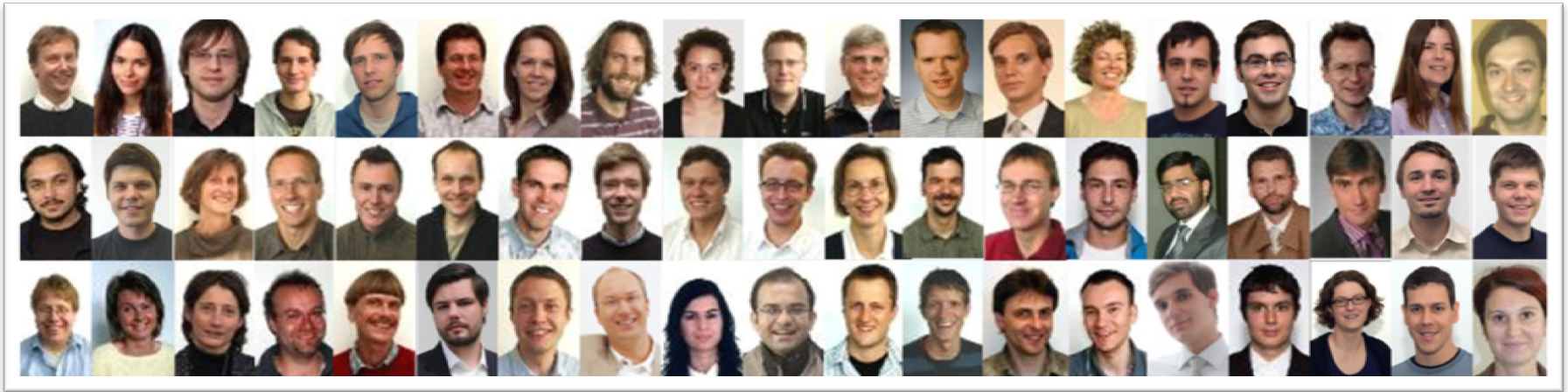


Darf Verwertung bereits in der Forschungsplanung mitgedacht werden? Innovation beginnt bei der Forschungsplanung!

Gerhard P. Fettweis – Vodafone Chair Professor



- Create world-class talent pool for industry and academia
- Create world-class research results in collaboration with academia and industry
- Enable members to startup their own company after graduation

Trickle / Pipeline of Technology

Vodafone Chair Funding

- e.g. fundamental limits of cellular

DFG funding

- e.g. fundamentals of interference cancellation

BMBF

- e.g. EASY-C
- e.g. Cool Silicon, fast

- → Industry transfer

EU

- e.g. Artist4G
- e.g. EARTH

- → Industry transfer

Startups

- Bring ideas to market

The Team

- 1 professor
- 8 senior scientists/lecturers/post-docs
- 32 Ph.D. students
- 15+ Master students
- 4 program managers
- 8 start-up incubator employees
- 5 secretaries
- 5 lab engineers

IPP Sponsors



Accomplishments

Scientific:

- 62 Ph.D. grads
- 200+ Ms. grads
- 700+ publications
- 12,000+ citations
- 200+ patent appl.
- 85+ patent families

Innovation:

- 10 spin-outs
- 350 engineers

Funding:

