate study in “KIT-Schools,” (e. g. Karlsruhe School of Optics and Photonics, School of Energy)
- Internationalizing of the course offering, programs for excellent students
- Early introduction of large-scale research to the students (internships, projects)

Karlsruhe House of Young Scientists (KHYS):
- Communication- and interaction platform for all young scientists
- Support and mentoring offers, coordination of the further education
- Funding (stipends) and career planning

House of Competence (HoC):
- Procurement of multidisciplinary key skills to students, scientists and employees (self-management, project management, etc.)
- Fields in HoC: science of culture, sports science, pedagogy, didactics, languages, and distance study
Karlsruhe Institute of Technology – three tasks

Research

Education

Innovation
Three dimensions of KIT-Innovation

First Dimension: Transfer of ideas
Selective and coordinated development of inventions to patent and product readiness. Selective information of the industry about research results.

Second Dimension: Business Development
Support of spin-offs by the joint development of sustainable concepts, the procurement of the financing, and the long-term monitoring.

Third Dimension: Shared Projects
Procurement of internships and other stays in enterprises to gain practical experience. Installation of “Shared Research Groups” and “Shared Professorships”.

OECD conference, Reykjavik, 05. June 2008
"Coming together is a beginn, staying together is progress, cooperation leads to success."

(Henry Ford)
KIT - The cooperation of Forschungszentrum Karlsruhe GmbH and Universität Karlsruhe (TH)

OECD conference, Reykjavik, 05. June 2008