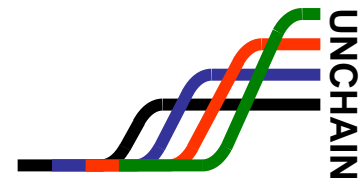


Research Leading to Innovation and Spin-off

Prof. Dr. Hans Schnitzer
Graz University of Technology, Austria
Institute for Process and Particle Engineering

Goals of UNCHAIN



- Establishing University Chairs on Innovation in the MEDA Region
- Developing Technology Transfer Policy and Training of the Chair Operators
- Initiating a Re-skilling Program on Innovation
- EU MEDA Twinning MSc Thesis Program
- Developing an EU-MEDA Virtual Environment and Strategy for University-Industry Cooperation in Innovation



Graz University of Technology

www.TUGraz.at

Institute for Process and Particle Engineering

Büro des Rektors

Facts and Figures

1,958 **Beginners** (Academic Year 09/10)
11,264 **Students Total** (Academic Year 09/10)

Graduates (Academic Year 08/09)

432 - Diploma Programmes
450 - Bachelor Programmes
177 - Master Programmes
155 - Doctoral Programmes

198,140 m² **Floor Space**

103.9 Mio. € **Federal Budget 2009**
47 Mio. € **Third -party Funds 2008**

2,222 **Staff Total** (as of December 2009)
1,376 **Academic Staff**
846 **Non-Academic Staff**



TU GRAZ:

7 Faculties, 104 Institutes

5 Fields of Expertise

Federal budget 2009 (in Mio €): 103.9

Refund of tuition fee 2009 (in Mio €): 7

Income from contractual work 2009 (in Mio €): 50,5

Students (WS)

- Total: 11.264
- Percentage of women: 21.3%
- Percentage of foreigners: 14.7 %
- Percentage of exchange students: 2.0%

Beginners (WS)

- Total: 1,958
- Percentage of women: 27.2%
- Percentage of foreigners: 19.9%
- Percentage of exchange students: 11.6%

Graduates (Academic Year 08/09)

- Total: 1,214
- Diploma programmes: 432
- Bachelor programmes: 450
- Master programmes: 177
- Doctoral programmes: 155

Staff (Persons of 31/12/2009)

- Total: 2,222
- Academic staff: 1,376
of which project staff: 752
- Non-academic staff: 846
(incl. 39 apprentices)
of which project staff: 155

Floor space

- Total: 198,140 m²

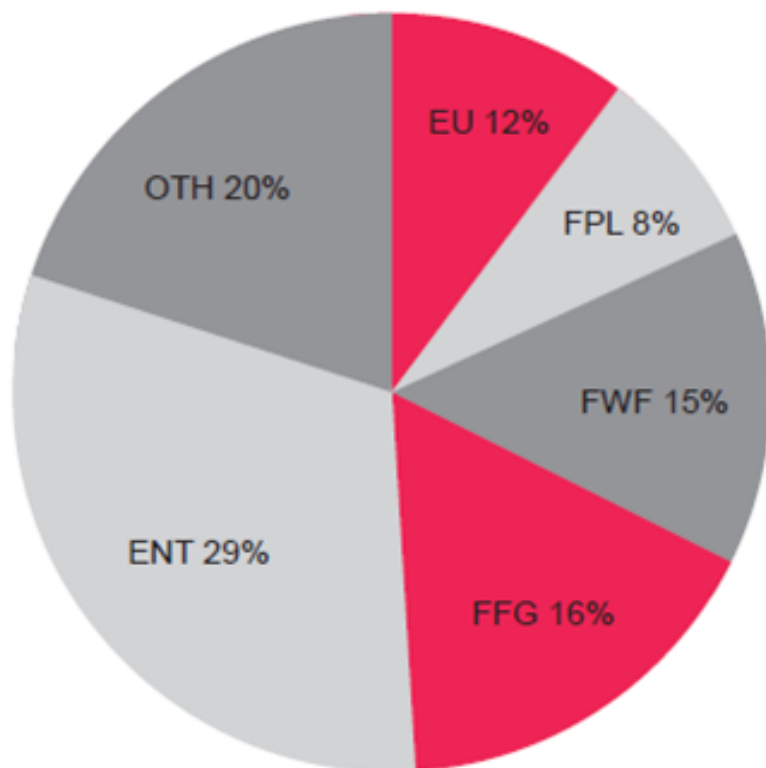
Graz University of Technology, Academic Year 2009/10, as of 31/12/2009

