Swiss SKA Day
May 18, 2016

Welcome to Ecole Polytechnique Fédérale de Lausanne
EPFL

Karl Aberer, Vice-president for Information Systems

EPFL History

1968 – Act on the Federal
Institutes of Technology

1853	1946		Today

Maison Bischoff
rue Saint-Pierre
In Lausanne

Ancien Hôtel Savoy
29-33 avenue de Cour
In Lausanne

Ecublens-Dorigny

Ecole spéciale de Lausanne	EPUL		EPFL
Students	11	399	1,293	9,921 (2014)
Faculty			56	338 (2014)

ÉCOLE POLYTECHNIQUE
FÉDÉRALE DE LAUSANNE

EPFL today

Campus (2014)

9,921 students, of whom 2,032 PhD students

338 faculty

4,508 staff (scientific & technical)

Spending (2014)
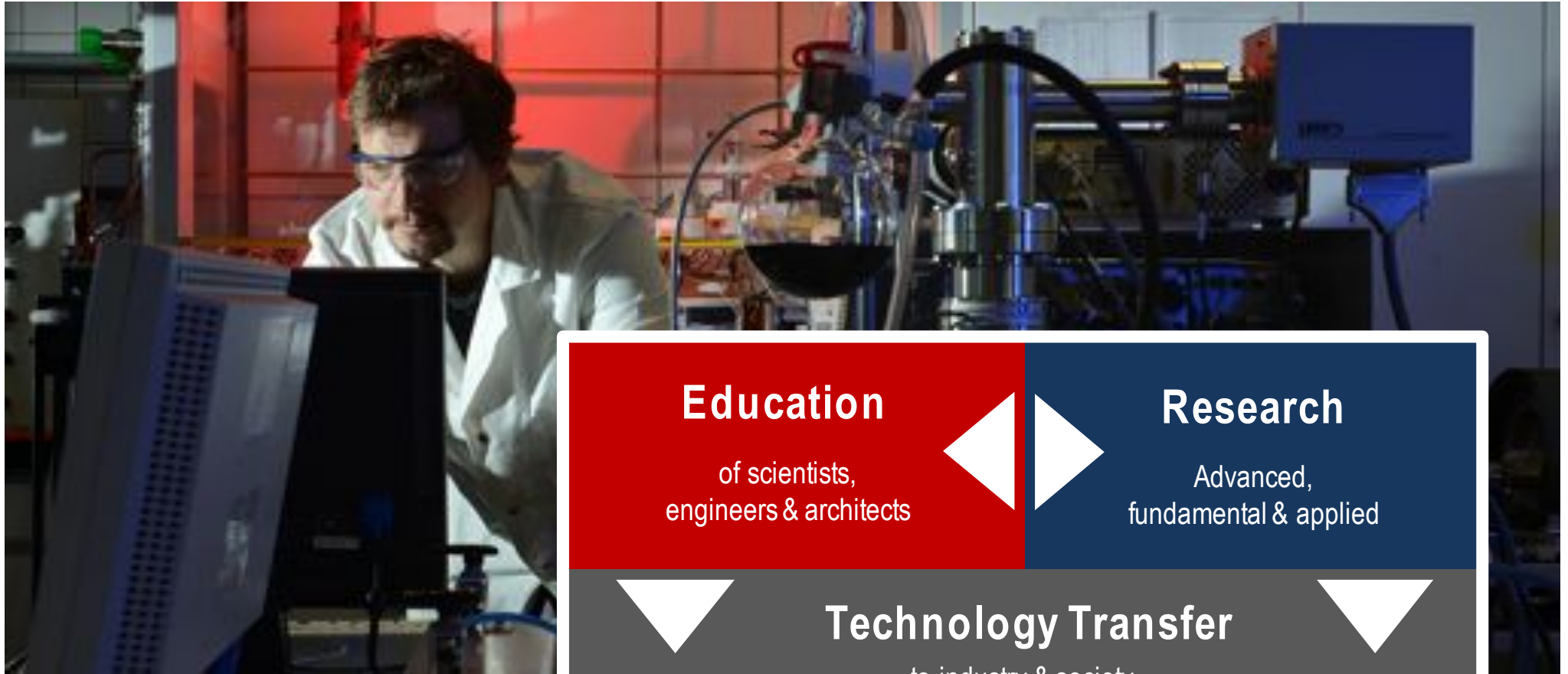
CHF 645M from State budget

CHF 251M other funding (EU, SNSF, private...)

