

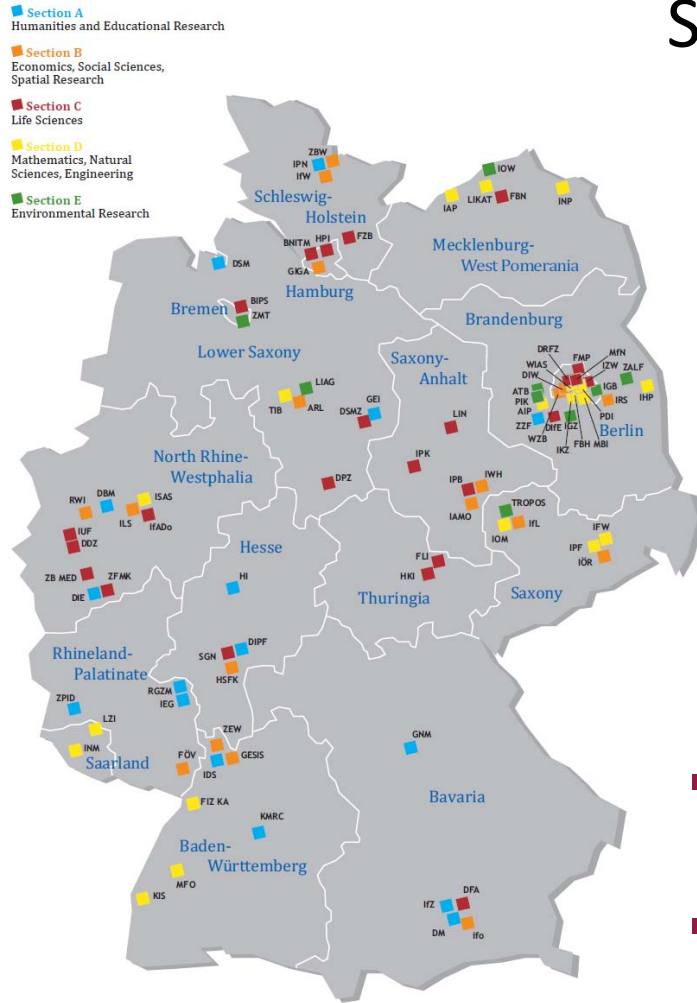
The German Research and Funding Landscape

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Senckenberg Gesellschaft für Naturforschung

Visiting Professors' College STU, 14.07.2015

Senckenberg Nature Research Society (SGN)



● Institute ● Museum ● Research Location

- **SGN:** founded in 1817, member of the Leibniz-Association since 1957
- **Leibniz-Association:** 89 institutes, overall budget 1,5 milliard EUR, 17.200 employees



R. Pfrenkle, Visiting Professors' College SFG 2015



Resources and Research Areas

- Total budget 65 million €, thereof third party funding projects with a total volume of 13 million €
- Staff: 765 employees , 282 scientists
- Additional 160 guests, fellowship holders, students

- **Senckenberg Programs:**

Research

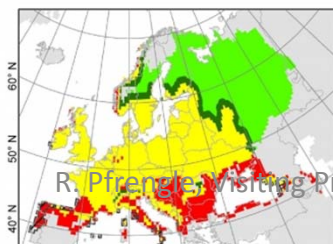
- Biodiversity and Systematics
- Biodiversity and Ecosystems
- Biodiversity and Climate
- Biodiversity and Earth System Dynamics

Science and Society

- Museums
- Scientific Service
- Knowledge Transfer

Infrastructure

- Collections
- Laboratories
- Large scale experimental facilities
- Libraries and literature exchange



R. Pfrangler, visiting Professors' College STU 2015

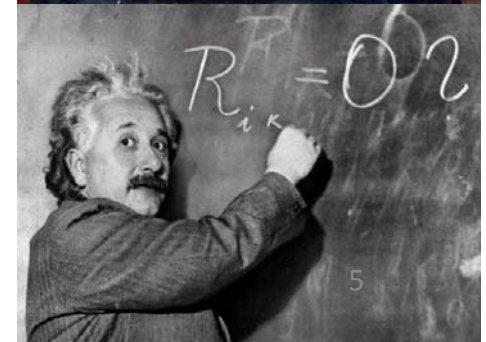


Topic areas

- I. Historical Background and Political Background
- II. Research Landscape and Research Funding
- III. Funding Organisations
- IV. Research-Performing Organisations
- V. Research Infrastructures
- VI. Quality Management
- VII. Political Research Initiatives

Historical Background

- Germany has a long research tradition
- Flourished in the mid-19th century until the 1920s
- 20th century: recognized as a world leader in science and research
- After reunification, research capacities were merged, common structure, integrated within the international research sector
- 21st century: German research sector has a broad, diverse and historically rooted spectrum of research structures



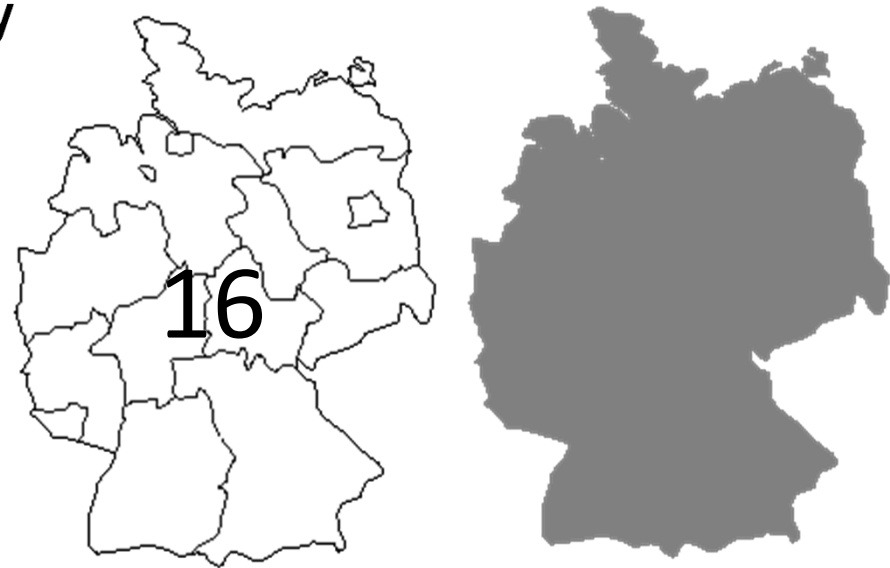
Political Background

- **Federal structure of Germany**

- Public-sector institutions
- Privat sector

- **General legal requirements:**

- Basic Law (Art. 91 b)
- Higher Education Act
- The State Higher Education laws
- Regulations, target agreements
- Performance-based contracting