33 %

TU Graz Funders of Contractual Research Projects 2009

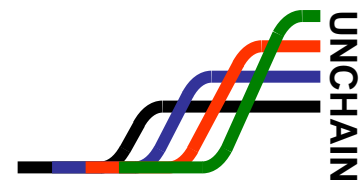


Source: Intellectual Capital Report 2009, as of 31.12.2009



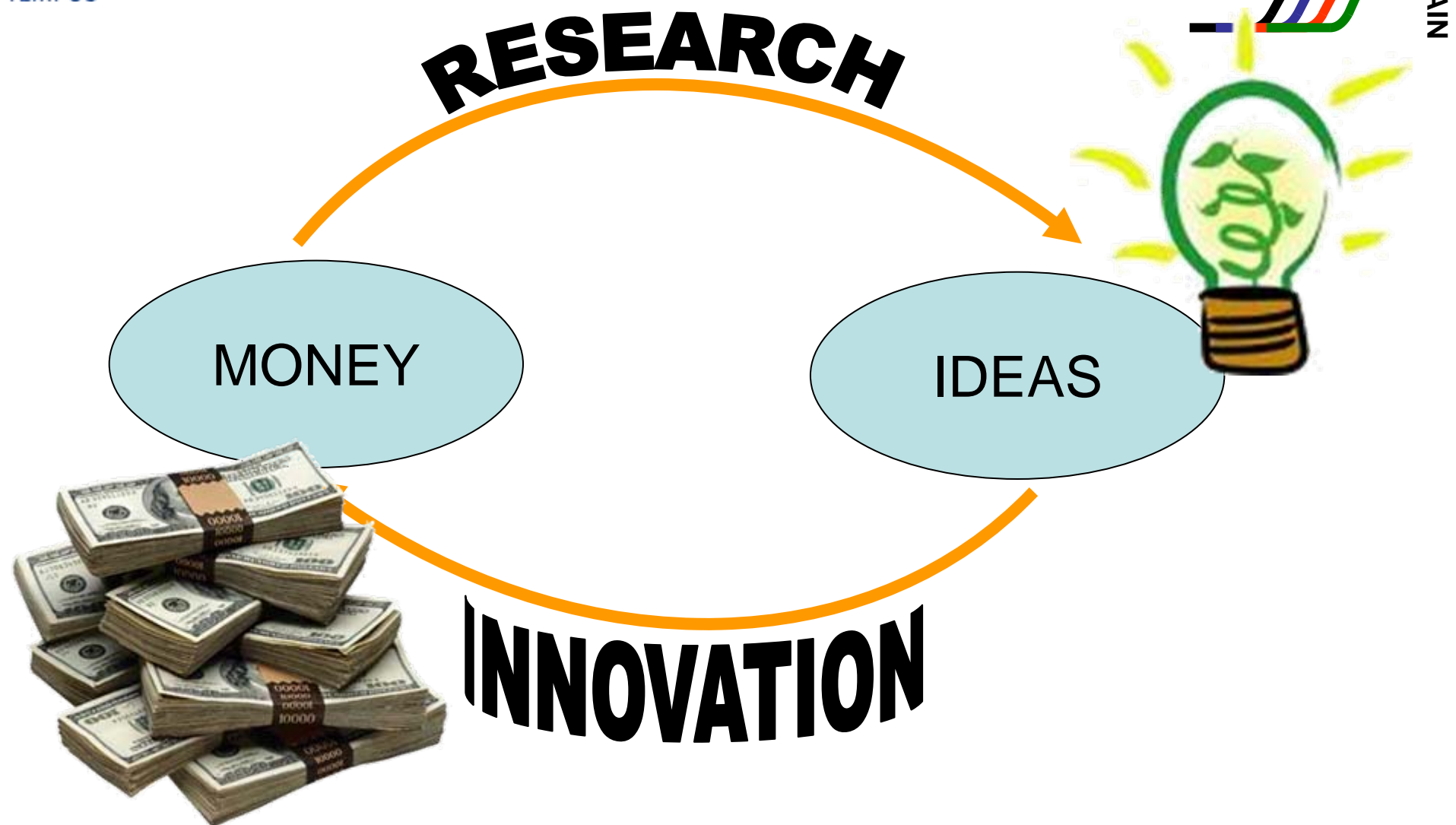
EU	European Union
FPL	Federal, provincial or local authorities
FWF	Austrian Science Fund
FFG	Austrian Research Promotion Agency
ENT	Enterprises
OTH	Others