Total: CHF 896M

EPFL's three missions according to the Federal Act
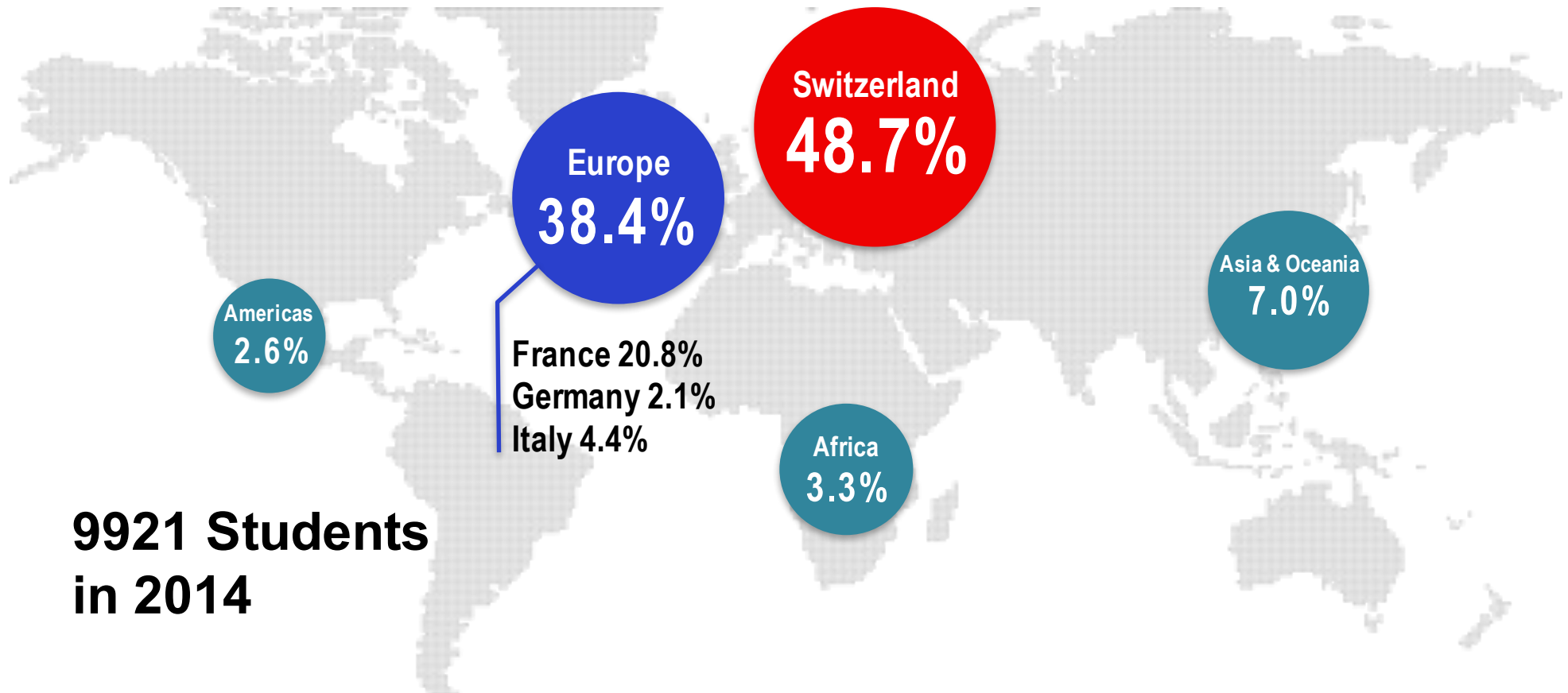