What

Basic Research
Applied Research
Experimental Development

Where

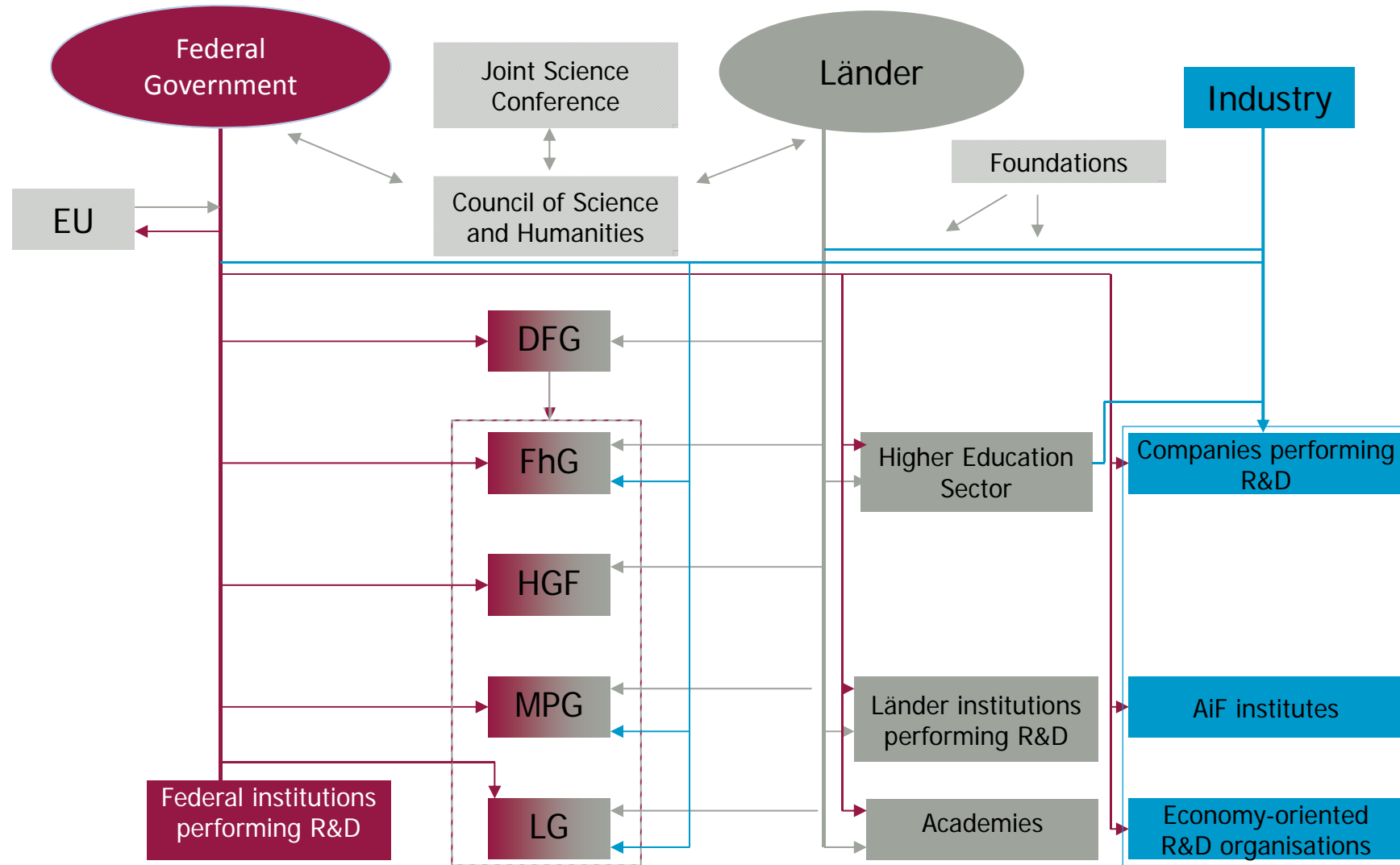
Institutions of Higher Education
Research Institutions
Industry

