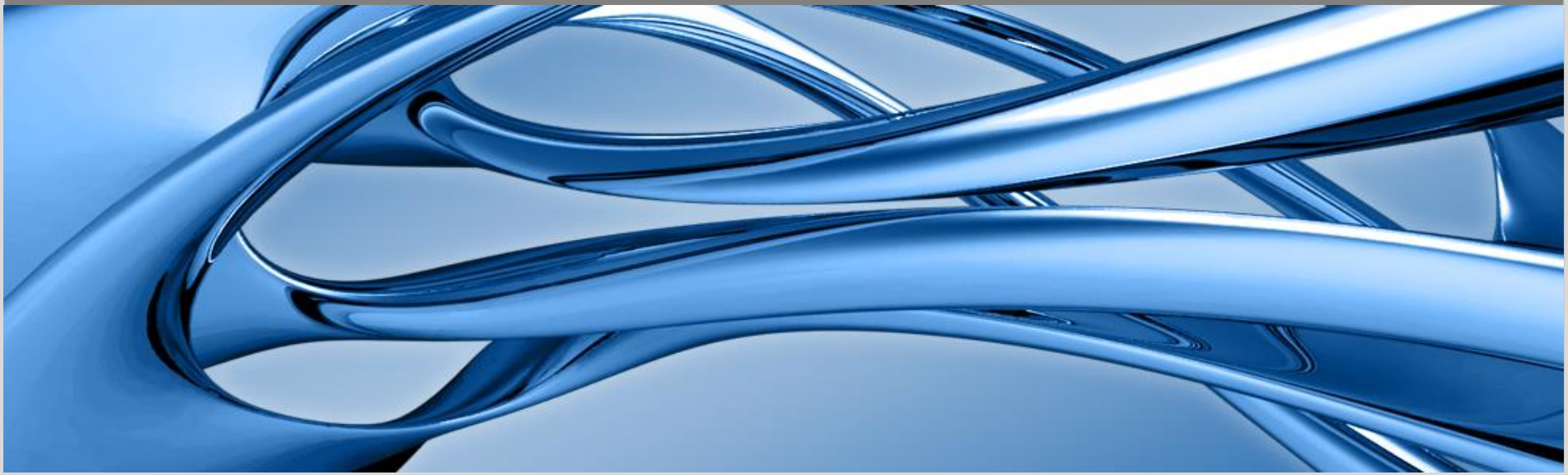
Karlsruhe Institute of Technology

The Karlsruhe Institute of Technology

Meeting with the Knowledge Network Institute of Thailand (KNIT) Delegation
June 14th, 2013

Prof. Dr. Alexander Wanner



KIT – Campus South

formerly: University of Karlsruhe (TH)

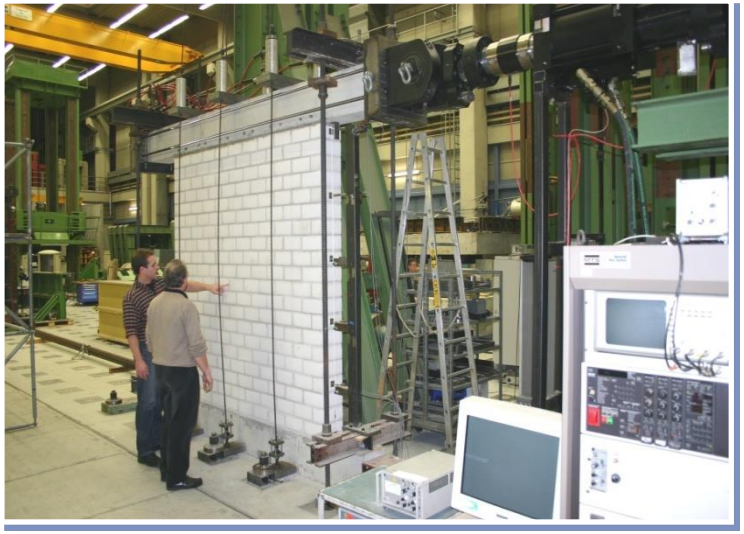
1825 Founded as Polytechnical School similar to the Ecole Polytechnique in Paris

1885 Reform to a Technical College

1902 Additional name „Fridericiana“ in honor of the Grandduke Friedrich von Baden

1967 University of Karlsruhe (TH)

2005 Supplemental name: „Forschungsuniversität · founded 1825“



KIT – Campus North

formerly: Research Center Karlsruhe (FZK)