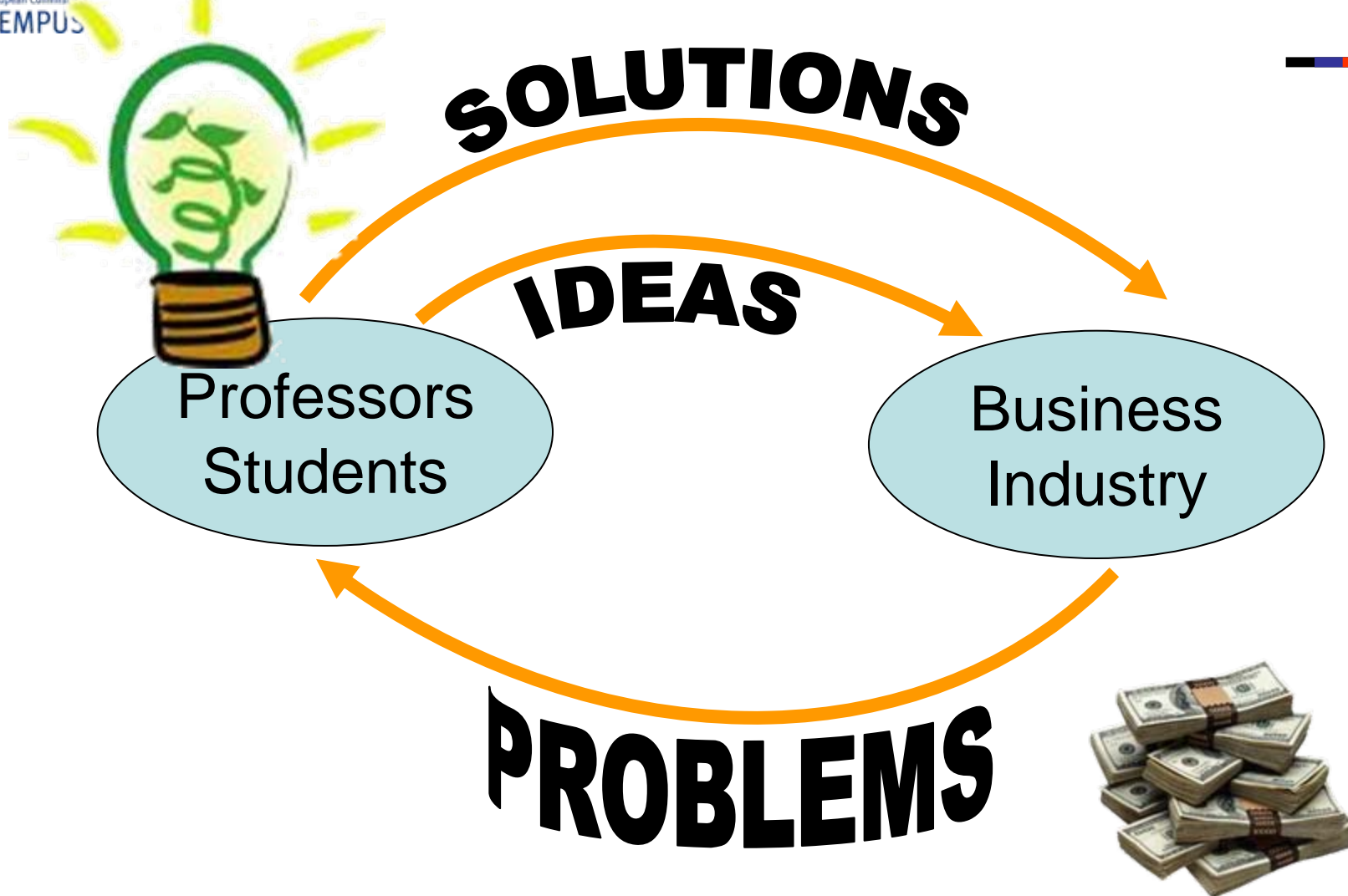
TU Graz - a medium sized university with strong industry links



Students	11.264
Graduates	1.214
Floor space	198.140 m ²
Federal Budget p.a.	103,9 Mill.€
Income from Contractual Work p.a.	47,8 Mill.€
Staff	2.222
- Permanent Staff	1.315
- Staff for Contractual Work	907