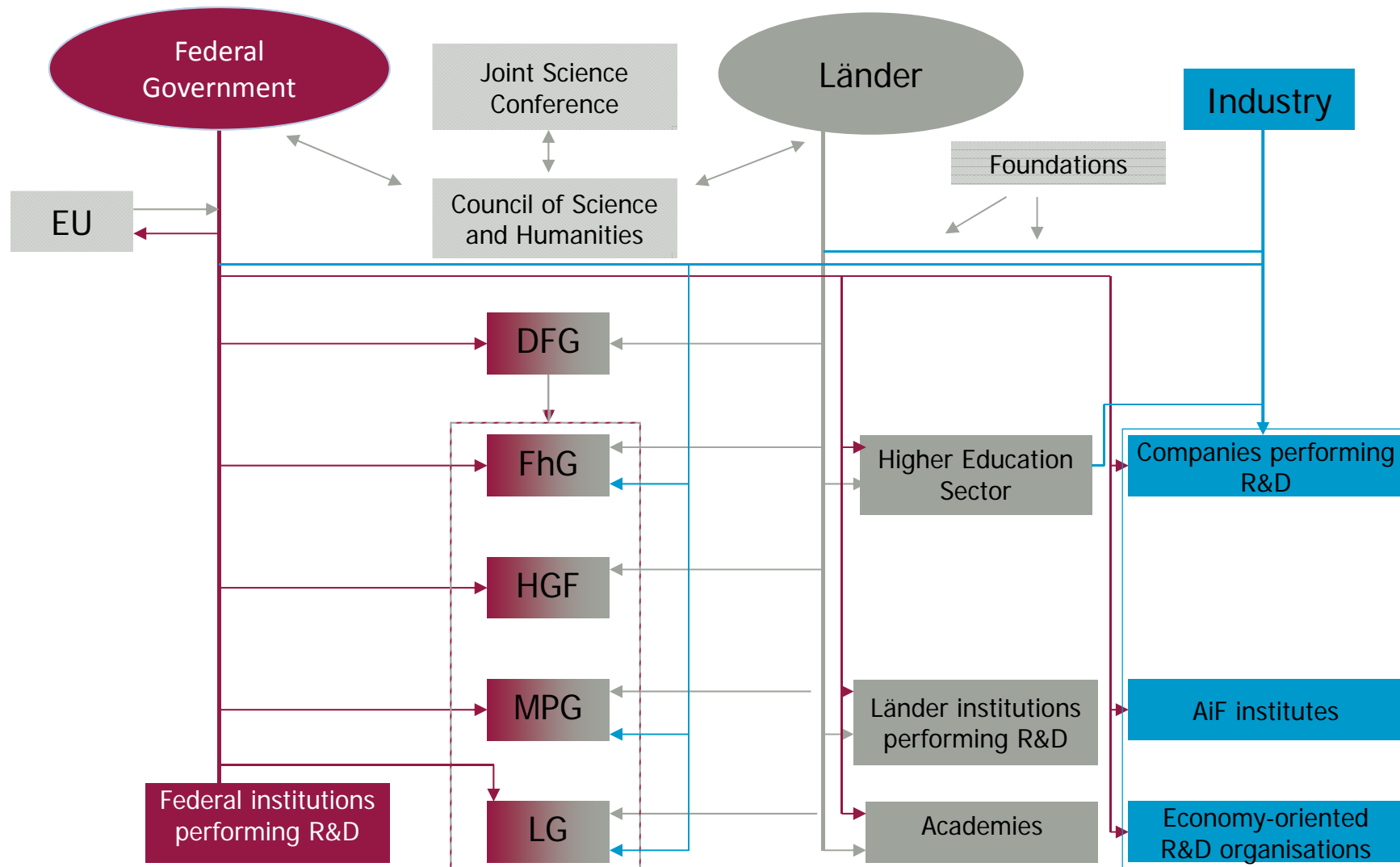
Research Landscape

Funding and Resources

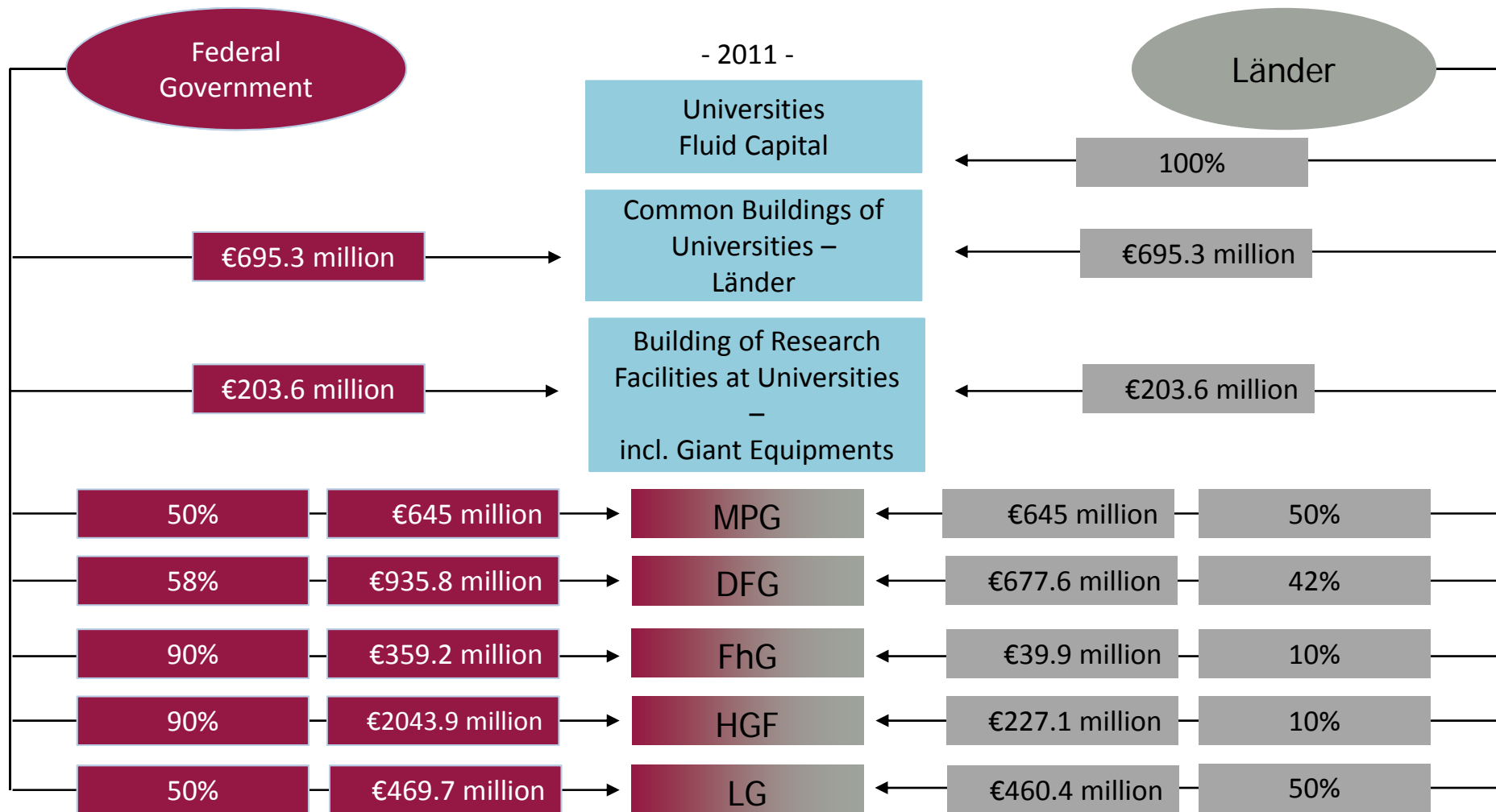
European Commission
Foundations
Private Sector
Public Sector

Structure of Research Funding





Proportions of Funding



Federal Government Institutions I

- Ministries fund 41 Federal R&D institutions
- to support the respective activities and provide the scientific basis for the execution of sovereign tasks
- Total budget

Facts and Figures



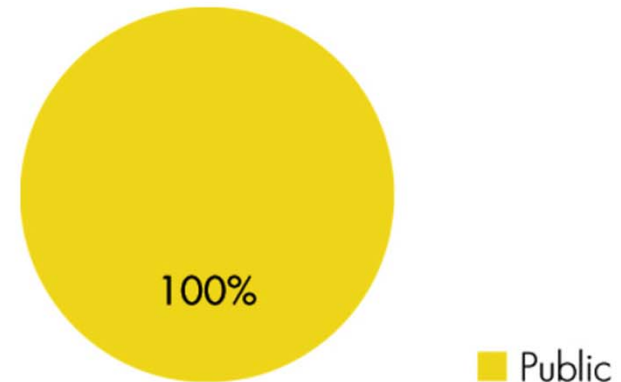
41 research organisations (2012)



20,500 staff;
9,200 scientists (2009)



planned budget in 2012: 1,707.5 million euros
for R&D: 828 million euros



Federal Government Institutions II

German Federal research institutions perform research in nearly all areas (society, security and defence, environmental protection...)

Departmental research institute Robert Koch, responsible for disease control and prevention

BAM - Federal Institute for Materials Research and Testing

responsible for the development of safety and reliability in chemistry and materials technologies

100% publicly funded



Länder Institutions

Support the research activities of the states

Example:

Centre for Solar Energy and Hydrogen Research (ZSW)

Facts and Figures



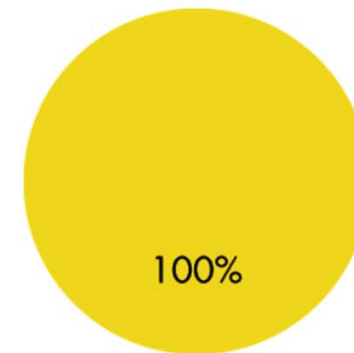
167 research organisations
in 16 Federal States of Germany (2012)



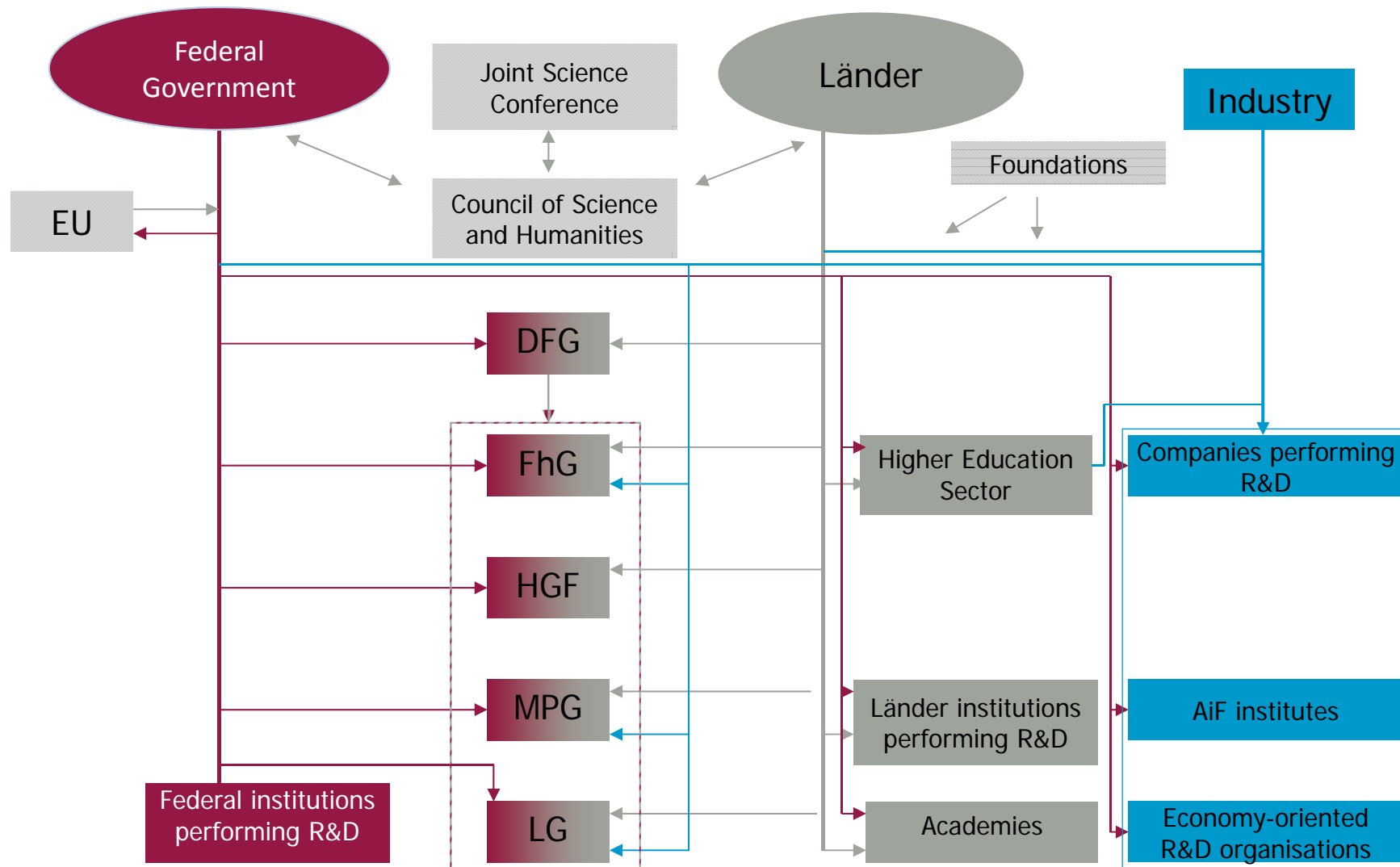
8,000 staff;
3,500 scientists and researcher (including municipal institutions)