1956 Founded as a Society for the Construction and Operation of Nuclear Reactors

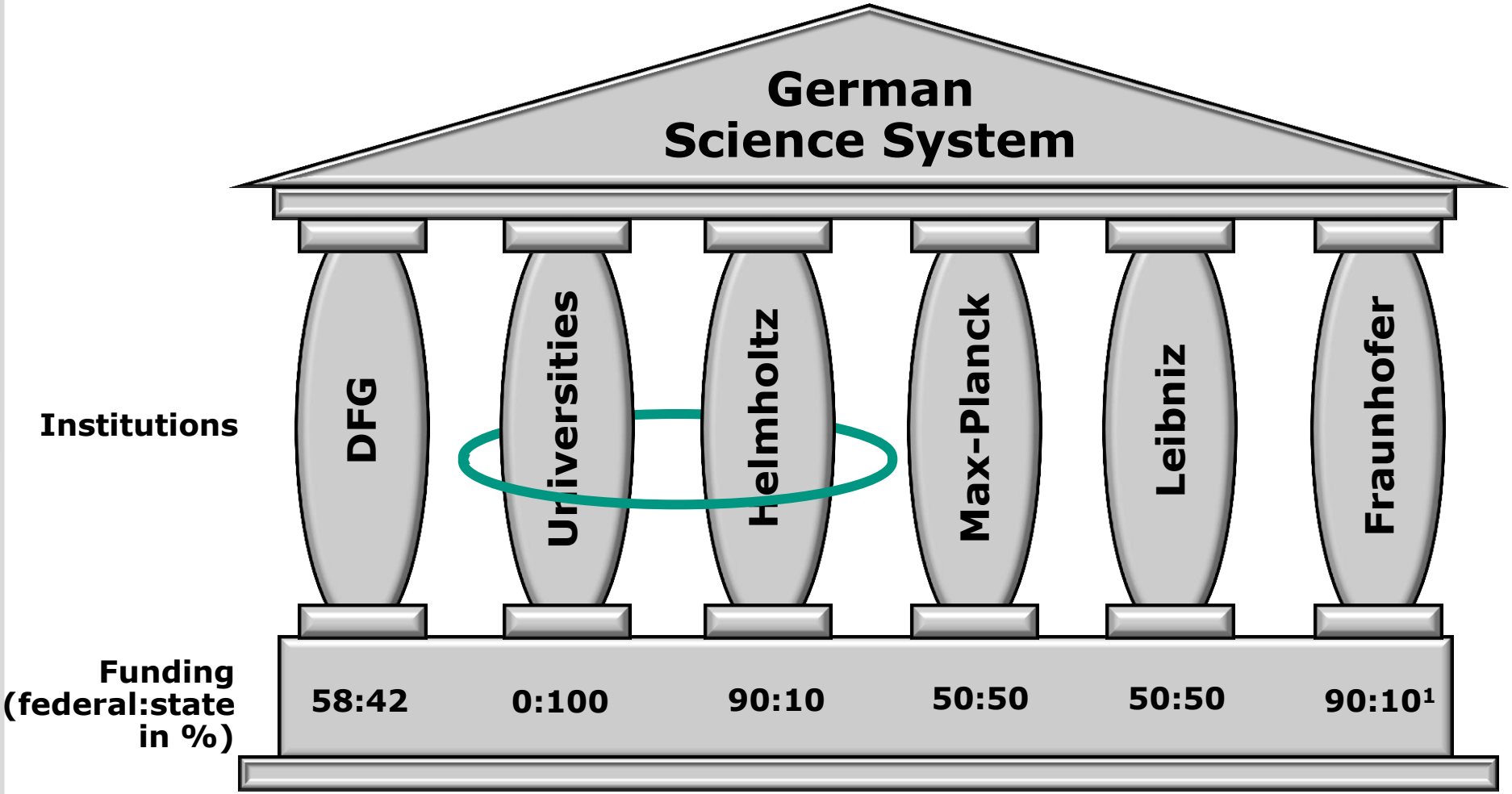
1963 Reorganisation: → Society for Nuclear Research Karlsruhe

1978 Nuclear Research Center Karlsruhe GmbH

1995 Research Center Karlsruhe – Technology and Environment

2002 Research Center Karlsruhe – Member of the Helmholtz Association

The German Science System



(1) Basic public funding only 30 %

The road to KIT

Decision of the Excellence Initiative:

October 13, 2006

KIT foundation

February 22, 2008

One legal entity

October 1, 2009

KIT concept

May 31, 2007

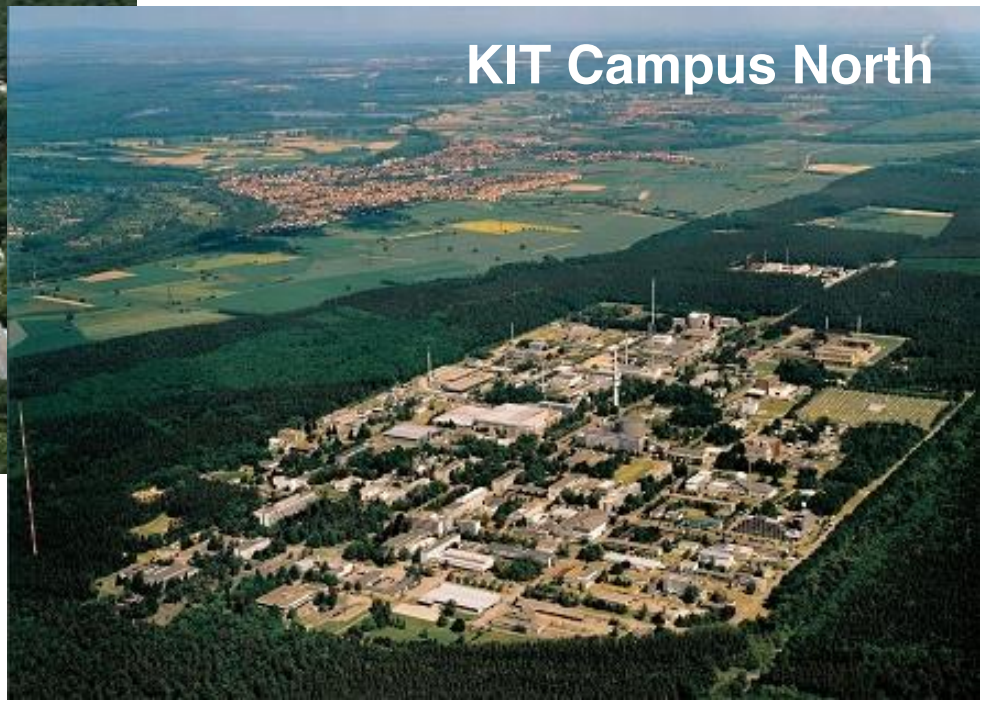
KIT Law

July 24, 2009

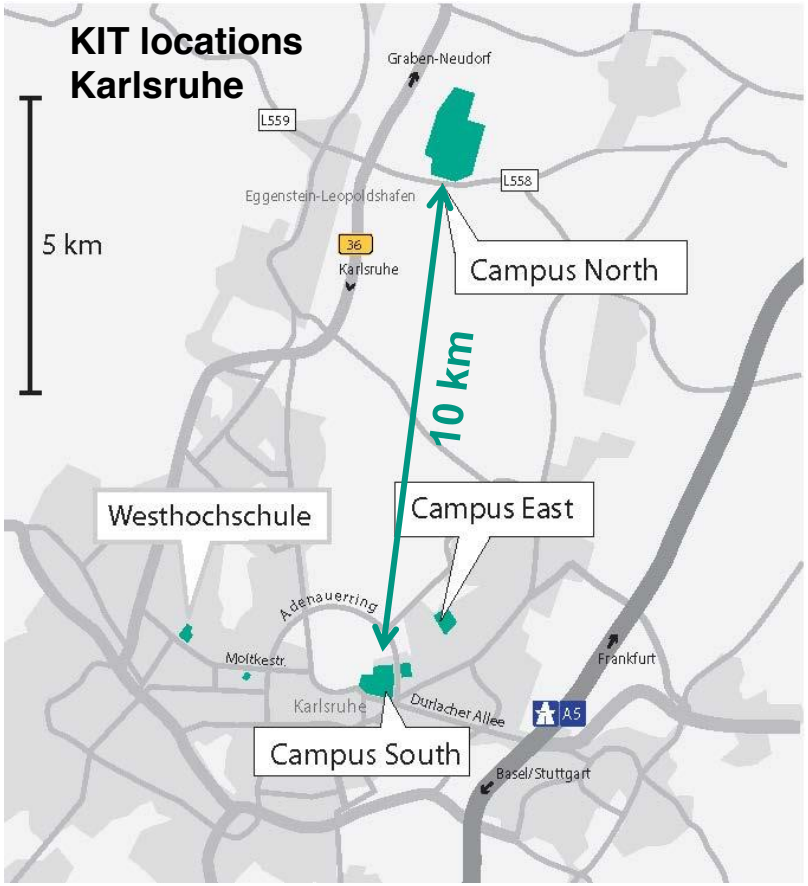
KIT law II

June 14, 2012

Locations of KIT in Karlsruhe



KIT - Locations



KIT – Facts and Figures

157 Institutes

5 Research-Centers

4 Research- Focuses

23.905 Students

9.331 Employees*

370 Professors

5.810 Scientists

≈ 3.290 Doctoral Researchers

789 Mio. € Budget**

250 Mio. € Federal Funds

229 Mio. € State Funds

310 Mio. € Third-Party Funds

* Numbers of People
30-06-2012
** Plan 2012

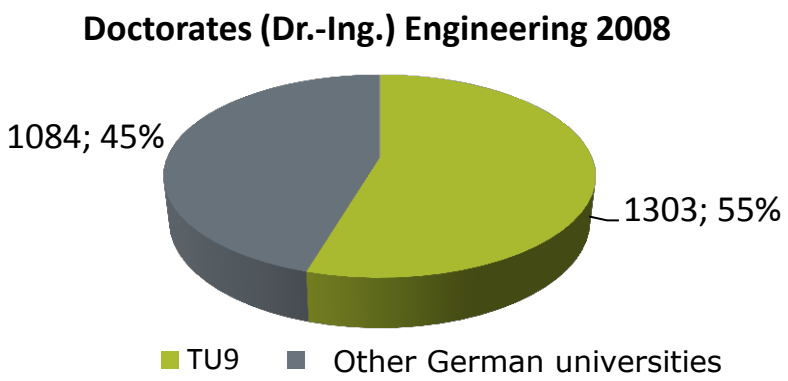
KIT – Part of the Helmholtz Association

- Helmholtz Association is Germany´s largest research association
  - **More than 34.000 employees**
  - **Budget ≈ € 3,4 billion** incl. third-party funding
- Helmholtz research fields are
  - Energy
  - Earth and Environment
  - Key Technologies
  - Structure of Matter
  - Health
  - Aeronautics, Space and Transport
- KIT is the largest of 18 Helmholtz centers

KIT – Part of TU9

TU9 association is the alliance of Germany's nine leading institutes of technology

- together more than 150.000 students
- 49 percent of german graduates in engineering



- one quarter of the total amount of third party funding in 2008
- total budget of TU9 universities: approx. 4,2 billion €