Education
of scientists, engineers & architects

Research
Advanced, fundamental & applied
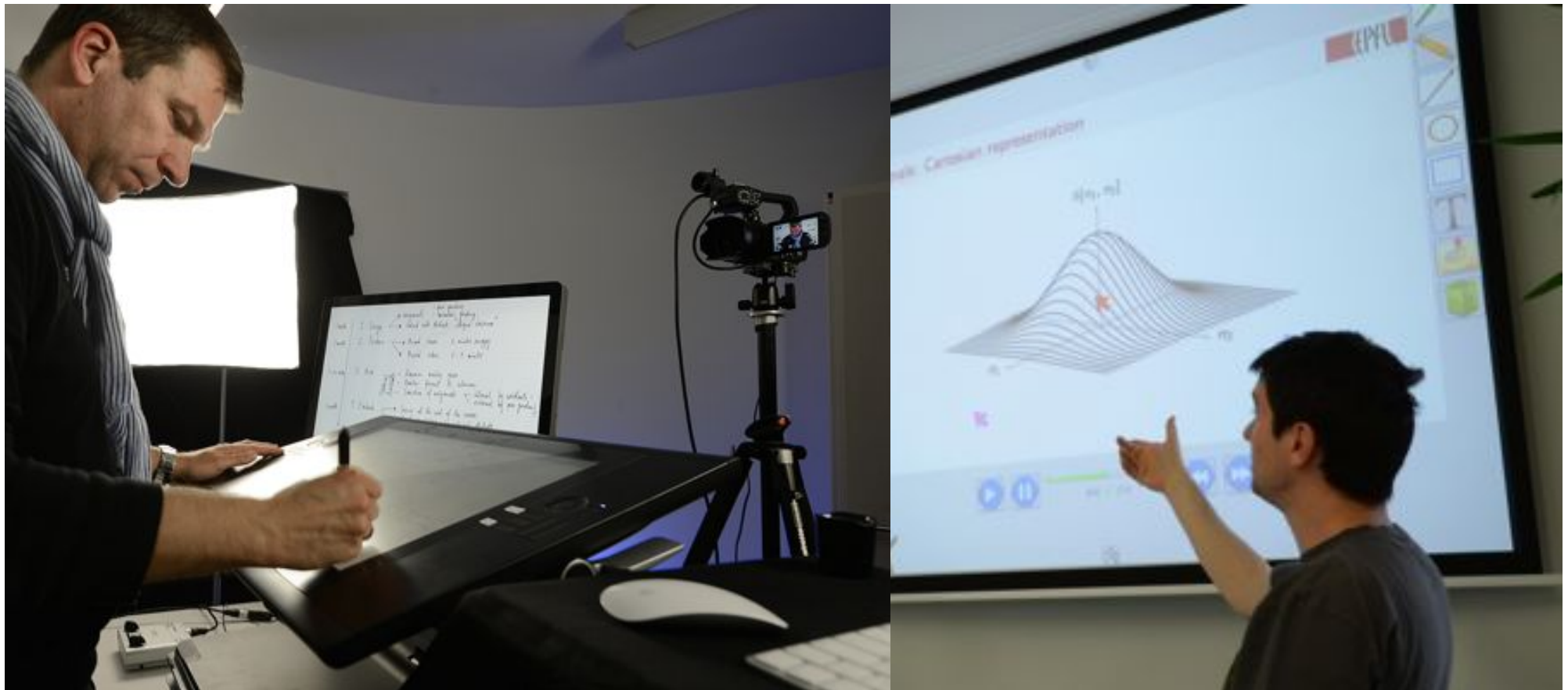
Technology Transfer
to industry & society

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Origin of Students (Bachelor+Master+PhD)

Switzerland
48.7%

Europe
38.4%

Asia & Oceania
7.0%

Americas
2.6%

Africa
3.3%

France 20.8%
Germany 2.1%
Italy 4.4%

9921 Students
in 2014

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MOOCs (Massive Open Online Courses)

September 2012 – February 2016 : 1'173'888 registered participants in 186 countries