539 smillion euro (2009);
for R&D: 264 million (including Municipal institutions)



■ Public





Fraunhofer

Fraunhofer-Gesellschaft

The Fraunhofer-Gesellschaft conducts applied research for private as well as public enterprises and for the general benefit of the public. It has more than 80 units overall, including 60 Fraunhofer Institutes in Germany, and is the largest organisation for applied research in Europe.



Leibniz Association

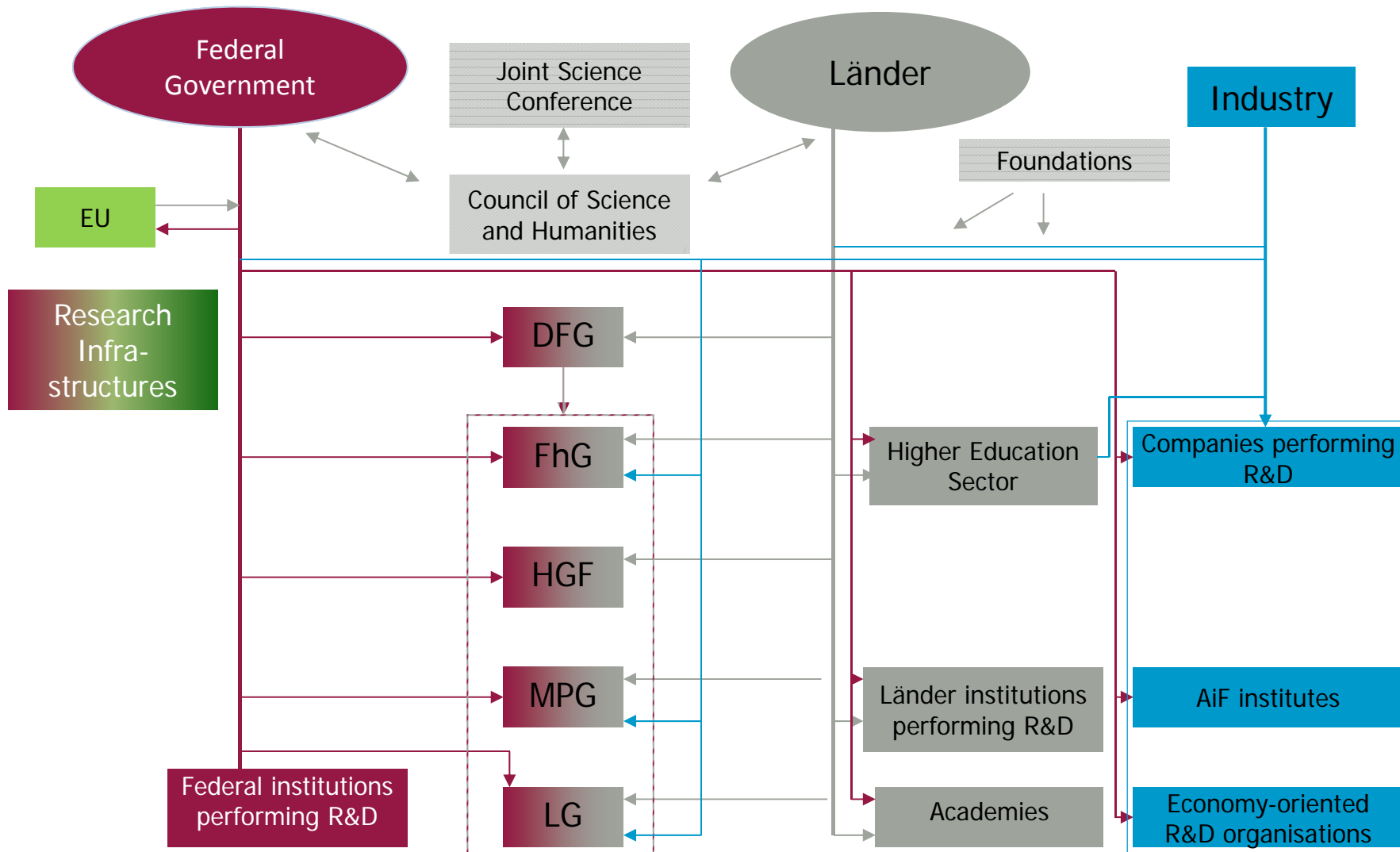
The Gottfried Wilhelm Leibniz Scientific Community (WGL), known as the Leibniz Association, is the umbrella organisation for 87 research institutions which address scientific issues of importance to society as a whole. It stands out for its enormous diversity of themes addressed by the institutes.



MAX-PLANCK-GESELLSCHAFT

Max Planck Society

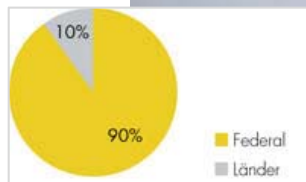
The Max Planck Society (MPG) is an independent, non-profit research organisation named after the world-famous physicist Max Planck (1858 - 1947). Primarily, the MPG performs basic research in natural science as well as in humanities, thus complementing research projects at universities.