KIT – One entity with two missions and three tasks

Karlsruhe Institute of Technology

One Entity

Karlsruher Institut für Technologie

Two Missions

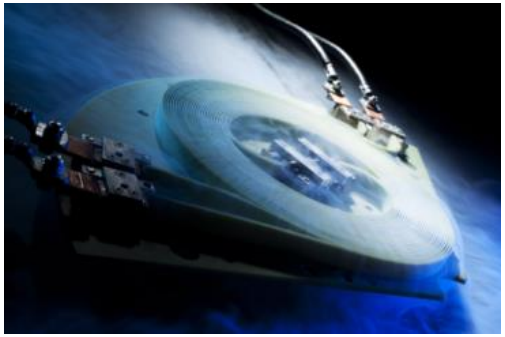
University

HELMHOLTZ ASSOCIATION

Three Tasks

- Research
- Innovation
- Higher Education

Strategic Orientation – Research Fields at KIT



Energy

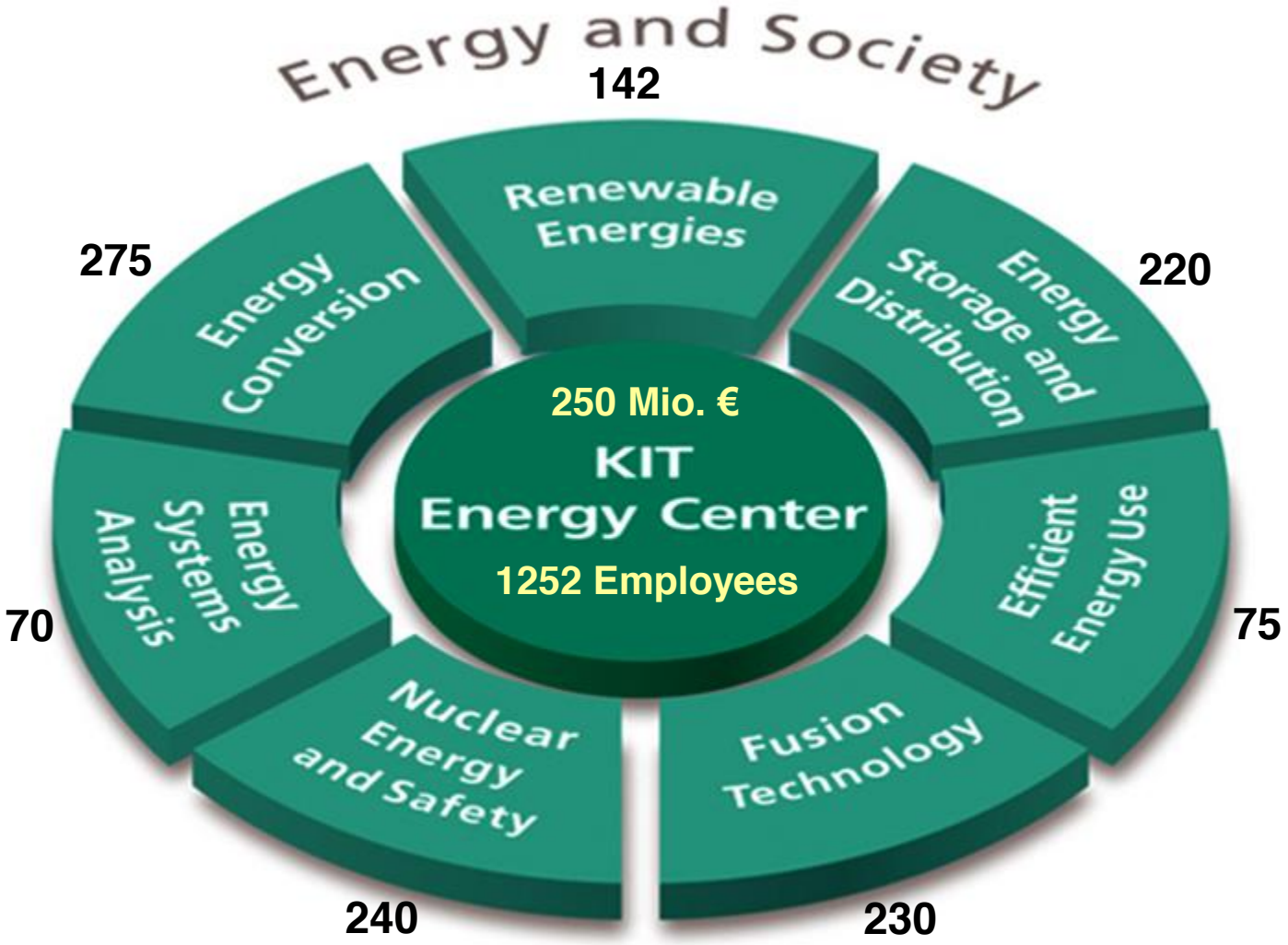
Environment

Future Technologies

Fundamental Questions

Society and Technology

Example: KIT Energy Center



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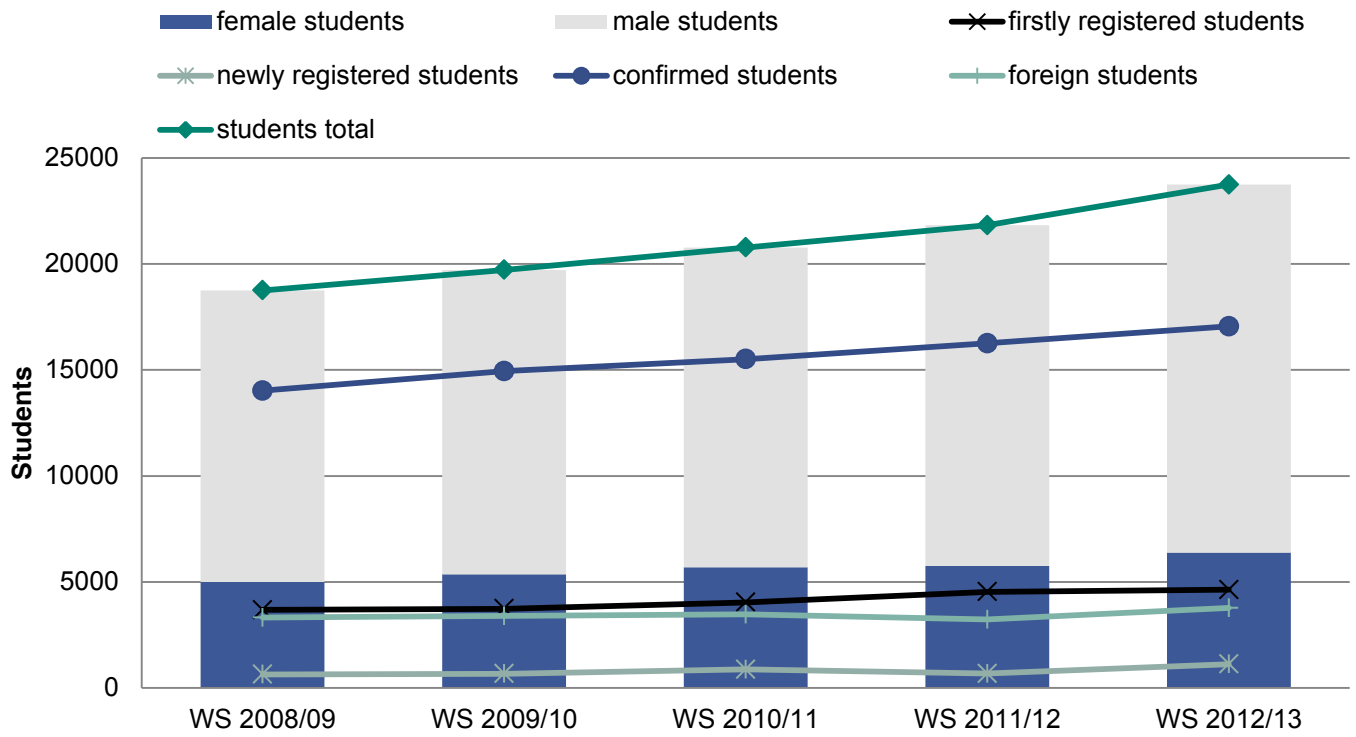
Higher Education at KIT