58'077 users passed EPFL MOOCs with statement of accomplishment

Rankings 2015

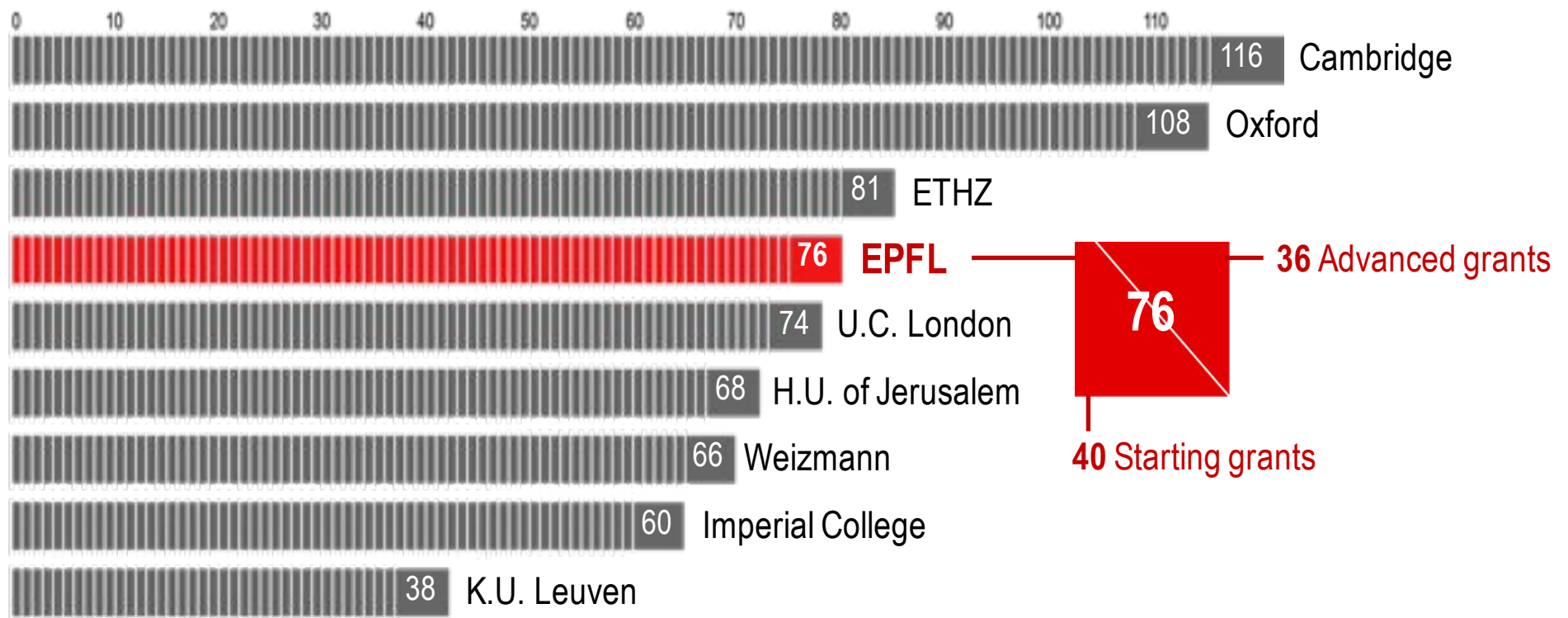THE under 50 : 1er ➡ **EPFL : best young university in the world**

		EUROPE	MONDE
QS	Eng. & Technology	5	17
	Global performance	6	14
THE (2014)	Eng. & Technology	5	12
	Global performance	8	34
Shanghaï	Eng./Tech. & Computer Science	3	14
	Global performance	37	103
Leiden	PP (top-10%) indicator	2	15

European Recognition - ERC Grants (European Research Council)

EPFL 4th in Europe, cumulative data for 2007-2013

	Grants
Cambridge	116
Oxford	108
ETHZ	81
EPFL	76
U.C. London	74
H.U. of Jerusalem	68
Weizmann	66
Imperial College	60
K.U. Leuven	38