Research Infrastructures

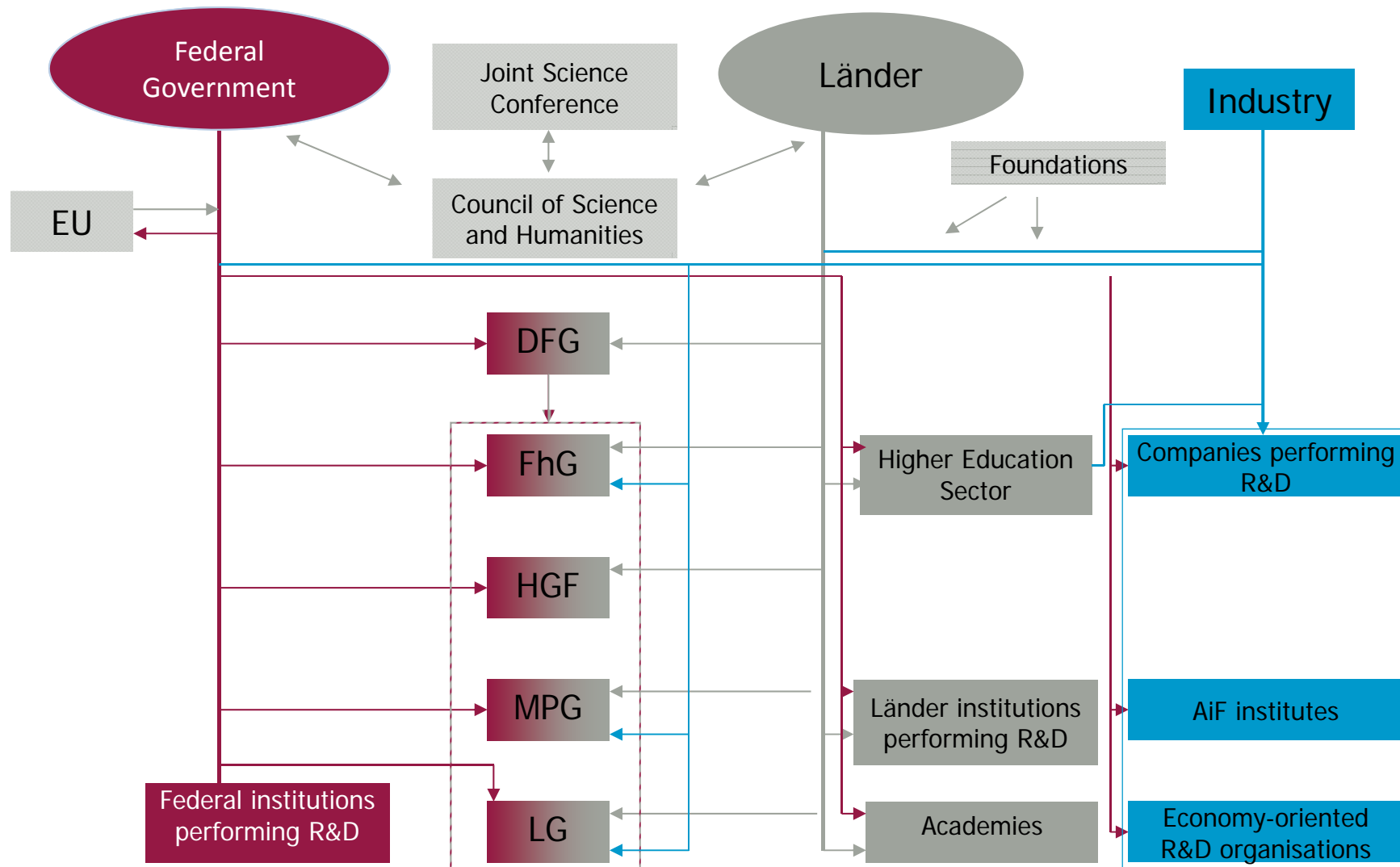
Helmholtz Association

- Deutsches Elektronen-Synchrotron (DESY)
- Research Vessel “Polarstern”



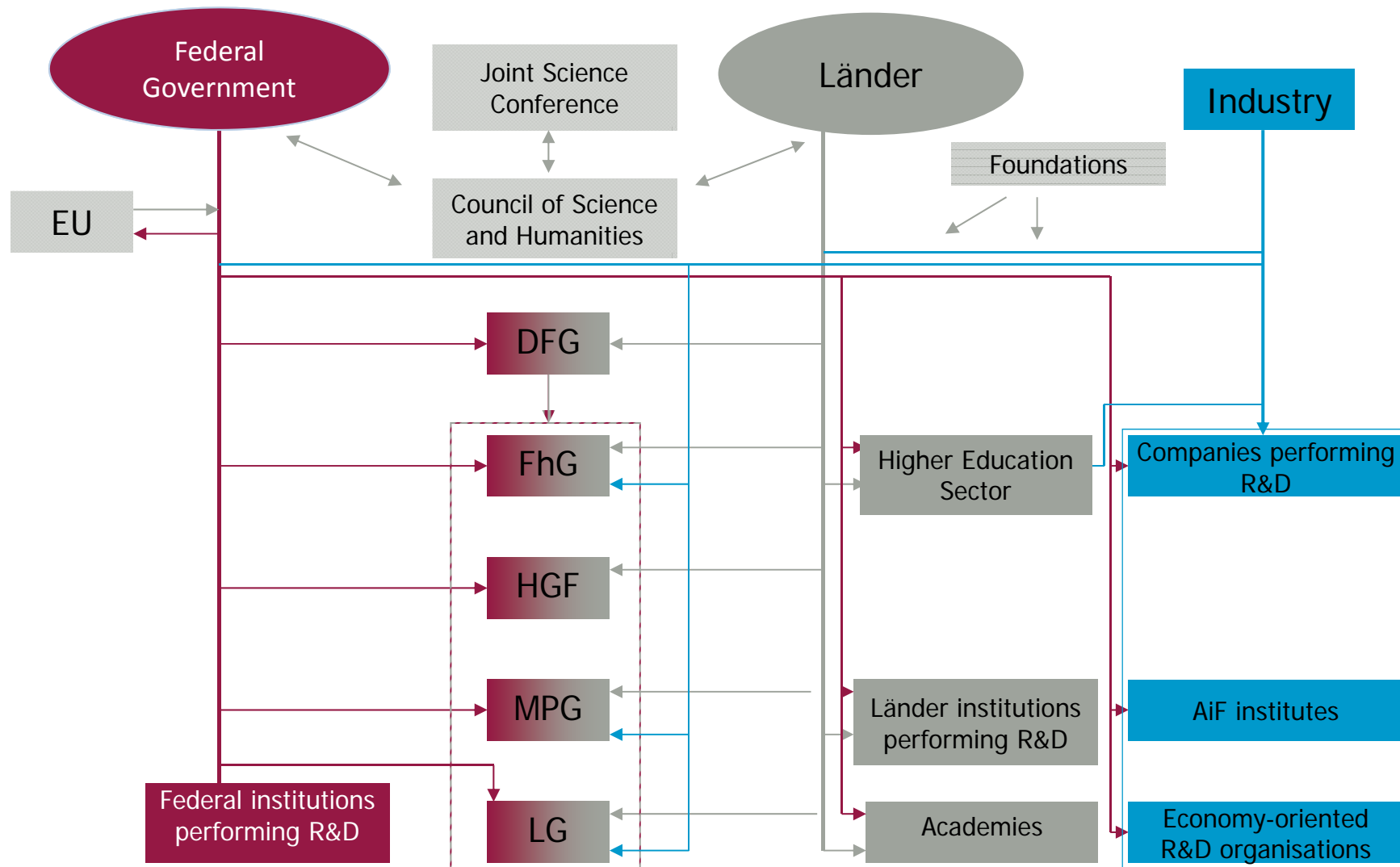
The Polarstern is a polar research vessel operated by the Alfred Wegener Institute for Polar and Marine Research (AWI).





