



Governance Principles of Benchmark Universities

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Why Governance Principles ??

ability to decide and act

on the basis of respect and deep knowledge

of the Institution

and of the experience of our peers

ETH Zurich at a glance



Founded 1855

- Driving force of industrialisation in Switzerland

ETH Zurich today

- One of the leading international universities for technology and the natural sciences
- Place of study, research and employment for approximately 29,000 people from over 110 different countries

Reasons for success:

- Excellent education
- Ground-breaking fundamental research
- Putting new findings into practice

Key statistics

	2000	2010	2014	Percentage women	Percentage international
Students (Headcount)	10,693	16,343	18,616	31%	37%
of which Bachelor students	n. a.	7,483	8,502	30%	20%
of which Master students	n. a.	4,233	5,159	31%	38%
of which Doctoral students	2,261	3,507	3,975	31%	69%
Professors (Headcount, includes dual professors)	351	446	498	13%	67%
Professors (full-time equivalents)	333	413	467	13%	69%
Personnel (full-time equivalents)	5,464	7,284	8,143	32%	55%
of which scientific staff	3,390	4,479	5,065	28%	69%
Expenditure (CHF million)	1,059	1,359	1,556		
of which federal financial contribution	915	1,082	1,210		
of which third-party funding	144	277	346		

Locations

Main location in Zurich

- Campus Zentrum: Historic main building in the heart of Zurich, built by Gottfried Semper
- Campus Hönggerberg: Modern campus, which links science, the business world and the public in exemplary fashion

Additional locations in Switzerland

- Basel: Department of Biosystems Science and Engineering
- Lugano: Swiss National Supercomputing Centre (CSCS)
- Other decentralised entities

Research facility in Singapore

- Singapore-ETH Centre for Global Environmental Sustainability (SEC)



Top university in continental Europe



THE World University Ranking
from the Times Higher Education:
No. 9 in the world (2015/16)

QS World University Ranking
from Quacquarelli Symonds Ltd:
No. 9 in the world (2015/16)

Academic Ranking of World Universities
from Shanghai Jiao Tong University:
No. 20 in the world (2015)

Objectives in Teaching, Research & Transfer:



- **contribute to themes of global importance**
- **identify and develop new themes of global importance**
- **harmonize portfolio with your stakeholders (and funders)**

Strategy towards Top Research Establishment:



- search,
■ appoint and
■ retain
world leaders in research
- provide
unfailing administrative support
(decisions, structures, processes)
- nurture
vibrant peer atmosphere

21 Nobel Laureates

1901	Physics	Wilhelm Conrad Röntgen
1912	Chemistry	Alfred Werner
1915	Chemistry	Richard Willstätter
1918	Chemistry	Fritz Haber
1920	Physics	Charles-Edouard Guillaume
1921	Physics	Albert Einstein
1936	Chemistry	Peter Debye
1938	Chemistry	Richard Kuhn
1939	Chemistry	Leopold Ruzicka
1943	Physics	Otto Stern
1945	Physics	Wolfgang Pauli
1950	Medicine	Tadeusz Reichstein
1952	Physics	Felix Bloch
1953	Chemistry	Hermann Staudinger
1975	Chemistry	Vladimir Prelog
1978	Medicine	Werner Arber
1986	Physics	Heinrich Rohrer
1987	Physics	Georg Bednorz / Alexander Müller
1991	Chemistry	Richard Ernst
2002	Chemistry	Kurt Wüthrich



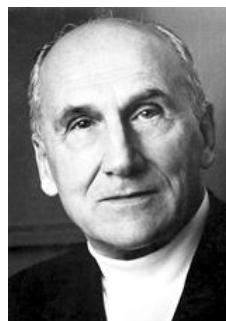
Albert
Einstein



Leopold
Ruzicka



Wolfgang
Pauli



Vladimir
Prelog



Richard
Ernst



Kurt
Wüthrich

Faculty Recruiting at ETH

(courtesy Thomas Eichenberger, ETH => 20 slides, separate file)

16 October 2013



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Core values



Culture of empowerment

- Scope for creativity and innovative ideas

Subject diversity

- Broad spectrum allows knowledge to be combined in original and forward-looking ways
- Courses in the humanities and social and management sciences are an integral part of the education