41 %





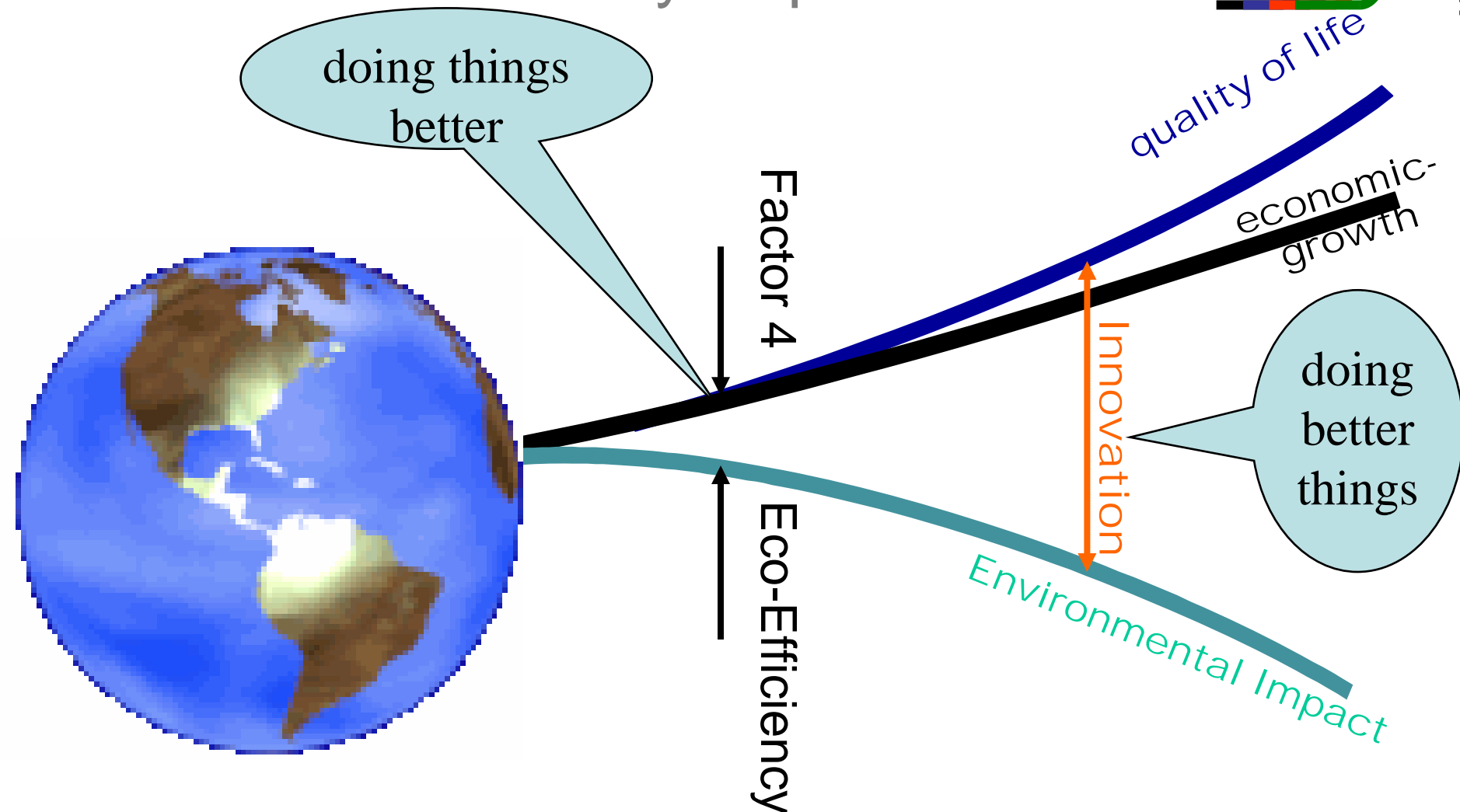
Cornerstone Issues

The present system of production is not sustainable and has not begun to address in a substantive way how competitiveness can be achieved within the framework of sustainability and the same time maintain an acceptable quality of life

Current trends in the modernisation of production have the potential to improve competitiveness and to reduce environmental impacts but are unlikely to bring production, and the use of products, within the framework of sustainability

Present policies and actions for RD&I might improve environmental performance but will not foster the transformation in production that are required to achieve competitiveness within the framework of sustainability

Sustainability requires innovation



Basic Questions

- How can economic growth and environmental impact be de-coupled?
- How can production and consumption be de-linked from resource throughput?
- How can changes lead to competitive advantages for the innovative entrepreneurs

There is a need for actions

“An important challenge facing industry is the transition from a traditional to a sustainable system of industrial production.”

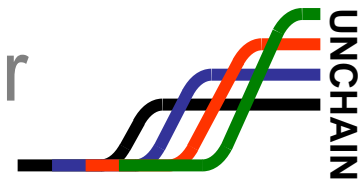
Regarding this, **research and innovation strategies** that combine **competitiveness** with the objective of sustainability should be supported.”