Foundations

- Make a valuable contribution to safeguarding the quality of research in Germany (Volkswagen, Thyssen, Bosch etc.)
- The Association of German Academic Foundations (Stifterverband) provides an important example of industry's concerted efforts to promote German science and research
 - about 350 foundations, total assets of about €1.4 bn
- 11 organisations play an important role in the German system of foundations via the grants and scholarships (AvH, DAAD)

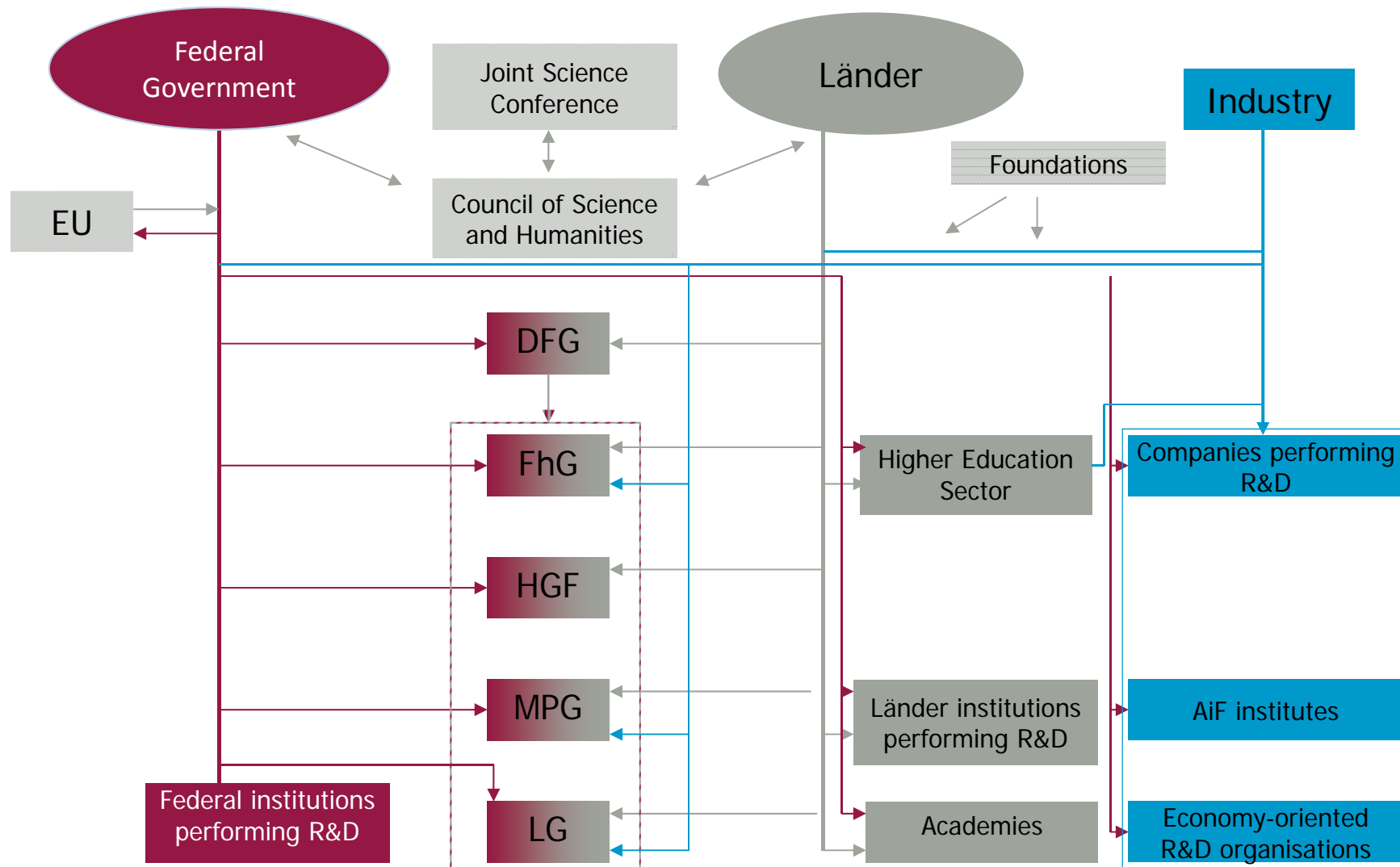


Higher Education Institutions

Facts and Figures (2012):

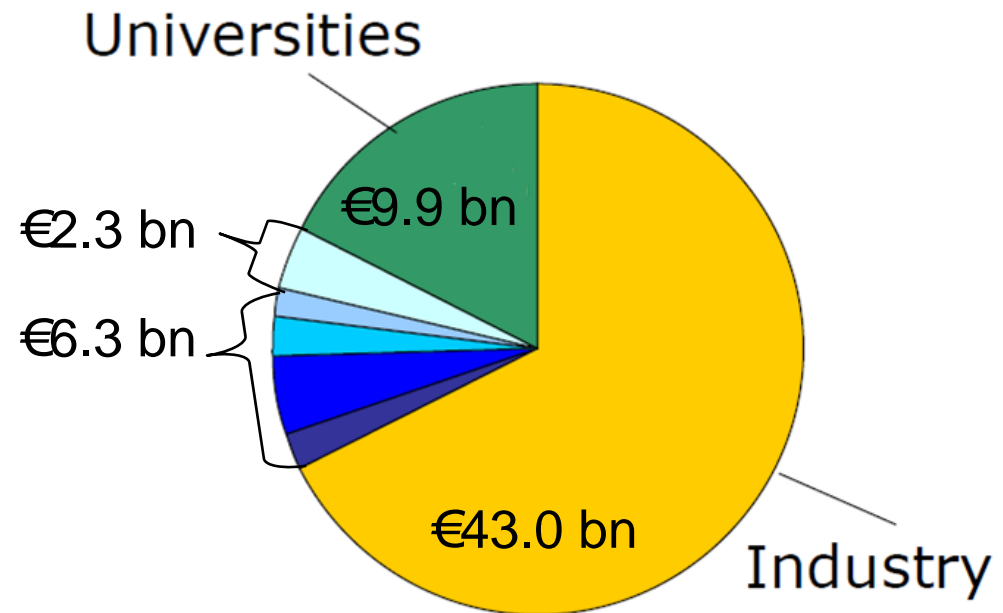
- 392 institutions, incl. 108 universities, ~ 200 institutions of applied science, 6 educational institutions, 52 art colleges, 16 theological institutions and 210 other colleges
- 112 of which are in private and 38 clerical owned
- Political and public voice: German Rectors' Conference

- 2.38 million students enrolled in German higher education institutions, 22,000 international doctoral students, 12.5% foreign students and 31,000 foreign academics



Proportion of R&D Expenditures

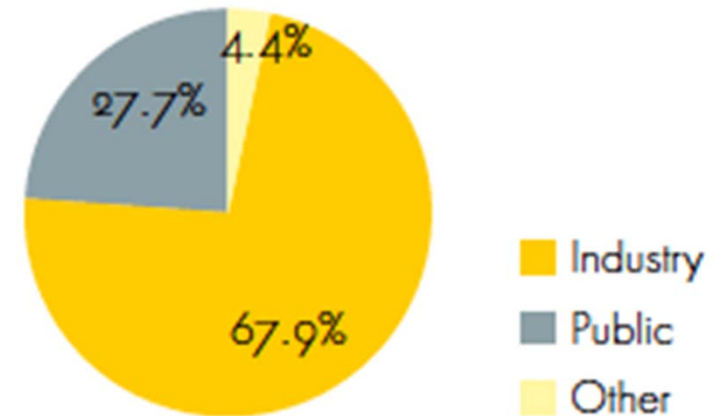
- Max Planck Society
- Helmholtz Association
- Fraunhofer -Gesellschaft
- Leibniz Association
- other public or private research institutes



Gross Domestic Expenditure on R&D: €69.9 bn (in 2010), ~ 3% of the GDP (with an annual increase)