76

36 Advanced grants

40 Starting grants

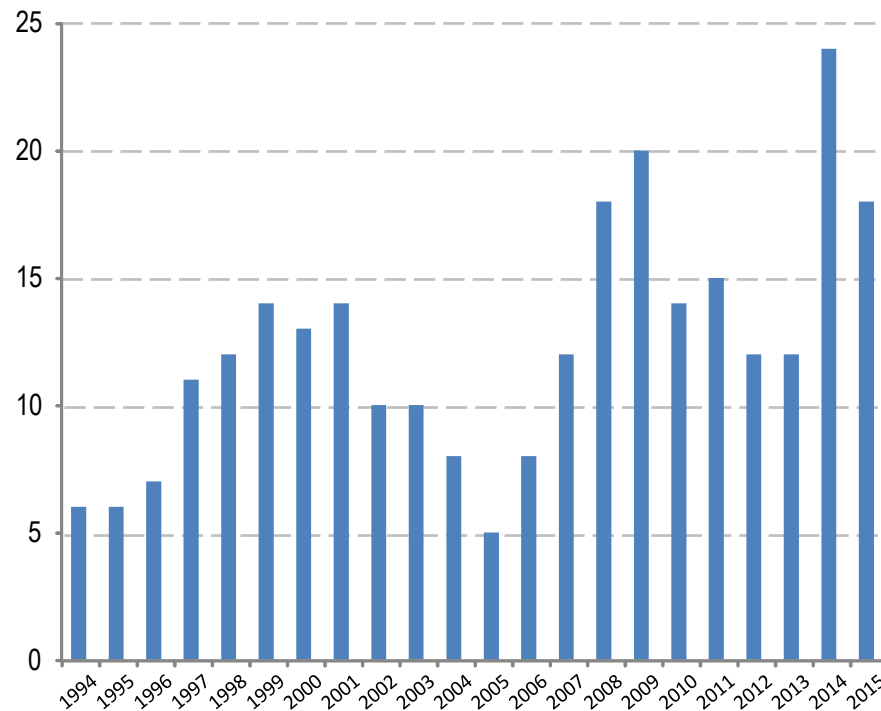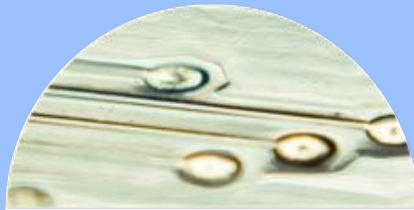ÉCOLE POLYTECHNIQUE
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Development of EPFL start-up

217 start-up
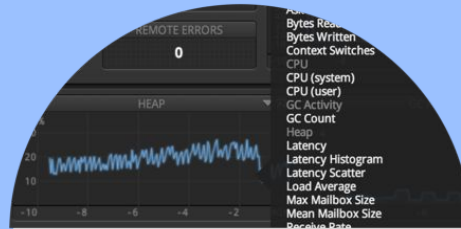created between 2000 and 2015

A culture of start-ups – a few EPFL success stories

KANDOU TECHNOLOGIES
Ultra-fast electronic buses
$10M from private investors
Founded in 2011

TYPESAFE
Scala Language used by Twitter,
$21M since May 2011 with US VCs
Founded in 2010

ALEVA
Electrodes for neurosurgery
Raised **CHF14M** with Swiss
Venture Capital
Founded in 2008

SIRI
EPFL Licence,
Acquisition by Apple in May 2011
Founded in 2008 in Silicon Valley

NEXTHINK
Software for businesses
More than **CHF16M** with Swiss and French VCs
More than 60 employees
Founded in 2004

SENSIMED
Active lenses for glaucoma prevention
Raised **CHF45M** with Swiss & German VCs
Founded in 2003

EPFL Innovation Park

INFORMATION TECHNOLOGY
FINANCE
COMPUTING

ELCA   Logitech   CISCO   CREDIT SUISSE

HEALTH
NUTRITION

BIOCARTIS   DEBIOPHARM GROUP   NayaMed.   Nitto   Nestlé Institute of Health Sciences   MERCK SERONO

ENGINEERING, TRANSPORT,
MATERIALS

ViaSat   PSA PEUGEOT CITROËN   Constellium

... and over 110 start-ups

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Big Data and Digital Science

Challenges for Universities

Education

> *Digital revolution in education*: massive open online courses (MOOCs), data-driven education

> *Educating for the Digital Revolution:* new profiles needed: Data Scientists, Digital Medicine, Cyber-Security etc.