(Statement of the commission “Innovation in the Economy“, 2000)

Change is indeed needed – but its not easy

- Innovation is not a natural process in our culture — imitation and adaptation are
- Risk-taking and change-making are not praised values in our societies – stability is
- Open competition and entrepreneurship are not (yet) assets in our economies – protectionism and well-establishment (still) are

What are the driving forces for innovation?



- consumers, market
- legislation
- costs, prices, economy
- public image,
- supply chain
- end of life problems
- sheer curiosity

But.... What is innovation

The term “**innovation**” is defined as follows:
(by the Brockhaus Dictionary)

- the **planned** and **goal-oriented** modernization of existing (social) systems through the **use of new ideas and technologies**;
- the creation and introduction of **new products, product technologies and forms of organization** in the economy

Innovation / Definition

Planned modernization with the goal,

either ...

to: latin “novare” “modernize”, “change”
(Brockhaus – The Encyclopedia; in 24 Volumes)

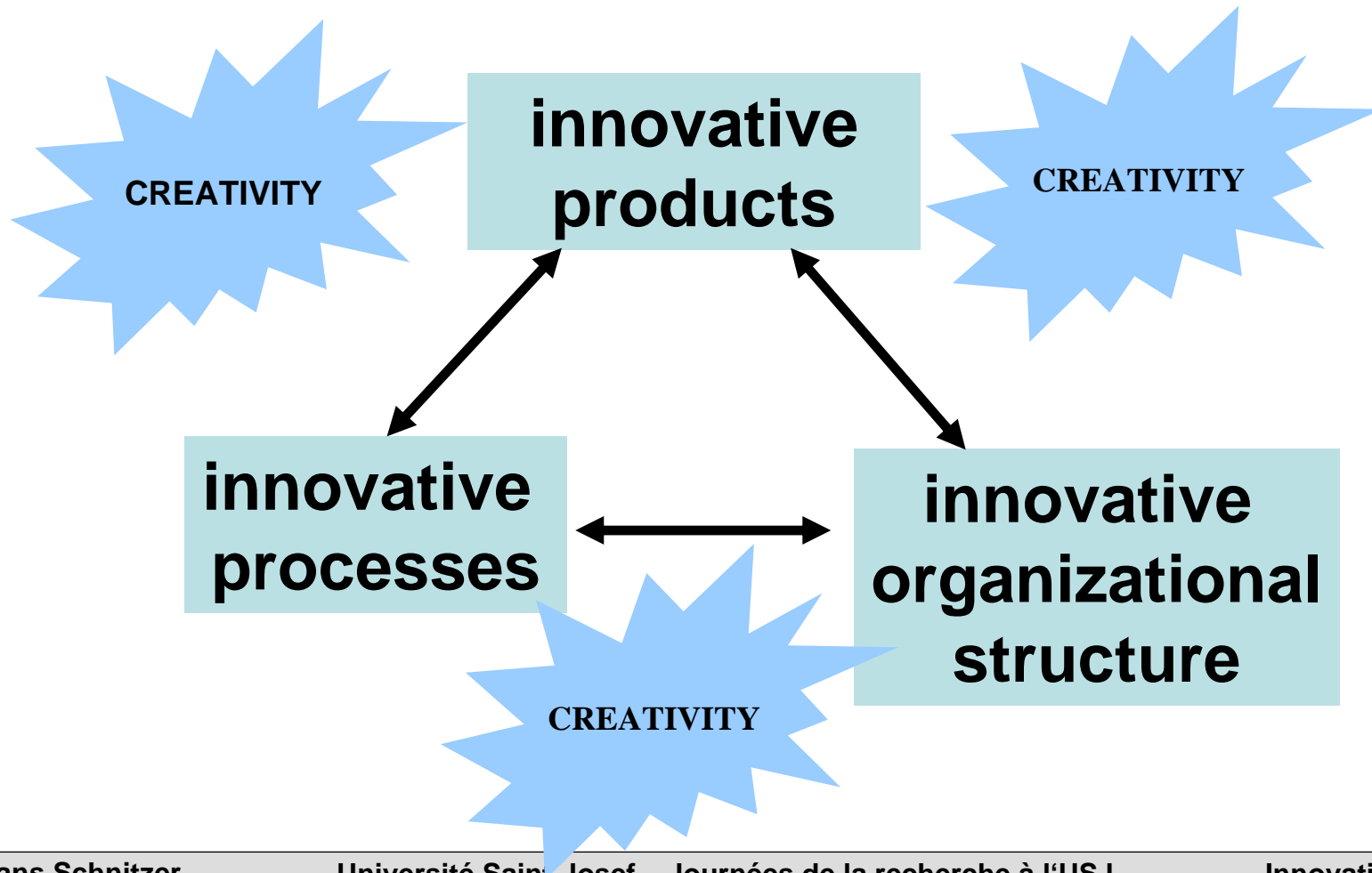
Josef A. Schumpeter:

„Innovation is the process of finding economic applications for inventions“

“Invention” = The invention itself

“Innovation” = The process which includes all phases of modernization – from the idea to the realization

Innovation in Companies



How to solve this problem?