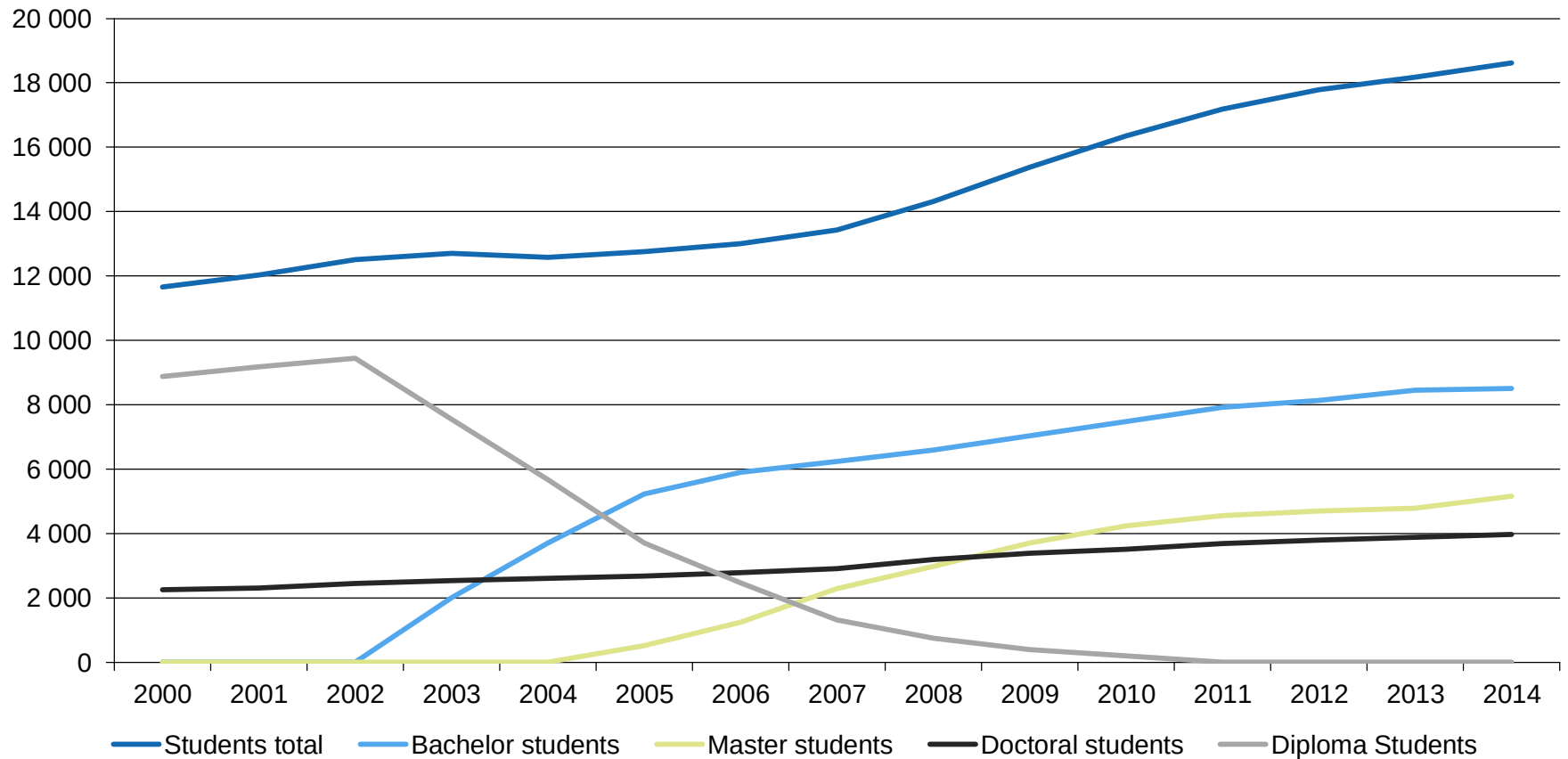
Linking research and teaching

- All researchers participate in teaching
- Early involvement of students in research