Research

> *Big Data for Research (data-driven science):* affecting all disciplines (Humanities, Health, Environment)

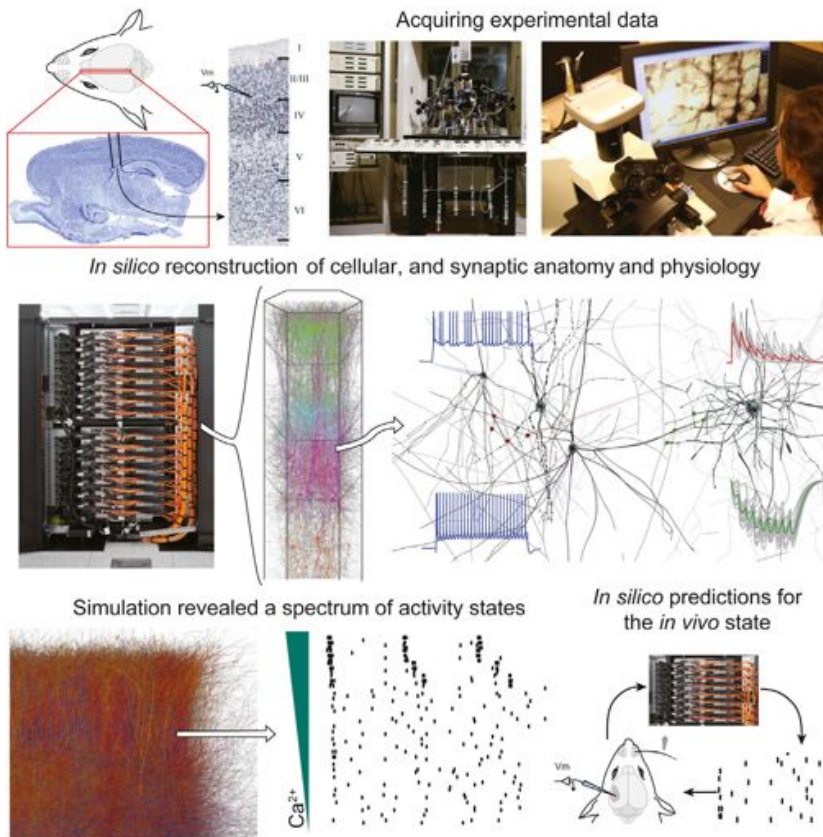> *Research for Big Data*: cloud computing, machine learning, cyber-security

Impact   **Needs**

Strategic Projects in Data-Driven Science
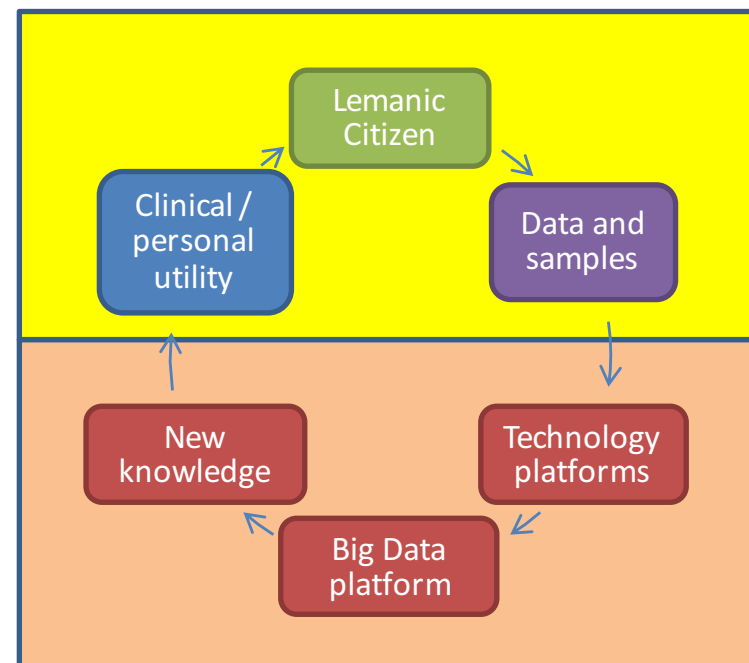
Human Brain Project