- Take a ladder
- Invent a telescope watering can
- Put the plant to an other place
- Engage a taller secretary
- Ignore problem?

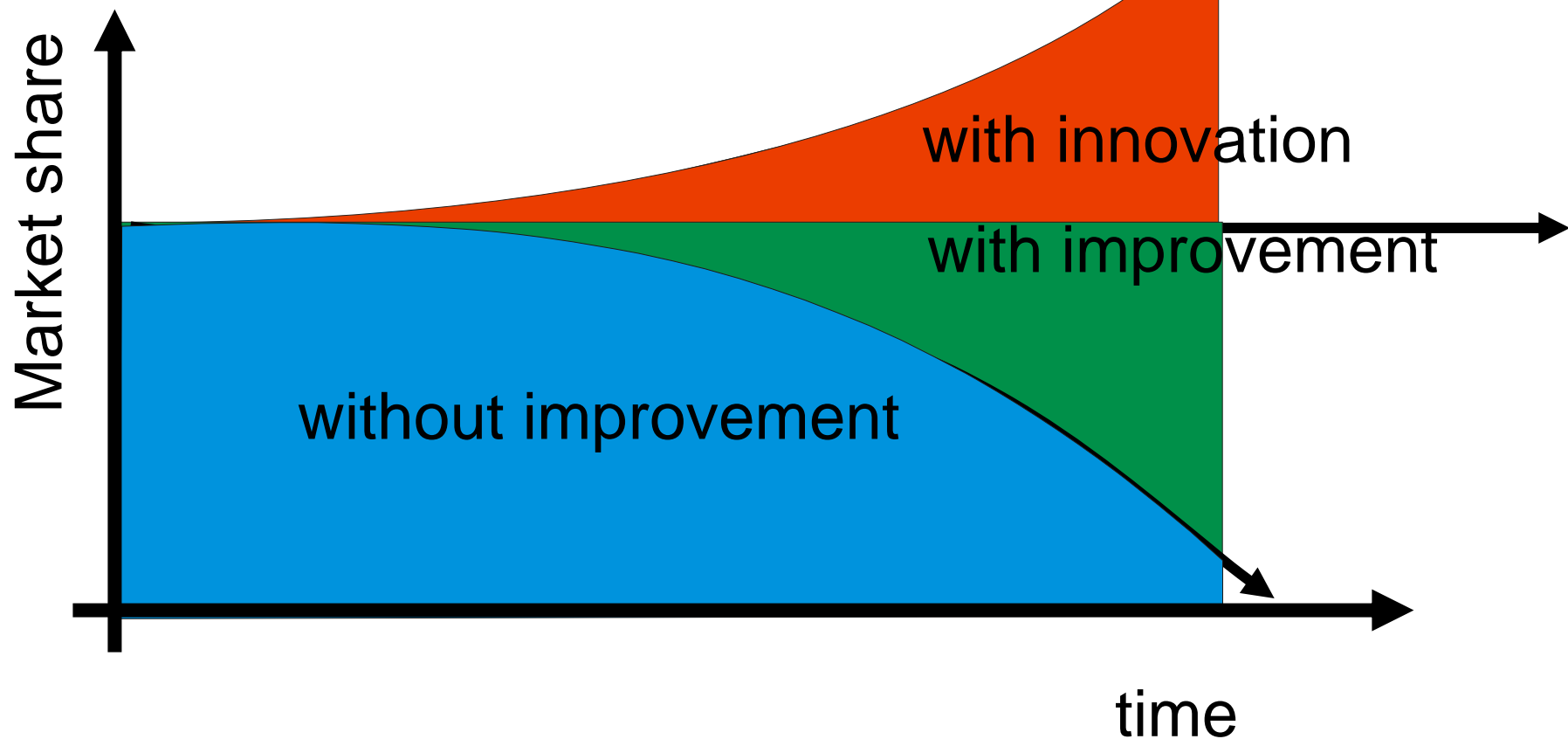
**innovate
products**

**innovate
processes**

**innovate
organizational
structure**



Innovation and Market Share



Questions for Companies

- What (innovation) strategy does my company pursue?
- Which market does my company wish to supply?
- What are the “problems” and “chances” of current products?
- How can current products / processes be improved?
- How can I think of “good” ideas for new products or for the optimization of existing products?
- How can I evaluate present ideas?
- How can ideas be effectively converted into a concept and a sellable product / process?