Sustainability

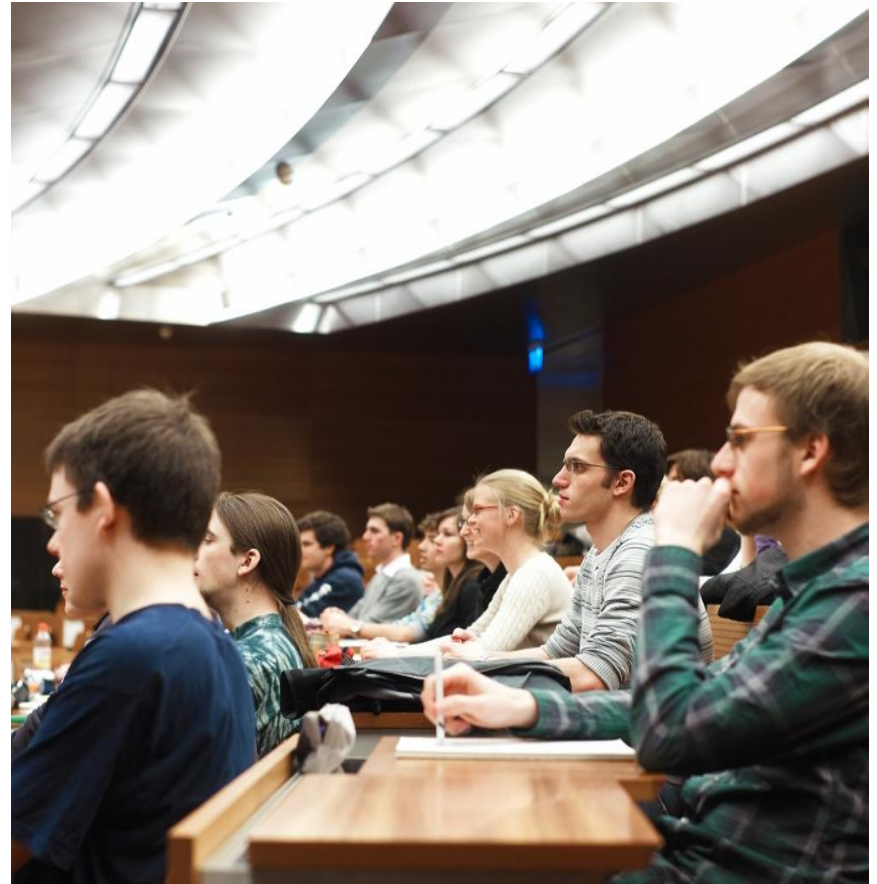
- An integral part of research, teaching and operations

Rising student numbers (Headcount)



Excellent education

- 24 Bachelor and 43 Master courses
- Compact study programmes
 - Bachelor: 6 semesters
 - Master: 3 or 4 semesters
- Low staff-student ratio (39 students per chair)
- Combination of a sound scientific grounding and practical application
- Use of the latest methods in education
- Scholarships for outstanding students
- Entrepreneurial approach encouraged



Degree programmes (1/2)

Engineering Sciences

- Biomedical Engineering (MSc)
- Biotechnology (BSc/MSc)
- Computational Biology and Bioinformatics (MSc)
- Computer Science (BSc/MSc)
- Electrical Engineering and Information Technology (BSc/MSc)
- Energy Science and Technology (MSc)
- Materials (BSc/MSc)
- Mechanical Engineering (BSc/MSc)
- Micro and Nanosystems (MSc)
- Neural Systems and Computation (MSc)
- Nuclear Engineering (MSc)
- Process Engineering (MSc)
- Robotics, Systems and Control (MSc)

BSc = Bachelor

MSc = Master

Natural Sciences and Mathematics

- Biology (BSc/MSc)
- Chemical Engineering (BSc)
- Chemical and Bioengineering (MSc)
- Chemistry (BSc/MSc)
- Computational Science and Engineering (BSc/MSc)
- High Energy Physics (MSc)
- Interdisciplinary Sciences (BSc/MSc)
- Mathematics (BSc/MSc)
- Medical and Industrial Pharmaceutical Sciences (MSc)
- Pharmaceutical Sciences (BSc/MSc)
- Physics (BSc/MSc)
- Quantitative Finance (MSc)
- Statistics (MSc)

Degree programmes (2/2)