- € 50M Chair
- € 50M VC
- € 1/2B projects

Project Partners



The Vodafone Chair's Startup History

system on ic

2002

NXP
founded by Philips

founded
1999 OnDSP™ based WLAN chip-sets

radioplan

2006

amd docs
actix

2000 SON systems

SIGNALION

2012

NATIONAL
INSTRUMENTS™

2003 Broadband Wireless HW (LTE,...)

IN-CIRCUIT

2006

IN-CIRCUIT

2004 Module and reference board design

DRESDEN
SILICON

2007

SIGNALION

2005 MPSoC semiconductor IP

freedelity
RADIOOPT

2007 Wireless audio

blue wonder
communications

2010

intel

2008 Network performance measurement

2008 LTE Cellular Handset Chip IP

INRADIO
integrated radio solutions

2010 Satellite Communications

exelonix

2013 Assisted living

Airrays

2014 Small Cells

STARTBAHN
Venture Fonds

2012 Startbahn Venture Fund

5G

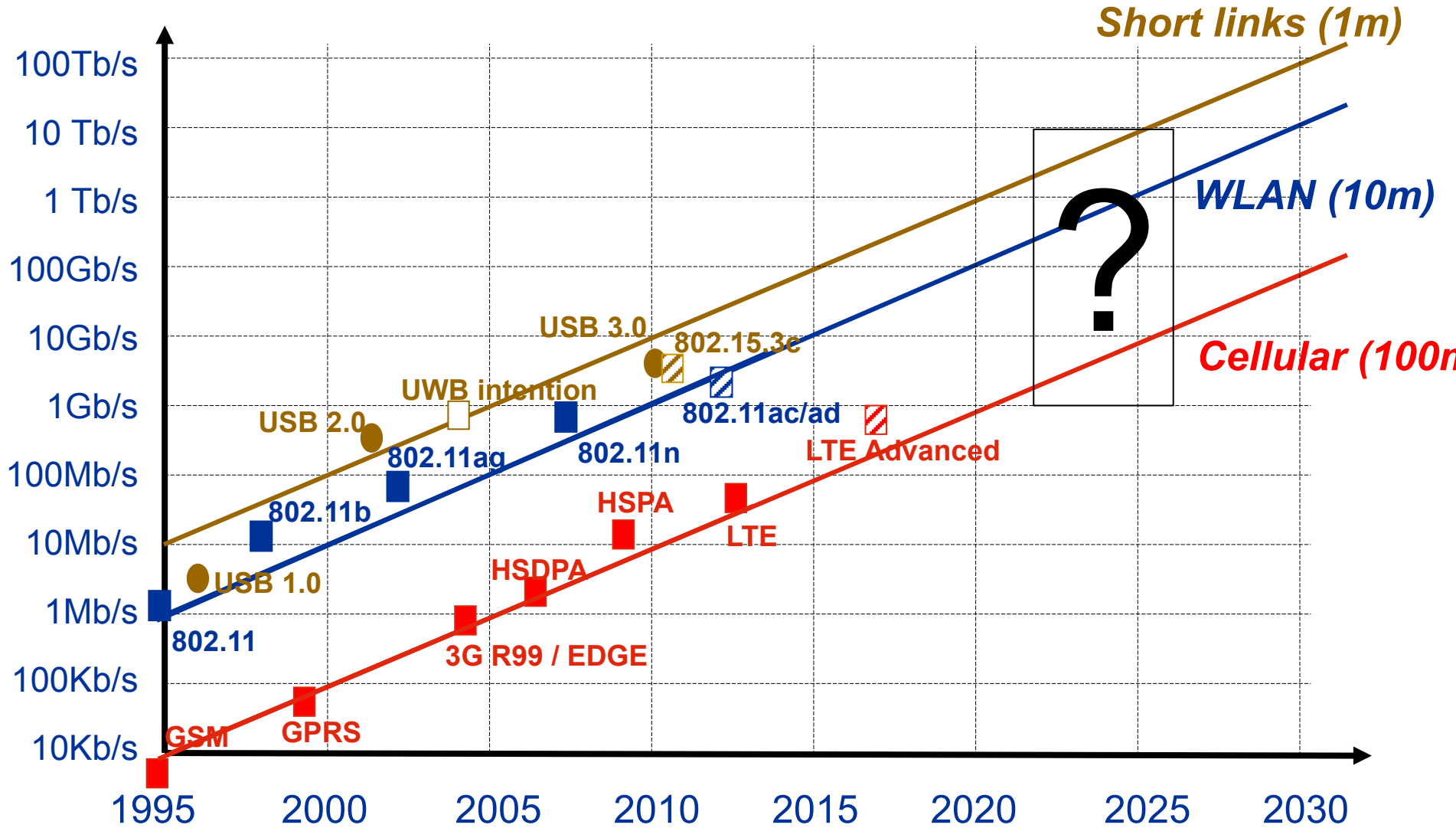
THE WIRELESS ROADMAP

G. Fettweis

A 5G Wireless Communications Vision , 2012-12-15, Microwave Journal

www.microwav ejournal.com/articles/print/18751-a-5g-wireless-communications-v ision

>2020 Outlook



5G

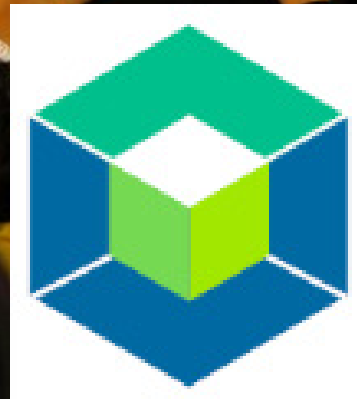
**ENABLING
THE TACTILE INTERNET**



2005/4/4 – Via Della Conciliazione



2013/3/12 – Via Della Conciliazione



Ad-Hoc Mobile
“Free-Viewpoint Video”



<http://googlesystem.blogspot.de/2009/12/google-goggles-mobile-visual-search.html>

Traffic Control





<http://www.spox.com/de/sport/olympia/0807/Artikel/Terminplaene/zeitplan-kanu.html>



Content
Communications

Steering &
Control
Communications

Health & Care

Traffic

Sports

Education

Manufacturing

Games

Smart Grid

...