The barriers

- lack of awareness
- lack of information
- lack of skilled people
- lack of money
- lack of suited technologies

Research & Technology House



Research & Technology House

LOGIN

TU Graz > Research > R & T House

Welcome at Graz University of Technology

TOP NEWS

[Information Platform:
Funding, Awards,
Events... »](#)[News & Stories »](#)[Career Info-Service »](#)

ABOUT

[Team »](#)[Folder »](#)[How To Find Us»](#)forschung@tugraz.at

Research and Technology Office

Information, counselling and support in the field of research funding programs, scientific international relations and mobility as well as research documentation in TUGonline. Assistance to the Vice Rector of Research and Technology in all relevant questions.

[» details](#)

Technology Transfer

Central contact point of the Graz University of Technology for corporations, offering initial counselling in questions of company innovations, acting as an agent between companies and the staff of the Graz University of Technology, delivery of career and recruiting services and maintenance of a comprehensive company data base.

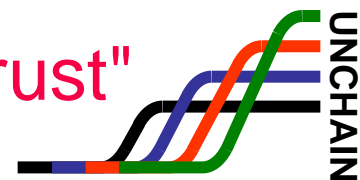
[» details](#)

Technology Exploitation

A service point and a competence centre for the commercialization of know-how and intellectual property .

[» details](#)

TUGraz: science-industry projects: "trust"



- first there was trust then IPR came into play ;-)
- trust is not consensus between the two legal departments
- trust and good reputation of universities, institutes and professors has been built on good R&D project results, good infrastructure and most of all on good graduates, over the last years

Quote (UNCHAIN): “*Knowledge Transfer Offices should and could play a crucial role as a bridge between research and industry*”:

Their role in building trust in science-industry-projects:

- help define the rules (cost, contract templates, IPR) and assess compliance:
eg TU Graz TEO established guidelines for handling of IPR in contract research and collaborative projects which are based on meetings with industry representatives
- act in a subsidiary role: a majority of project income is acquired because of institutes' good reputation (“social capital”), so do not interfere too much

science-industry projects and IPR



science-industry projects - **what industry researchers want:**

- an immediate project start, strict compliance to timeline
- to get to know high-qualified young graduates
- to tap specific expertise of senior researchers
- to use specific infrastructure (which is otherwise too expensive to buy)
- no fuss about IPR, if possible 100% exploitation rights

science-industry projects - **what academics want:**

- to draw a paper
- to draw any figure from the project that they are assessed by (eg citations, third party income)
- to gain some profit for the institute (reserve / lab investment) and if possible for themselves
- NO FUSS about IPR, no „legal tricks“ from industry side

Protect or publish?