Architecture and Civil Engineering

- Architecture (BSc/MSc)
- Civil Engineering (BSc/MSc)
- Environmental Engineering (BSc/MSc)
- Geomatic Engineering and Planning (BSc)
- Geomatics (MSc)
- Integrated Building Systems (MSc)
- Spatial Development and Infrastructure Systems (MSc)

Management and Social Sciences

- Comparative and International Studies (MSc)
- History and Philosophy of Knowledge (MSc)
- Management, Technology and Economics (MSc)
- Public Policy (Officer of the Swiss Armed Forces) (BSc)

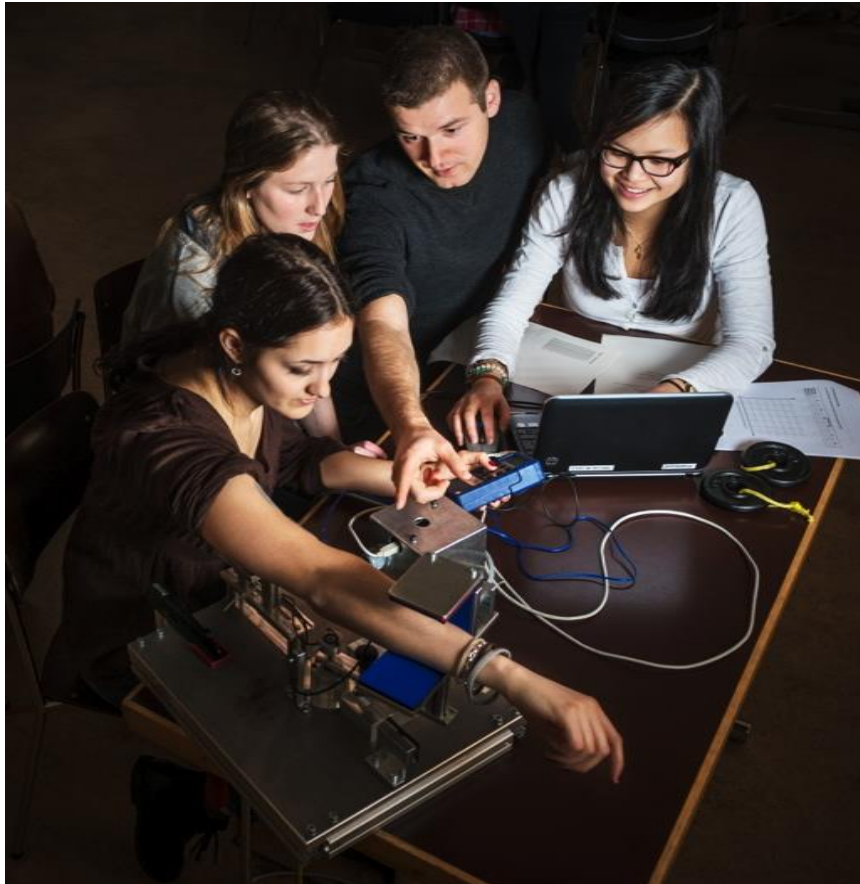
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MSc = Master