Coordinators: Frank Ellinger & Gerhard Fettweis, TU Dresden
Starting 2014, approx. €100M





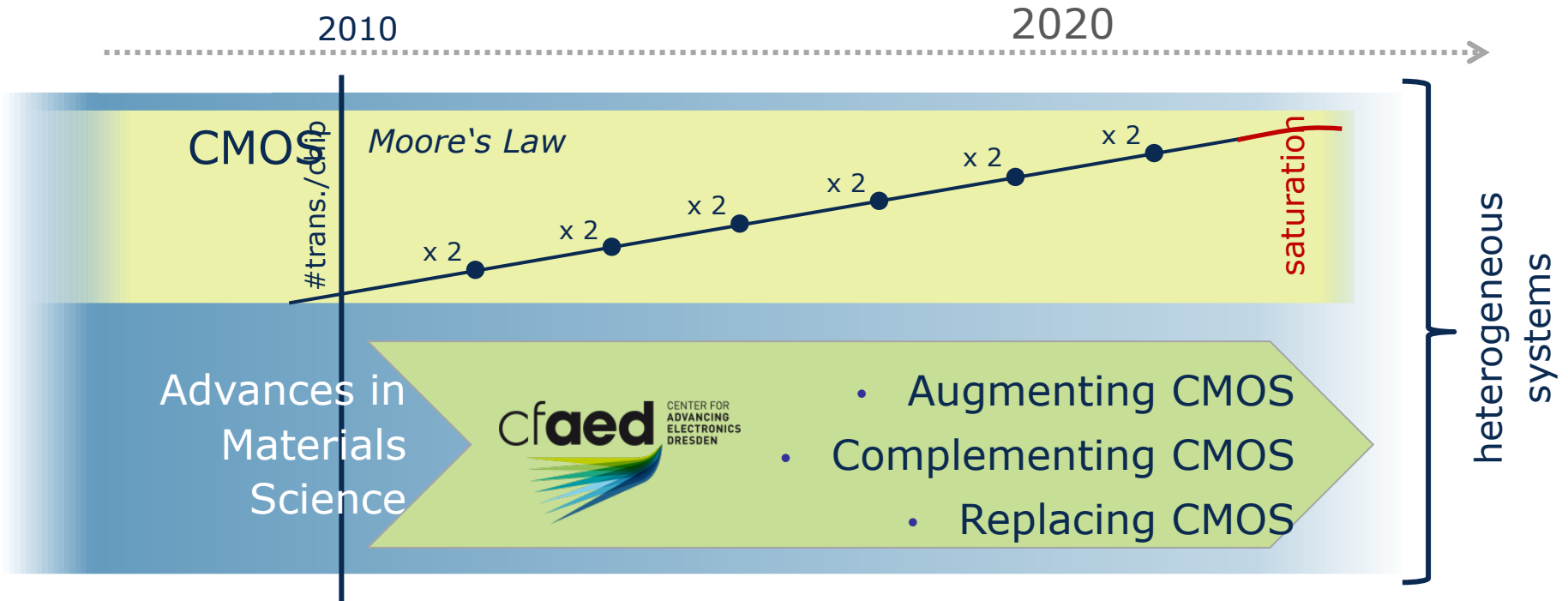
Center for
Advancing Electronics Dresden

Coordinator:

Professor Dr.-Ing. Dr. h.c. Gerhard Fettweis

TU Dresden, Vodafone Chair Mobile Communications Systems

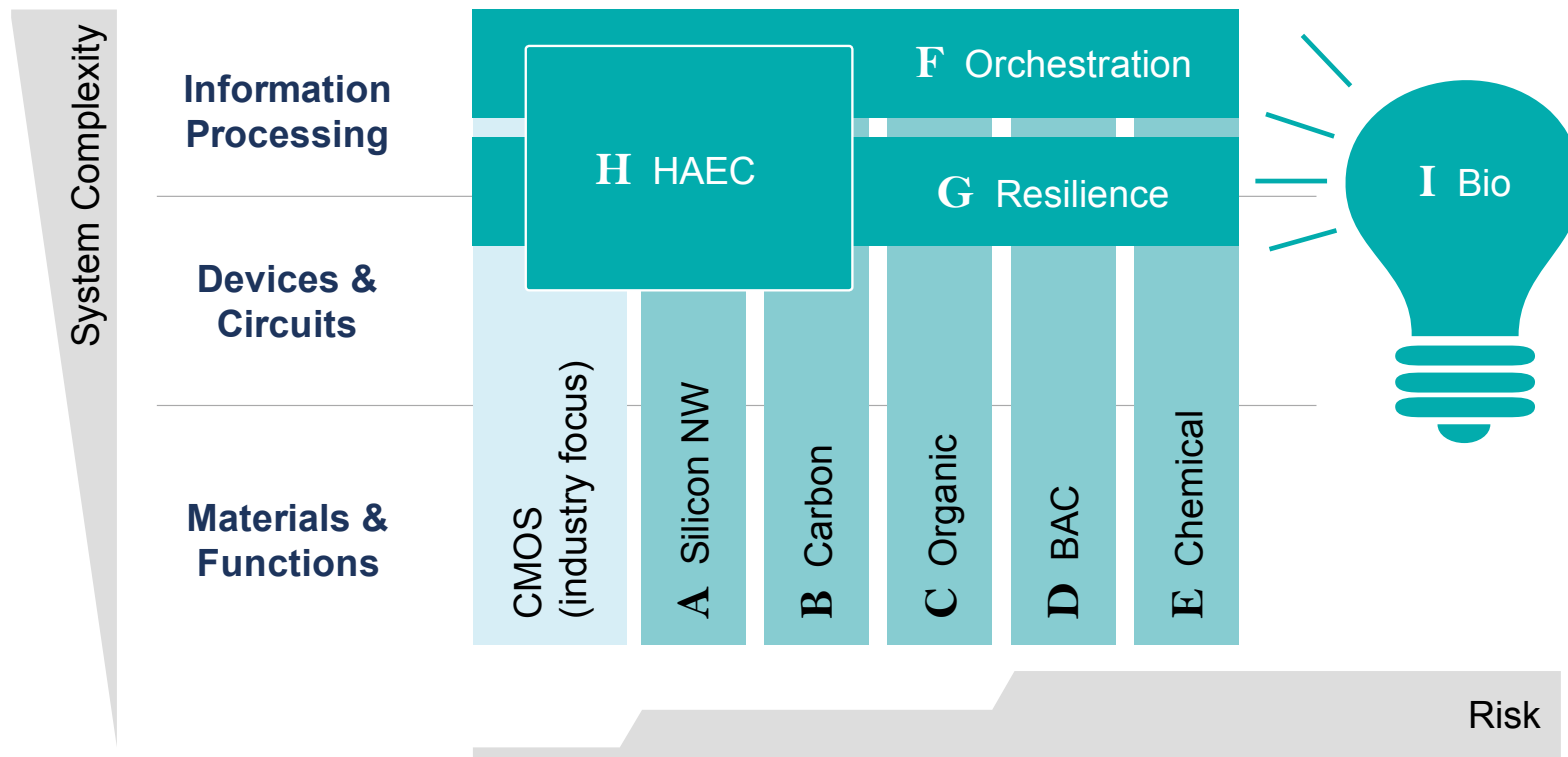
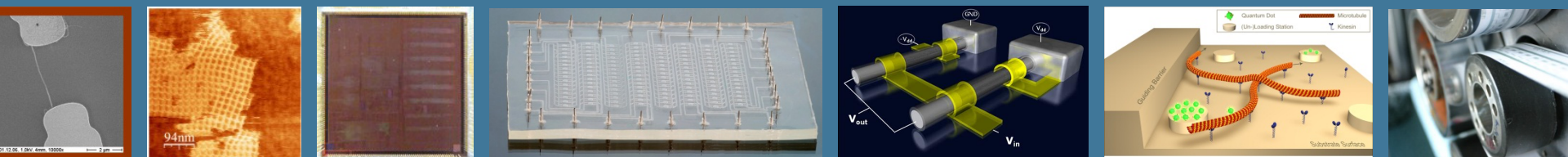
CMOS Faces Limitations such as Saturation in Integration Density