Industry I

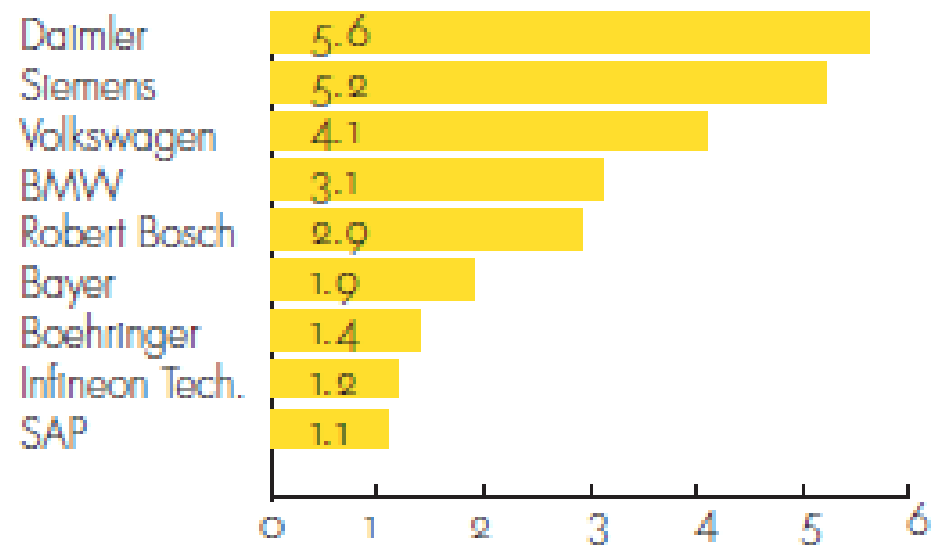
- Industry funds 2/3 of the gross domestic expenditure on R&D
- Majority of industry's total R&D expenditure remains within the industrial sector: ~ 92% of industry's €38.6 bn in internal R&D business enterprise expenditures



- The state provides a total of €2.3 bn in research support for research projects of the business enterprise sector

Industry II

- The automotive sector is the leading industrial spender on R&D (~ 40%), followed by producers of office machines, IT equipment and electrical equipment (~ 19%), chemical industry (17%) and machine tools (9%)



R&D expenditures in billion EUR (2005)
Source: Eurostat

Industry III



Innovation made in Germany: The automotive sector.

- Industry-funded research lead to realizable results and applications
- 2/3 of the annual funds invested in research come from industry

Facts and Figures



shares of the internal industrial research budget: 13.5% small enterprises (up to 249 employees), 8.3% medium-sized enterprises (250-500), 78.2% big enterprises (more than 500 employees) (2009)



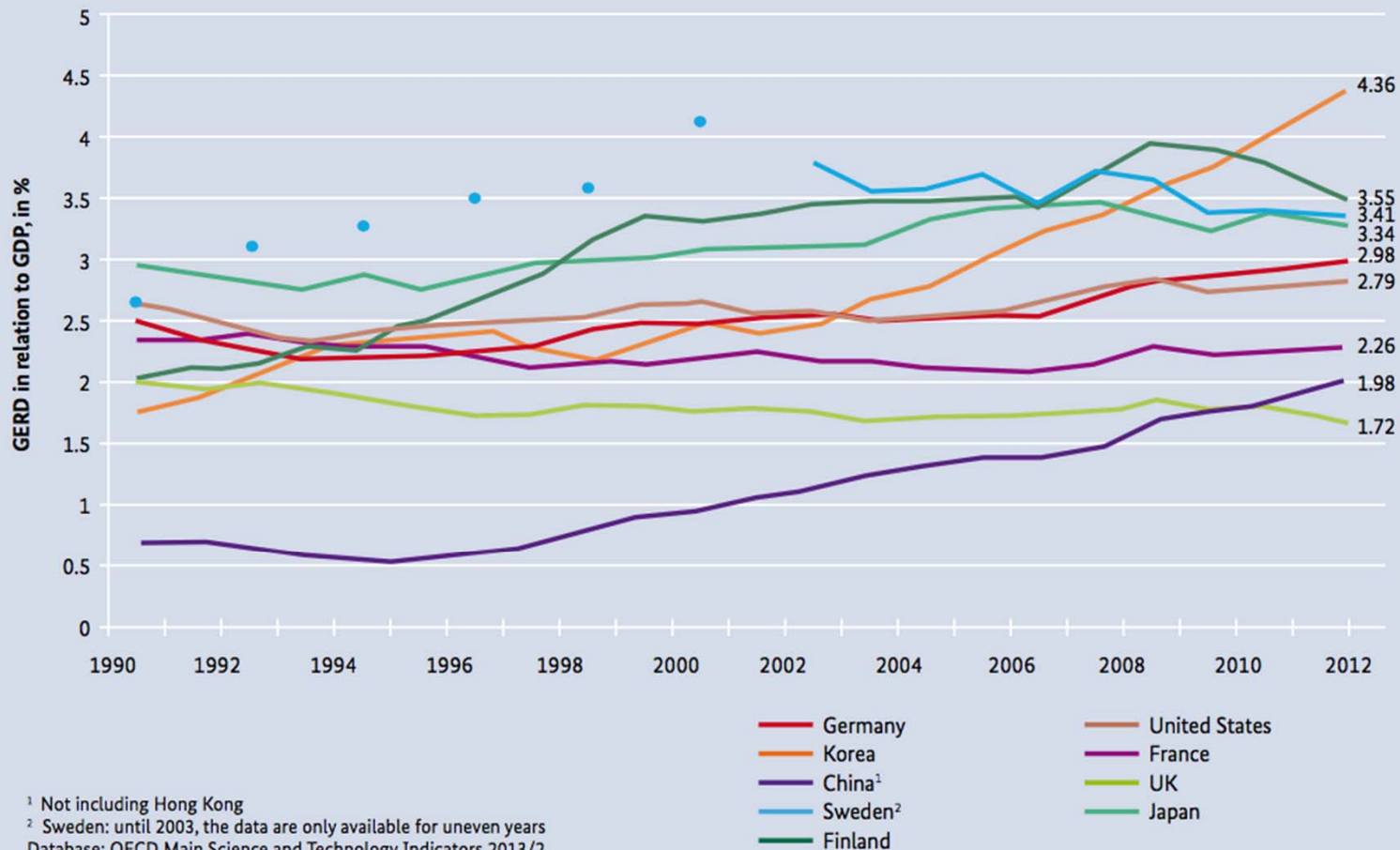
332,500 research staff,
including 183,00 scientists (2009)



annual budget (2012, estimated):
approx. 49.9 billion euros (internal R&D expenditure)

R&D funding in OECD countries in proportion to GDP

Fig. 27 Gross domestic expenditure on research and development as a fraction of the gross domestic products of selected countries (R&D intensity), 1991–2012