System-oriented Natural Sciences

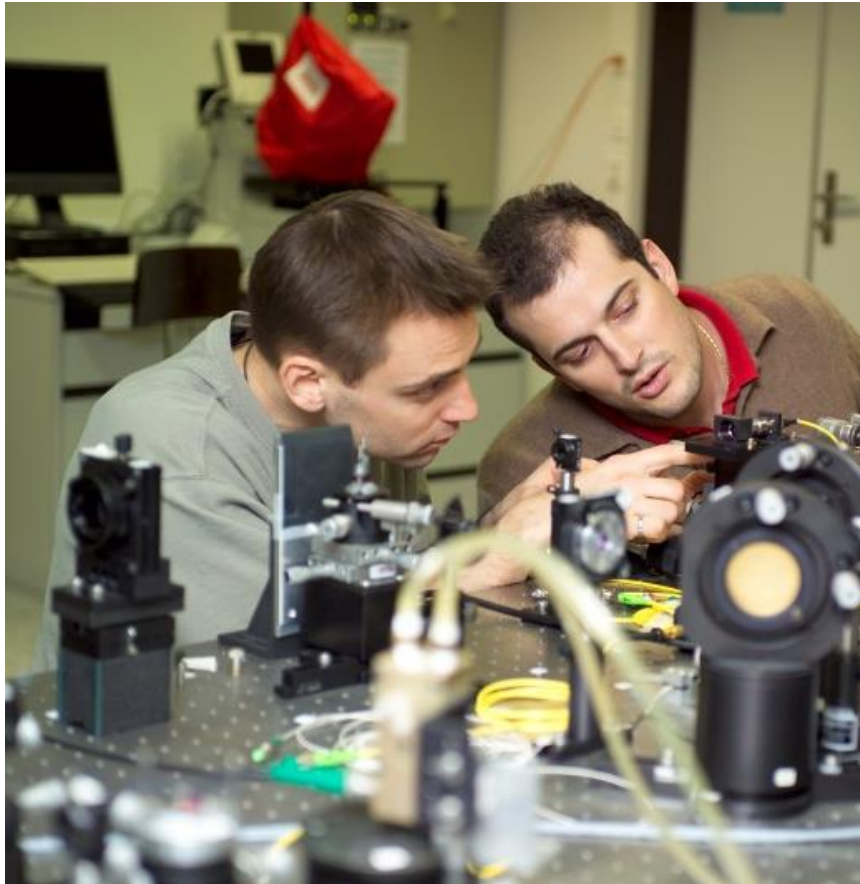
- Agricultural Science (BSc/MSc)
- Applied Geophysics (MSc)
- Atmospheric and Climate Science (MSc)
- Earth Sciences (BSc/MSc)
- Environmental Sciences (BSc/MSc)
- Food Science (BSc/MSc)
- Health Sciences and Technology (BSc/MSc)

Bachelor programmes – an excellent basis



- 8,938 registrations in total (2014)
- 2,657 new entrants (2014)
 - international students: 20%
 - women: 30%
- Teaching an in-depth knowledge of mathematics and other basic sciences
- Theoretical and methodological knowledge of the chosen subject area
- Identification of initial focus areas through choice of elective courses and projects
- Teaching language: German

Master programmes – getting fit for competition



- 5,159 registrations in total (2014)
- 2,311 new entrants (2014)
 - international students: 38%
 - women: 31%
- Specialisation or in-depth study of a subject area
- Strong links with research and practice
- International atmosphere that spurs students on to perform in preparation for a career or doctorate
- Teaching language: mainly English

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Doctorate – for qualified researchers



- 3,976 registrations in total (2014)
- 1,006 new entrants (2014)
 - international students: 70%
 - women: 32%
- Independent scientific work
- Taking responsibility for developing skills in a specialist or interdisciplinary field
- Supervising students