Unique Window of Opportunity
for shaping the next big technology waves

Research Approach

„More-Shots-on-Goal“



Advancing Electronics Requires Close Cooperation

Advancing Electronics

Engineering

Materials
Science

Electrical
Engineering

Computer
Science

Discovery-Driven

Innovation-Driven

PHYSICS

CHEMISTRY

BIOLOGY

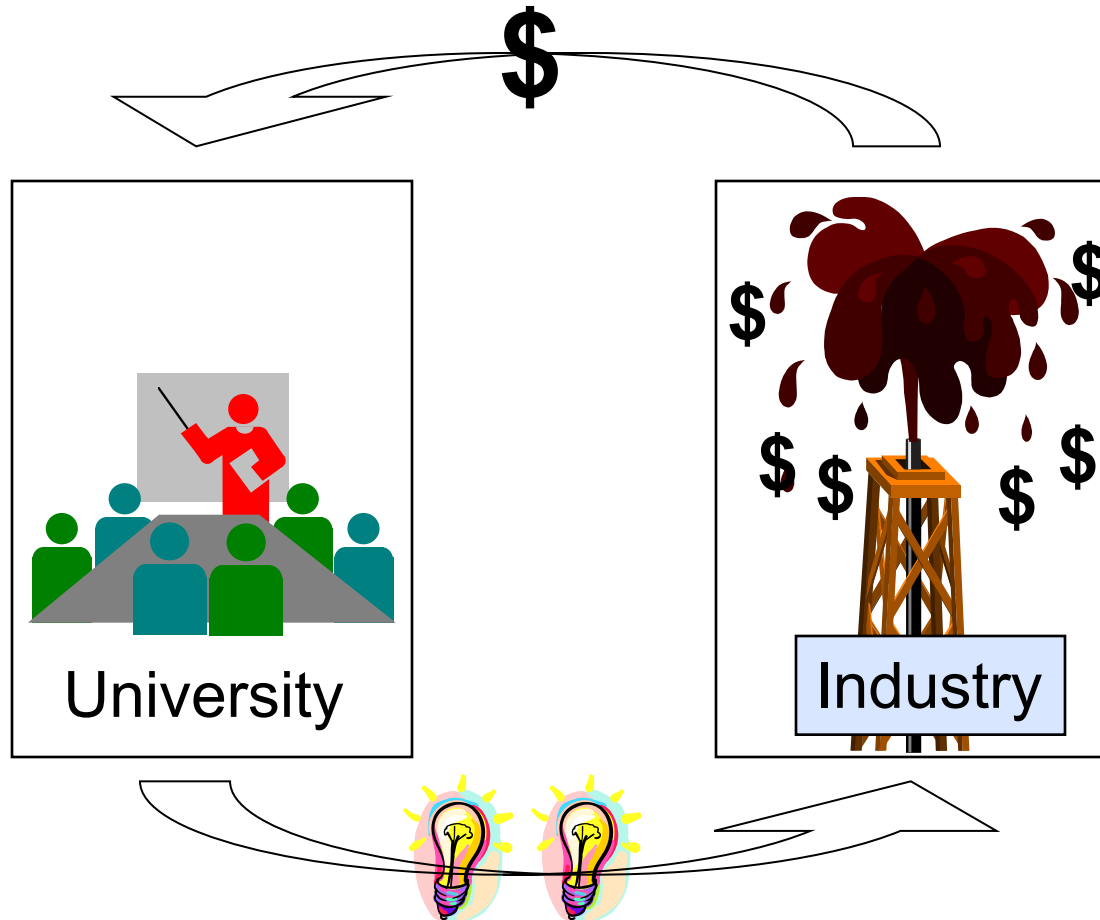
NATURAL SCIENCES

Higher Impact



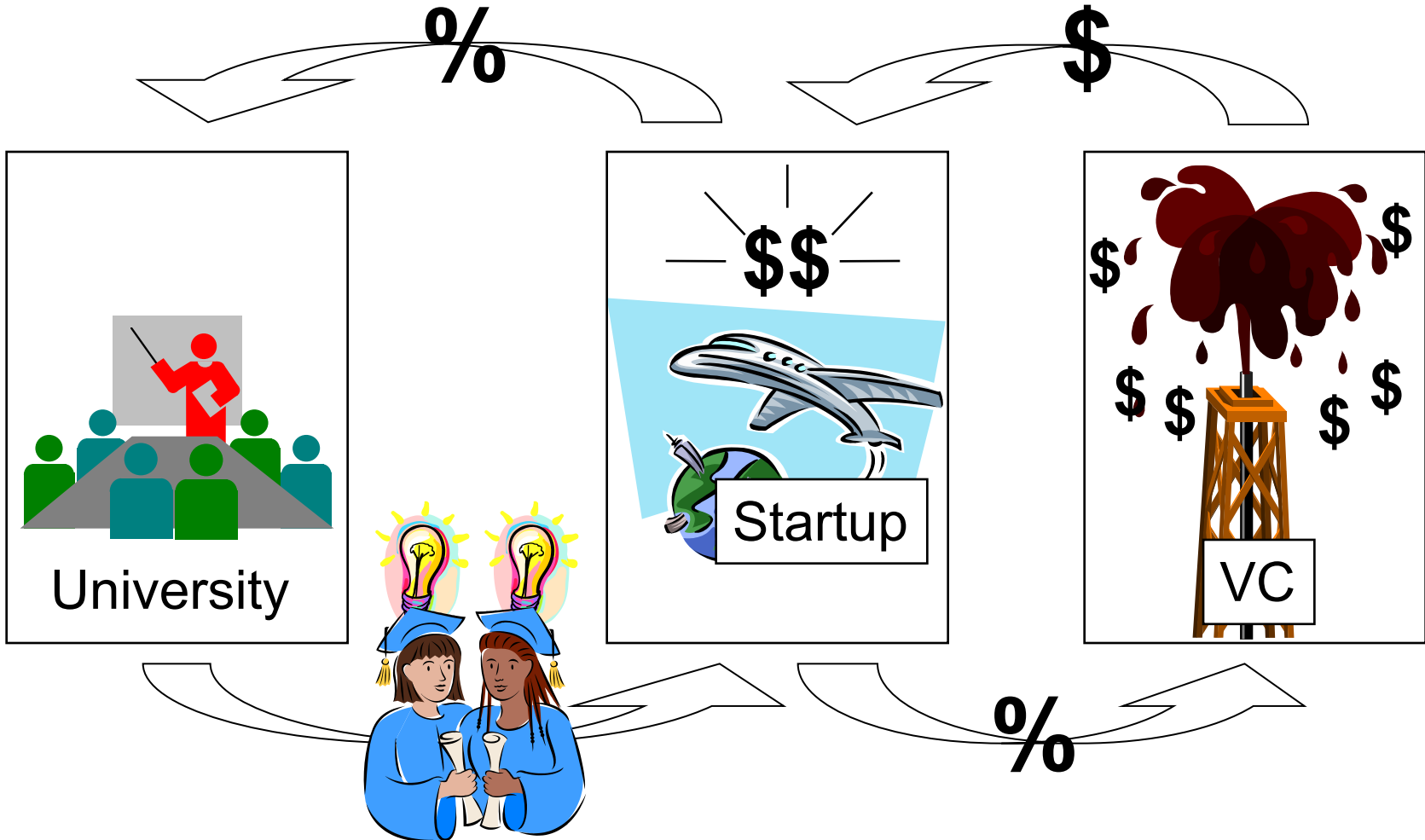
University Environment

Traditional University-Industry Relationship

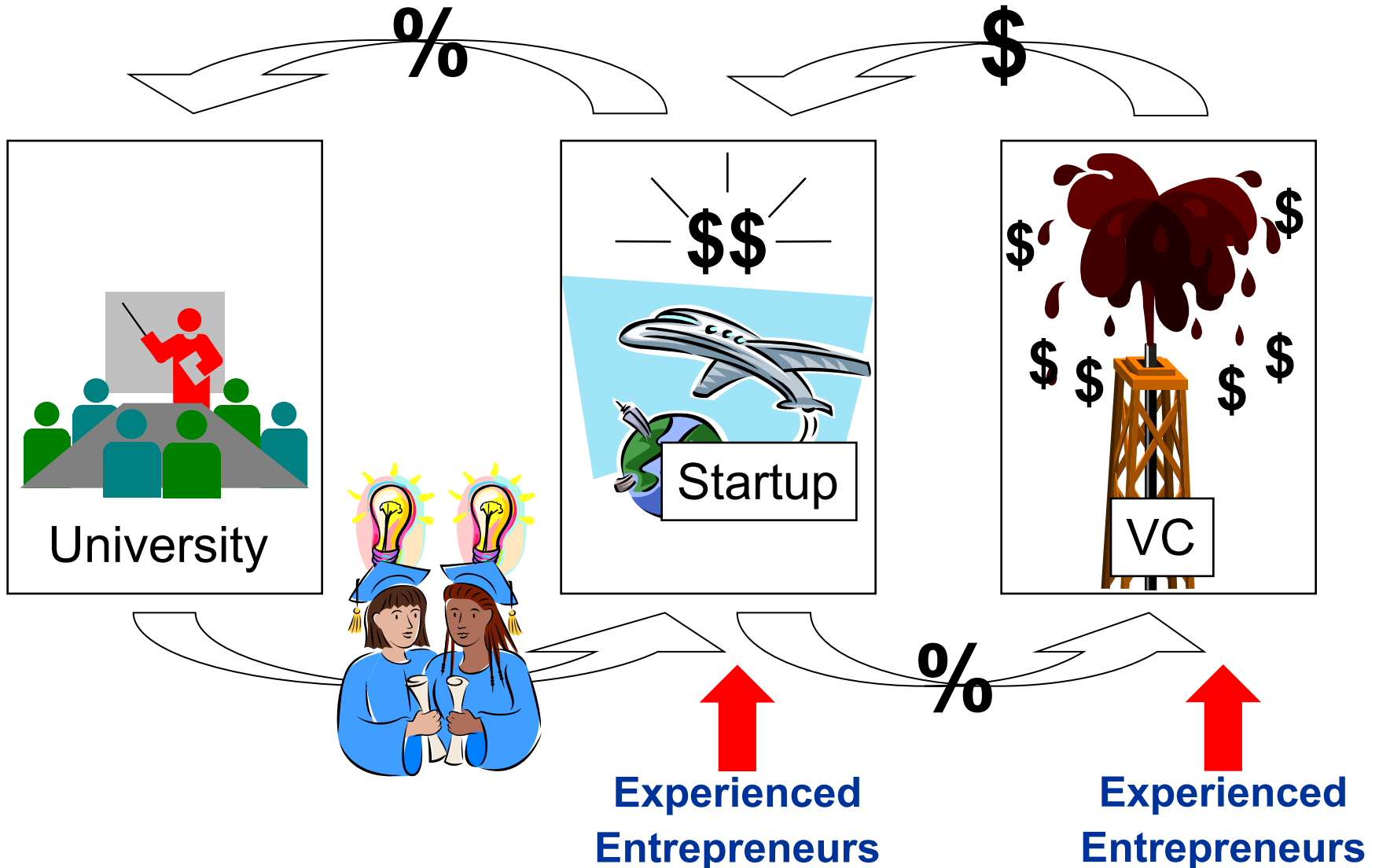


From Dr. Armin Wieder

University Startup Model – US Version



Secret Sauce – US Version



No repeat entrepreneurs:

- ❑ VCs are scared and w/o experience
- ❑ University spinout team has never built a product
- ❑ University spinout team has never sold a product
- ❑ University spinout team has never delivered service & mainenance

Possibility:

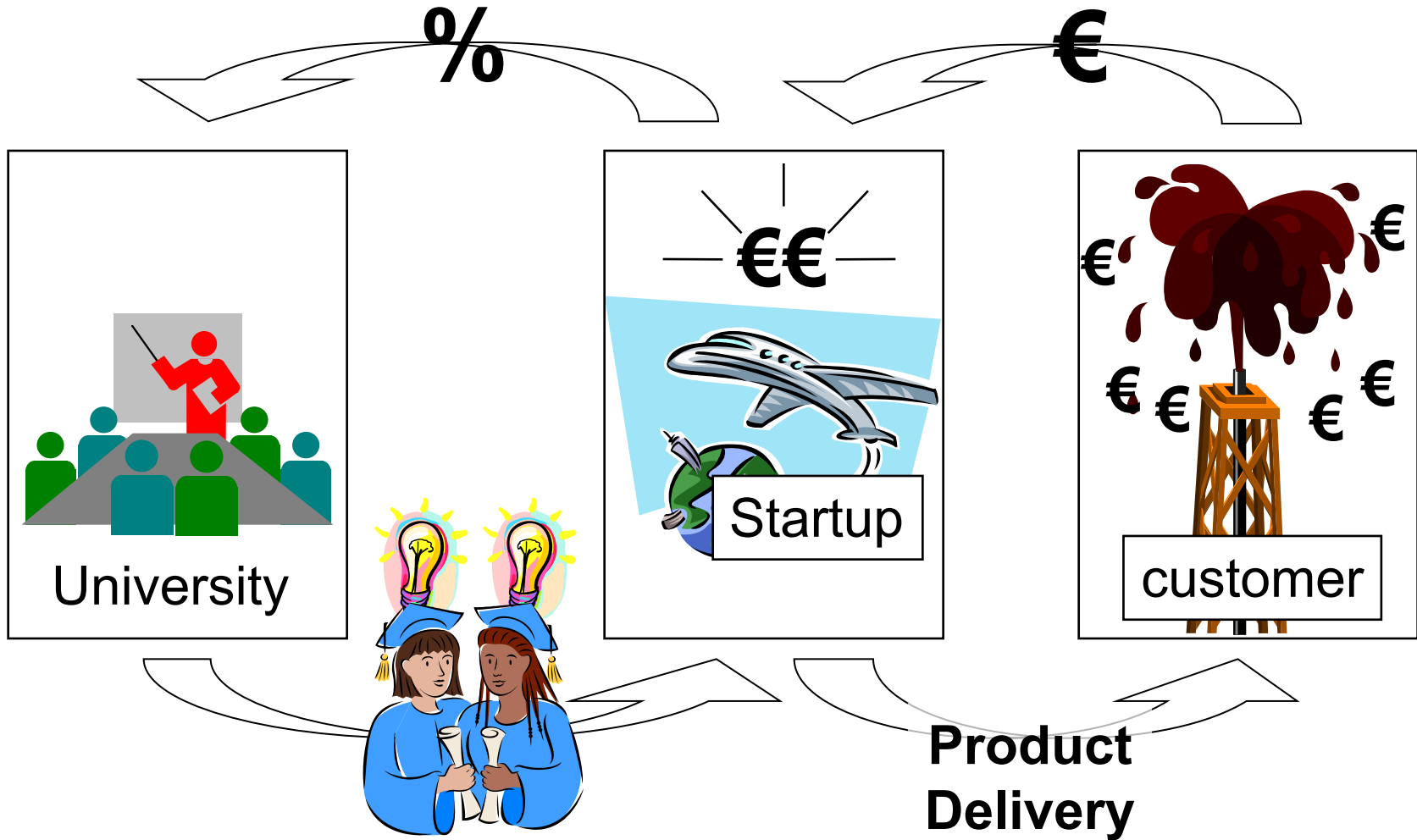
- ❑ Start with consulting services
- ❑ Start with project business

➔ Learn the way your customer thinks

➔ Learn how to manage revenues

➔ Become established (brand name recognition)