23.905 students in 11 faculties

- Architecture
- Civil Engineering, Geo- and Environmental Sciences
- Chemistry and Biosciences
- Chemical and Process Engineering
- Economics and Business Engineering
- Electrical Engineering and Information Technology
- Humanities and Social Sciences
- Informatics
- Mathematics
- Mechanical Engineering
- Physics

Development of students per year



	WS 2008/09	WS 2009/10	WS 2010/11	WS 2011/12	WS 2012/13
students total	18748	19721	20771	21823	23905
female students	4992	5361	5691	5754	6422
male students	13756	14360	15080	16069	17483
firstly registered students	3683	3733	4032	4530	4708
newly registered students	641	673	872	674	1461
confirmed students	14019	14940	15506	16257	17359
foreign students	3321	3395	3466	3228	3859

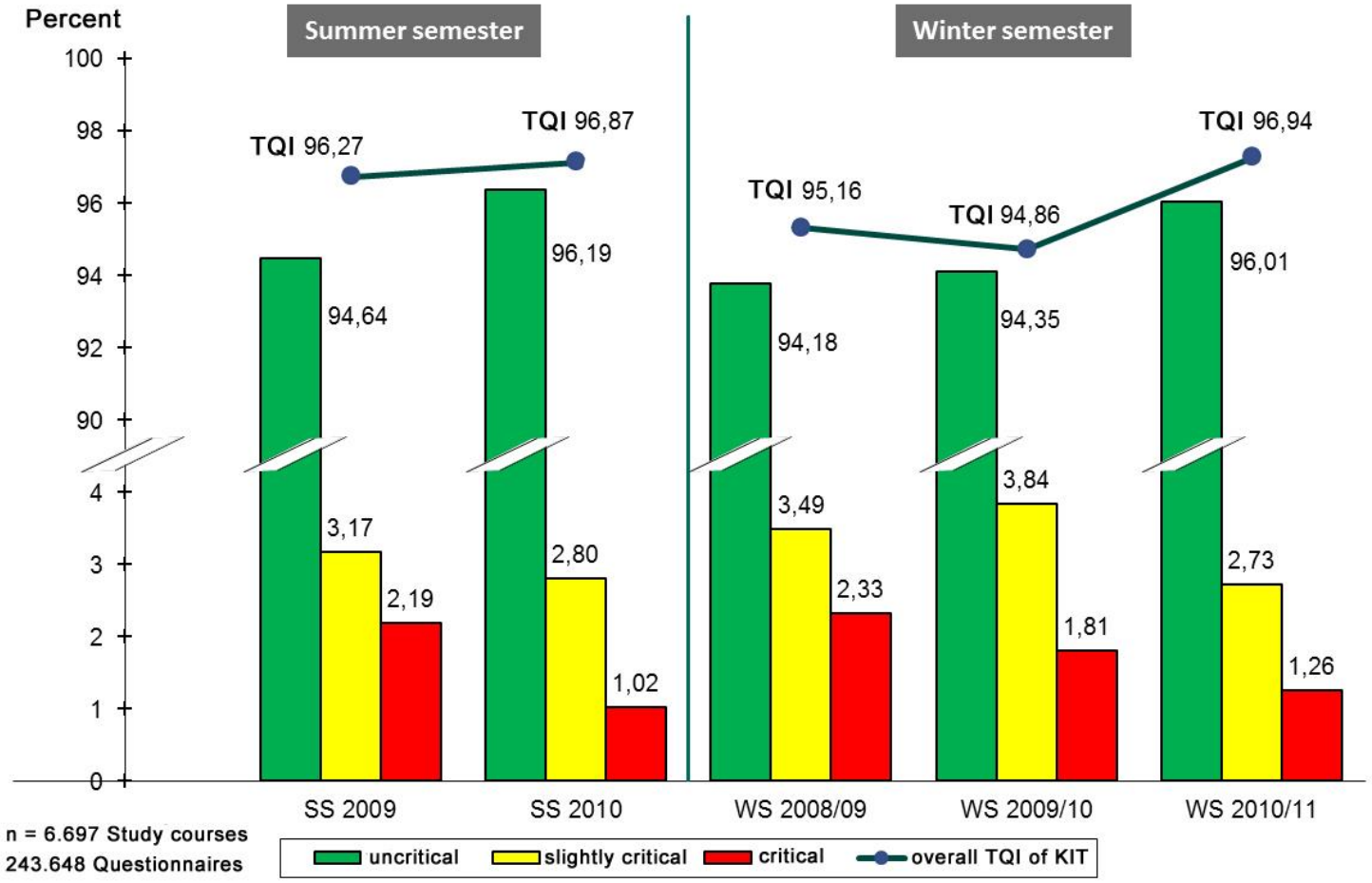
HoC – House of Competence

House of Competence

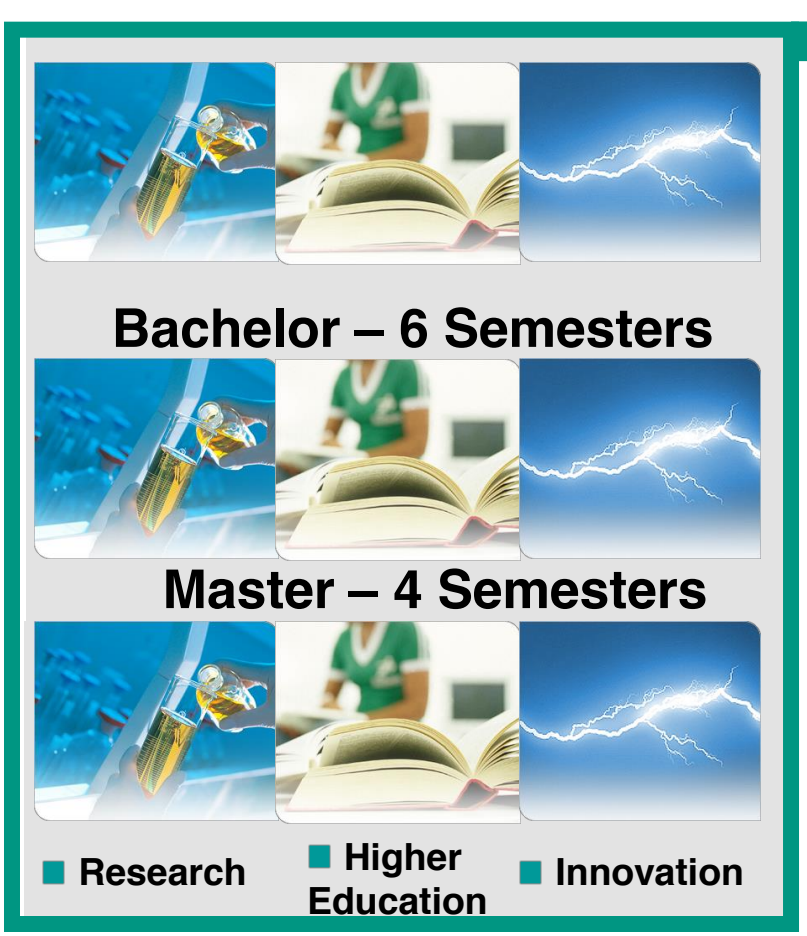
- As a central academic institution for **competence development** and **competence research** at KIT, HoC promotes:
  - ✓ cross-disciplinary research and the
  - ✓ acquirement of important key competencies.
- HoC provides new approaches to promote and maintain high levels of performance (innovative teaching and learning scenarios).