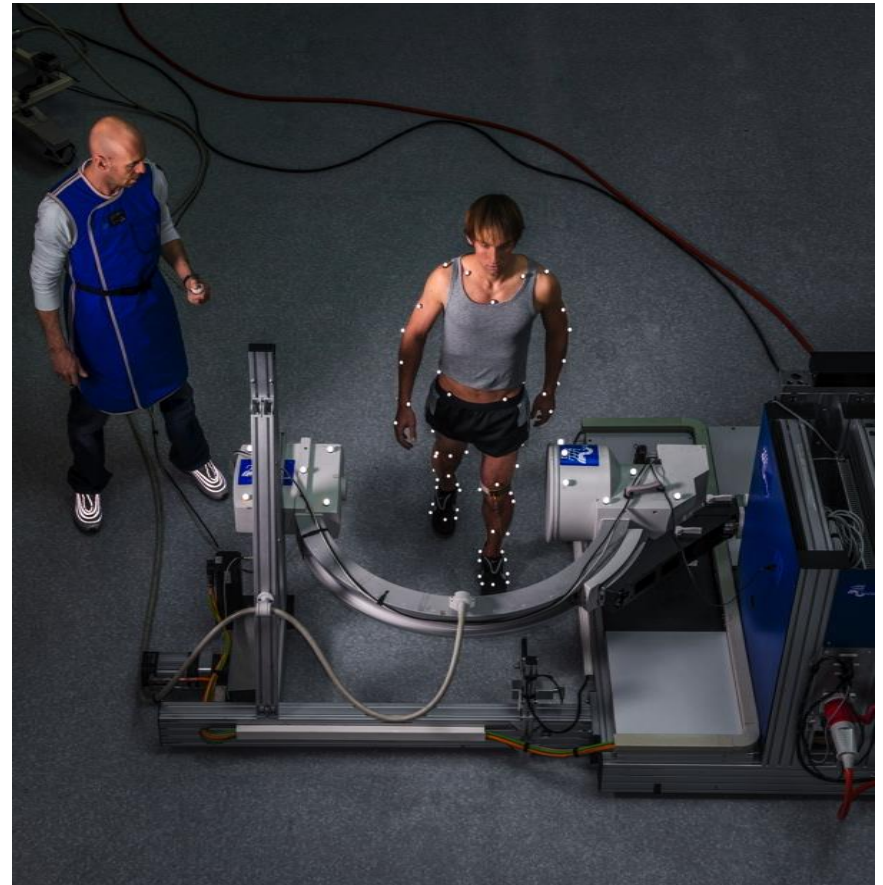
Pioneering research

- Top infrastructure
- International faculty: the best from all over the world
- Ground-breaking fundamental research
- Freedom to take an unconventional approach
- Applying the results for the good of society
- International cooperation with numerous research partners from science, business and industry



Main focus areas

- World food system
- Cities of the future
- Climate change
- Energy
- Health
- Risk research
- Information processing
- New materials
- Industrial processes



Globally networked with leading universities

- International cooperation in research and education
- Partnerships with leading universities



• Research contact

ETH Global, January 2015

International alliances

GlobalTech – Global Alliance of Technological Universities

- California Institute of Technology
- Georgia Institute of Technology
- Imperial College London
- Indian Institute of Technology Bombay
- Nanyang Technological University
- Shanghai Jiao Tong University
- Technische Universität München
- UNSW Australia

GULF – Global University Leaders Forum

- Community of presidents of leading universities

IDEA League

- TU Delft
- RWTH Aachen
- Chalmers

IARU – International Alliance of Research Universities

- Australian National University
- National University of Singapore
- Peking University
- University of California, Berkeley
- University of Cambridge
- University of Copenhagen
- University of Oxford
- University of Tokyo
- Yale University

UNITECH International

- Network of leading European technical universities and multinational companies

Objectives in Teaching, Research & **Transfer**:



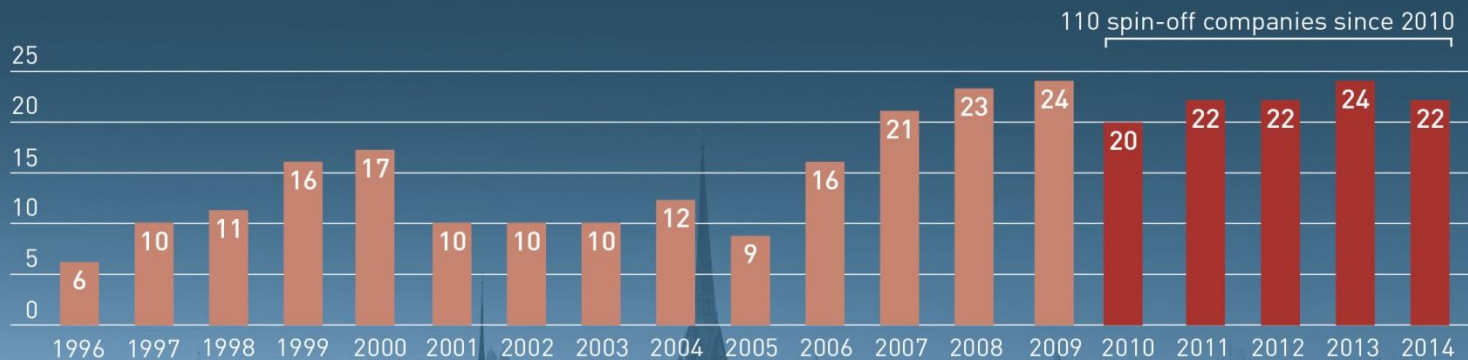
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Stimulating the economy

Knowledge and technology transfer 2014

- 22 spin-offs, 82 new patents registered, 298 cooperation agreements (> CHF 50,000)