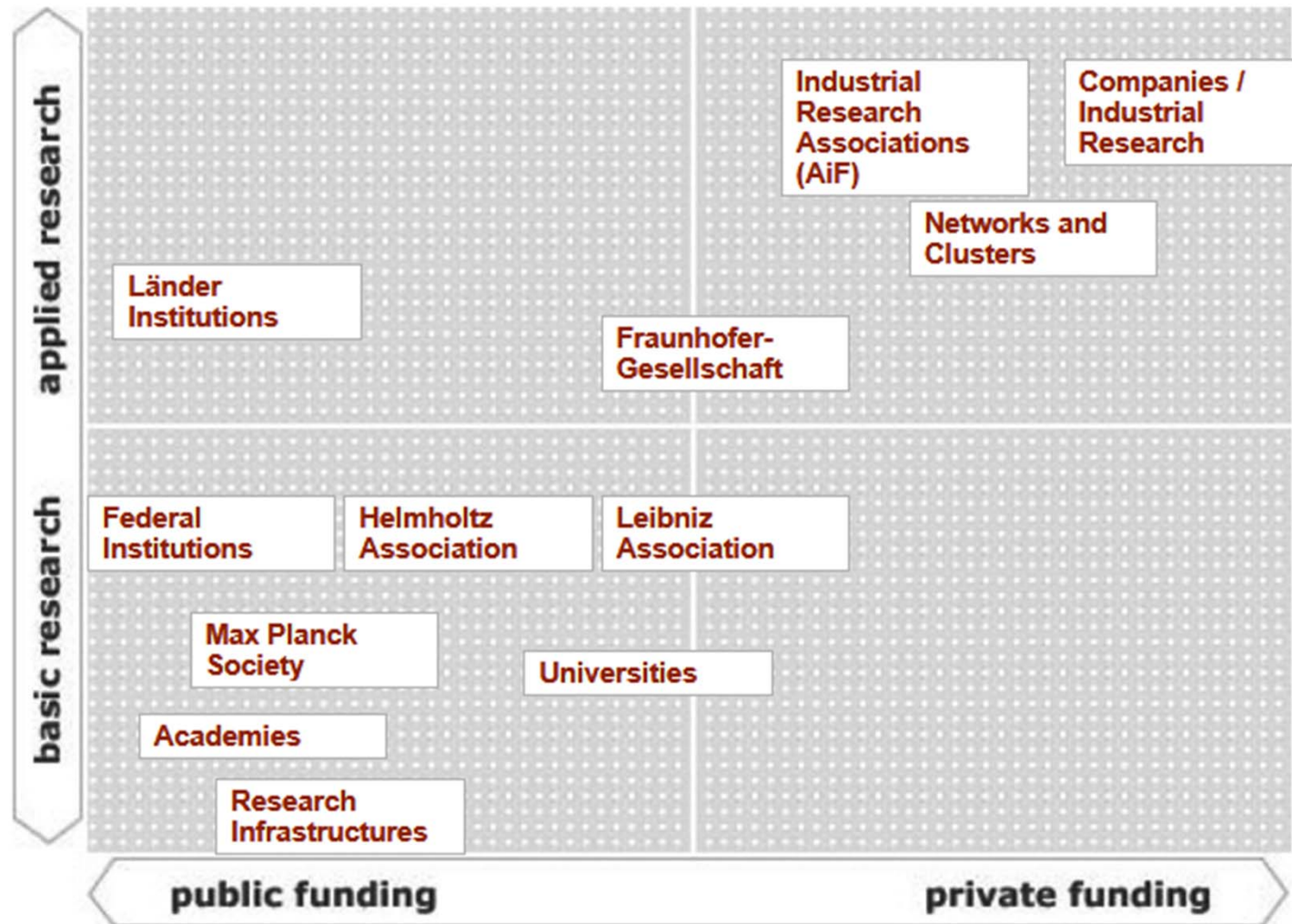


¹ Not including Hong Kong

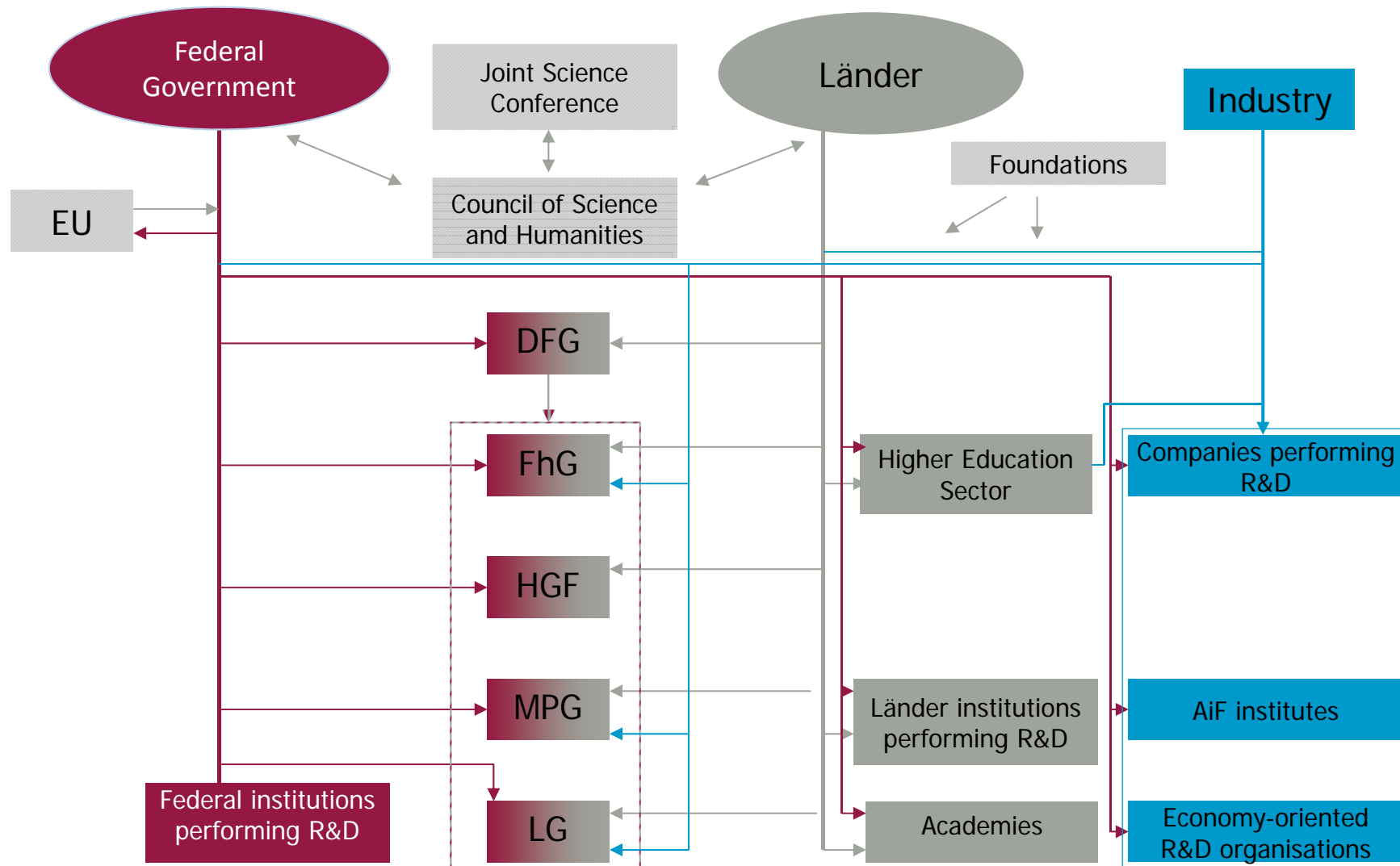
² Sweden: until 2003, the data are only available for uneven years

Database: OECD Main Science and Technology Indicators 2013/2

Research-Performing Organisations



Quality Management



The German Council of Science and Humanities

- Wissenschaftsrat (WR) is an important instrument of cooperative federalism for the advancement of science in Germany
- The scientists and figures of public life in its ranks work at equal level with representatives of the Federal Government and the Länder governments
- WR mediates not only between scientists and policymakers, but also between the Federal and the Länder governments



German Research Foundation

- Central self-governed organisation of German science
- Total budget: € 2.3 bn, financing: Federal Government 67 %, 33% Länder, small contributions by foundations and private donations

Tasks:

- Support for research and its cooperation
- Supporting young scientists
- providing scientific advice for parliaments and authorities



Political Research Initiatives

Initiative for Excellence

Higher Education Pact

Joint Initiative for Research and Innovation

High-Tech Strategy

Internationalization Strategy

Excellent Universities in Germany



Aims of the Excellence Initiative:

- Promote top-level research
- Improve the quality of universities
- Increase international competitiveness

Two programme phases:

- 1.9 bn €; 2006 - 2012
- 2.7 bn €; 2012 - 2017

Thank you very much for your attention!



Sources

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