KIT Teaching Quality Index

Changes in the quality of study courses in the overall analysis for KIT in a time series of five semesters (WS 2008/09 until WS 2010/11)



Structure of Study – BA/MA



KIT concept:

- 6 + 4 BA/MA model
- Consecutive BA/MA programs
- Polyvalent research-oriented Master programs
- The study courses are characterized by a close link between

  Research - Higher Education - Innovation

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KIT – Three Dimensions of Innovation

First Dimension: Transfer of Ideas

Second Dimension: Business Development

Third Dimension:
Human Resource Exchange with Industry

First Dimension: Transfer of Ideas / Industry on Campus

Projekthaus e-drive

Research cooperation between KIT - Daimler AG – State of Baden-Württemberg

Development of hardware components and software solutions for electric power trains

BELLA
Battery and Electrochemistry Laboratory

Battery and Electrochemistry Laboratory BELLA

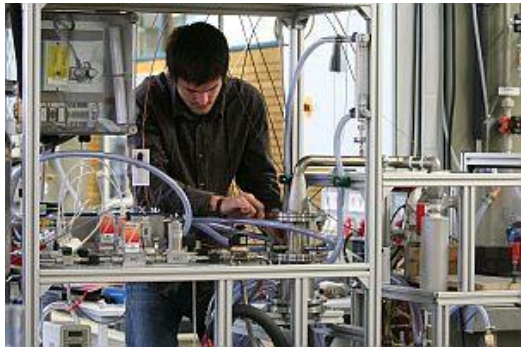
Joint Laboratory KIT - BASF

Development of materials for electrochemical energy storage

IP3 – Innovative products, intelligent particles, integrated processes

Joint laboratory KIT - BASF

Development of nanostructured materials e. g. for Organic Electronics



Second dimension: Business Development

Karlsruhe Institute of Technology

cement lite ADVANCED PROCESSING

Production of 1 ton of cement clinker

Ordinary Cement

limestone:	1200 kg
sand:	100 kg
clay:	190 kg
iron ore:	30 kg

Emission of **907 kg*** CO_2

cement lite ADVANCED PROCESSING

limestone:	380 kg
sand:	690 kg
water:	100 kg

Emission of less than **483 kg*** CO_2

Energy demand roughly 50%

Share of worldwide CO_2 emissions

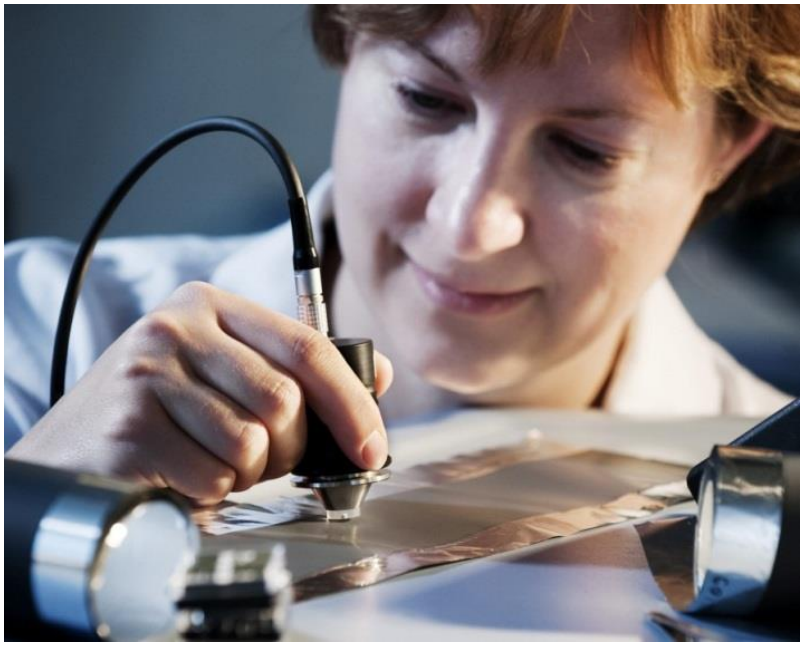
Cement production	**6,5%**
Chemical industry	**5,3%**
Iron and steel	**5,2%**
Air transport	**2,2%**

Sources: Dr. Peter Stemmermann
World Resources Institute

* overall, including raw materials and fuel
translated from „Der Spiegel“, 02.08.2010

Third dimension: Human Resource Exchange with Industry

- Shared Professorships
  - Professors with activities both at KIT and in industry
  - → Currently 5 professorships
- Shared Research Groups
  - Research groups in close collaboration with an industry partner
  - → Currently 4 groups
- KIT Industry Fellowships
  - Junior version of Shared Professorship especially for young engineers
  - → Currently 1 fellowship



Thank your for your attention

Karlsruher Institut für Technologie