305 spin-off companies founded at ETH Zurich between 1996 and 2014



Distinguished partners: examples of cooperation

Energy, Environment and
Sustainability



SIEMENS

Science and Technology
for Health



Information and Complexity



Material, Technologies
and Processes

SULZER



Talents



Miscellaneous



Services at a national level



Swiss Economic Institute (KOF)

- Information from business and economic research
- Forecasts for the Swiss government and for business

Swiss Seismological Service (SED)

- Measures earthquake activity
- Produces hazard maps to assess seismic risk

Swiss National Supercomputing Centre (CSCS)

- Supercomputing services for Swiss universities and research institutions

ETH Library

- Switzerland's largest scientific library with 7.5 million printed and digital documents

Dialogue with society

Scientifica: the Zurich Science Days

- Exhibition, lectures and shows for a wide audience, presented by researchers and students of ETH Zurich and the University of Zurich

"Treffpunkt Science City"

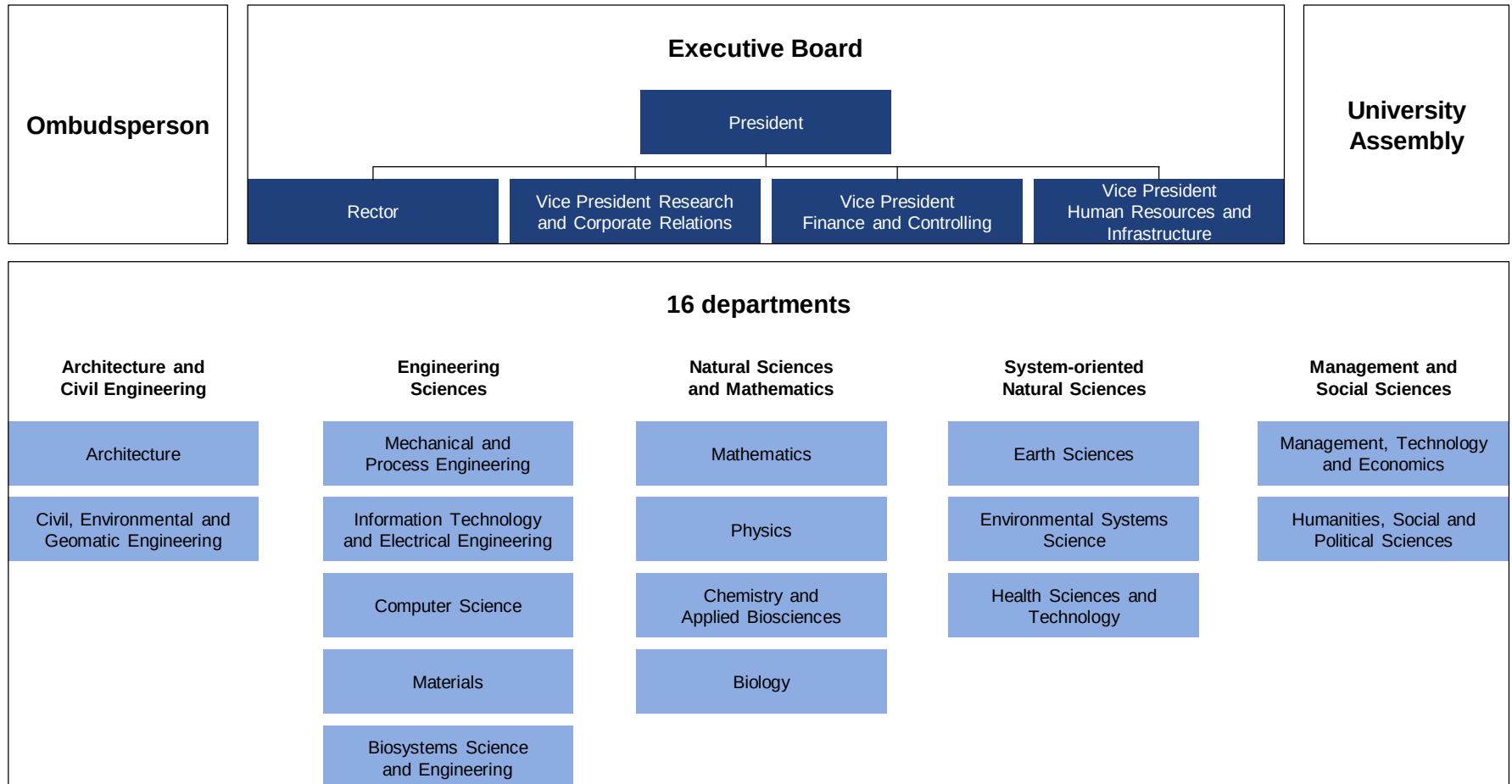
- Series of public events on selected scientific themes