University Startup Model – EU Version



TU Dresden's Leadership in Challenging Roadblocks of Electronics

✓ Power Plateau



€150M program

✓ Integration Plateau



€100M program

✓ Interconnect Bottleneck



€100M program

✓ Latency Bottleneck



€350M program & 50+ startups

1990-2010

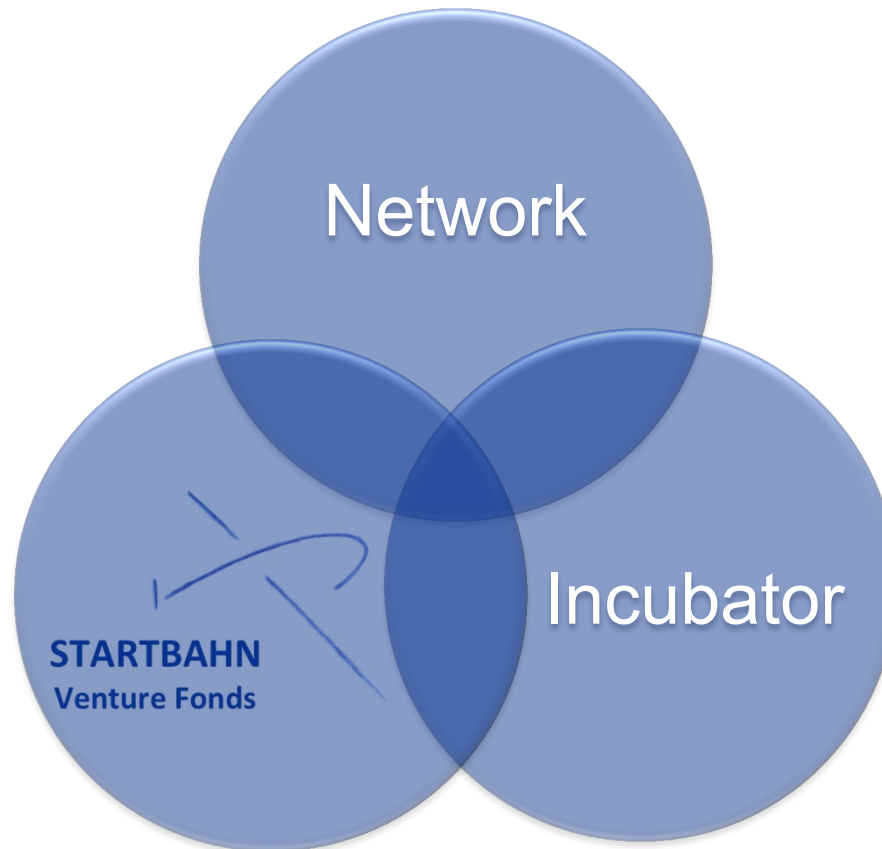
- ***Startups due to job loss***
- ***Tech startups***
- Producing entrepreneurs ***with high flyers***

2010-2020

- Generating startups with high growth potential
- Usign repeat entrepreneur high flyers

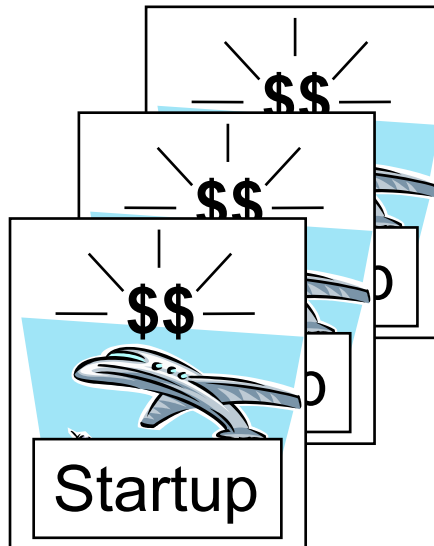
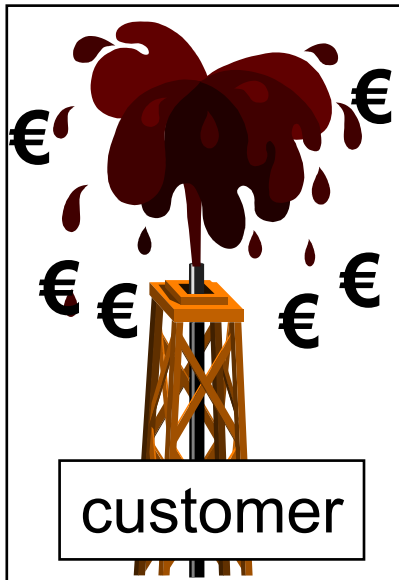
2020+

- Generating real VCs
- A Bright economy



<http://www.hightech-startbahn.de/en>

Needed: Translational Research Center



Translational
Research
Center

Incubator





vodafone

Thanks a lot to Vodafone for 19 years of continued support !

www.vodafone-chair.org

Tactile Internet <http://www.youtube.com/watch?v= VXEPzQgpok>

CFAED cfaed.tu-dresden.de

HAEC www.tu-dresden.de/sfb912

3DCSI www.twinlab3d.org

fast www.fast-zwanzig20.org