- EU FET Flagship project
- 1 billion € budget
- Consortium: 400 researchers, 113 institutions from 24 countries

Acquiring experimental data

In silico reconstruction of cellular, and synaptic anatomy and physiology

Simulation revealed a spectrum of activity states

In silico predictions for the *in vivo* state

Health 2030: The Lemanic Center for Personalized and Digital Health

- Sequencing 10'000 genomes
- Combine with factors influencing personal health: from environment to media
- Data-driven clinical research and personalized health care
- Important **privacy problems** with medical and genomic data

Research for Big Data

EcoCloud Research Center on Energy-efficient Cloud Computing

- **Mission**
  - Holistic approach to **Green-IT**
  - Mobile phone energy efficiency in Datacenters!
  - Maximizing value from data
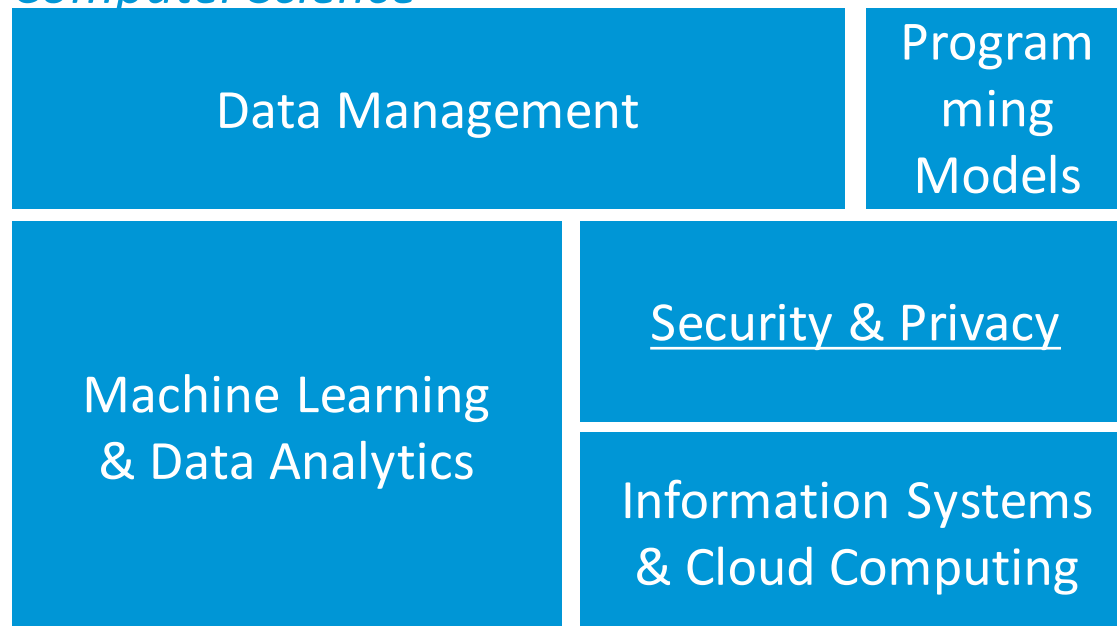
  - 16 faculty, 50 researchers
  - $3M/year budget

Swiss Data Science Center

Initiative of the ETH Board

- Support for developing digital science in different research disciplines
- 60 Mio investment for 2017- 2020
- Data science education at master level

Computer Science

Mathematics

Data Management	Programming Models	Statistics
Machine Learning & Data Analytics	Security & Privacy	
	Information Systems & Cloud Computing	

Enjoy the Conference and the Campus!