Numerous other events

- Platform debates
- Talks
- Exhibitions
- Information events
- and many more



Organisation



Competence centres for promoting interdisciplinary cooperation

... at ETH Zurich

- Competence Centre for Materials and Processes (CC-MaP)
- Energy Science Center (ESC)
- Risk Center
- Teaching and Learning (EducETH)
- World Food System Center (WFSC)

... with other institutions

- Center for Climate Systems Modeling (C2SM)
- Center for EXperimental and Clinical Imaging TEchnologies (EXCITE) Zurich
- Neuroscience Center Zurich (ZNZ)
- Zurich-Basel Plant Science Center (PSC)
- Competence Center for Personalized Medicine (CC-PM)

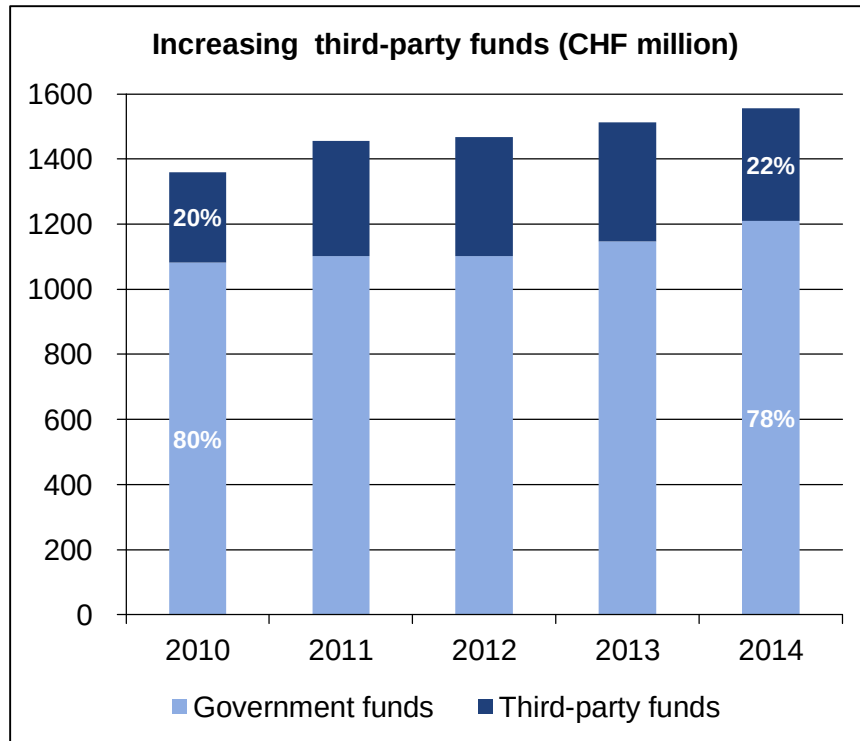
... at ETH Domain

- Biomedical Imaging (NCCBI)
- Energy and Mobility (CEM)
- Environment and Sustainability (CCES)
- Materials Science (CCMX)

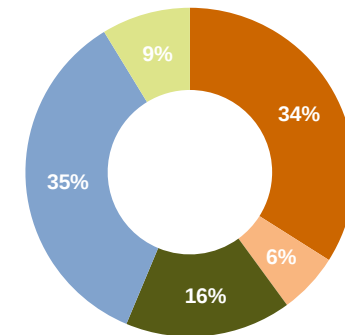
Solid block grant and increasing third-party funding

Expenditure 2014: CHF 1,556 million

Third-party funds: CHF 346 million (22%)



Origin of third-party funds



- National organisations (research sponsorship)
- Research contracts from federal offices (federal research contracts)
- European research programmes (framework programmes)
- Partnerships with business, other third-party funding
- Endowments and legacies



Thank you for your attention.