Phase 1: Detection

Detection, declaration of research results having a valorization potential



Phase 3 : Publication

Scientific publication of the research results



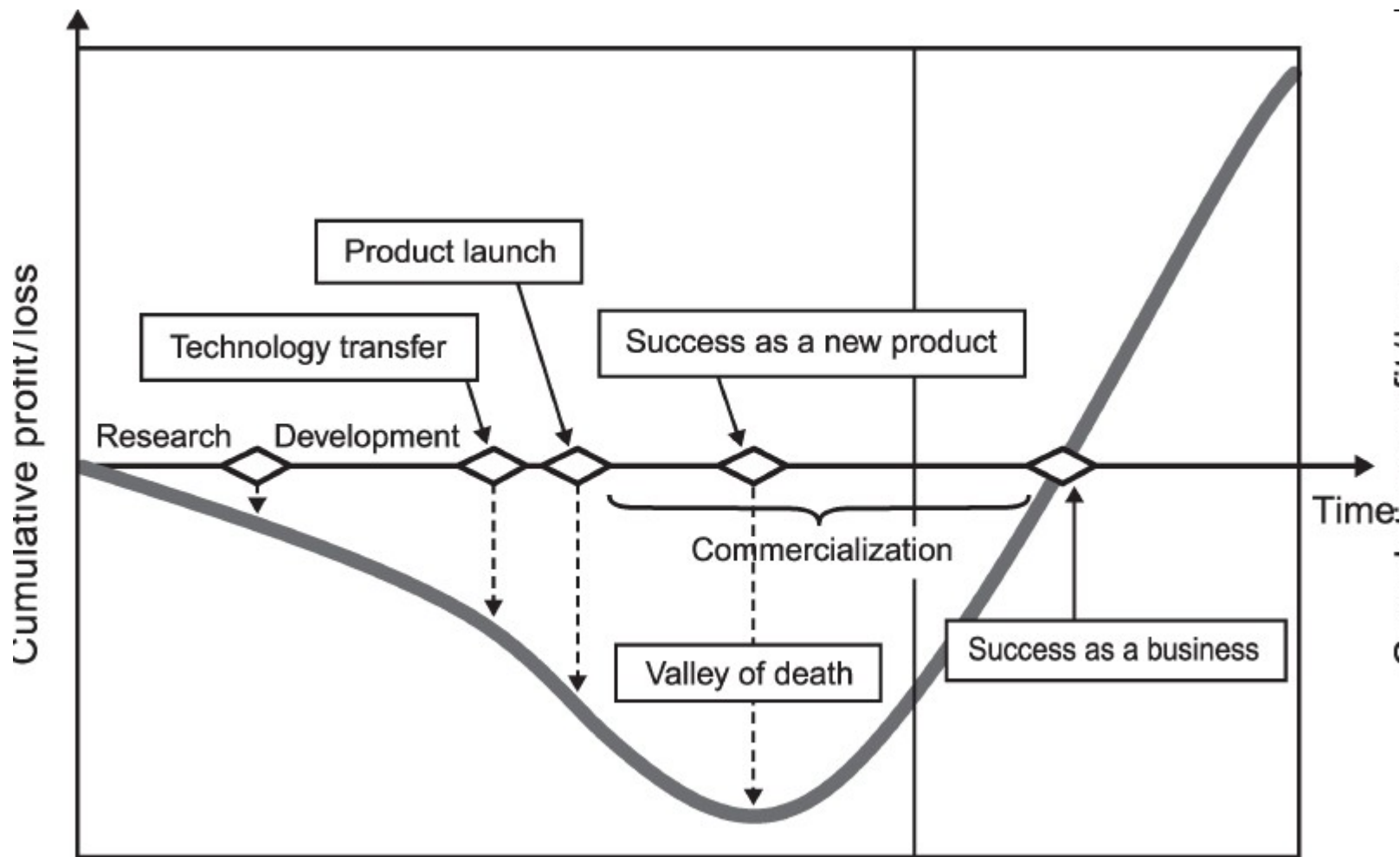
Phase 2 : Protection

Research results protected by IPRs protection such as patent, trademark, copyrights...

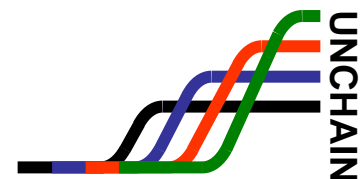


Phase 4 : Exploitation

Transfer agreement of IPRs, licensing, creation of start-up,...

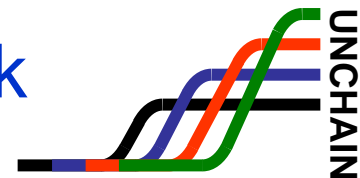


Knowledge & Technology Transfer support portfolio



Way of KTT	Central Organisations (service departments eg TTO)
by sc. publications	database, webpage (collection, display)
by training	quality standards, standard fees, sales
“by head”	recruiting support services, alumni services
by employees inventions	rules; selection; incentives; legal support; proactive commercialization incl. negotiation
by start-ups / spin-offs	* entrepreneurial spirit awareness, start-up support * spin-off rules and compliance
by contract research projects	* additional costumers (lead management) * contract templates (esp. IPR), compliance
by collaborative projects / ventures	support in building consortia; contract templates so that there are only few exceptions (esp. IPR), negotiations

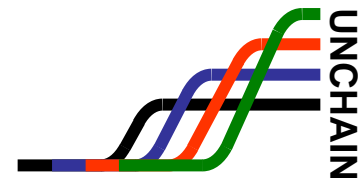
TU Graz income from contractual work by different ways of KTT



Way of KTT	Income (order of magnitude / year)
scientific publication	mostly non-monetary
education / transfer “by heads”; training courses	100 kEUR
patenting / licenses	> 100 kEUR
entrepreneurship:	
spin-offs	< 100 kEUR
start-ups	non-monetary (“outreach”)
industrial joint ventures (eg Competence Centres)	>> 1 MEUR
contract research, collaborative research (projects)	>> 10 MEUR

Largest share of income is still from contract or collaborative research and industrial joint ventures (eg Competence Centres with large consortia)

Practical experience at TU Graz: start-ups/spin-offs



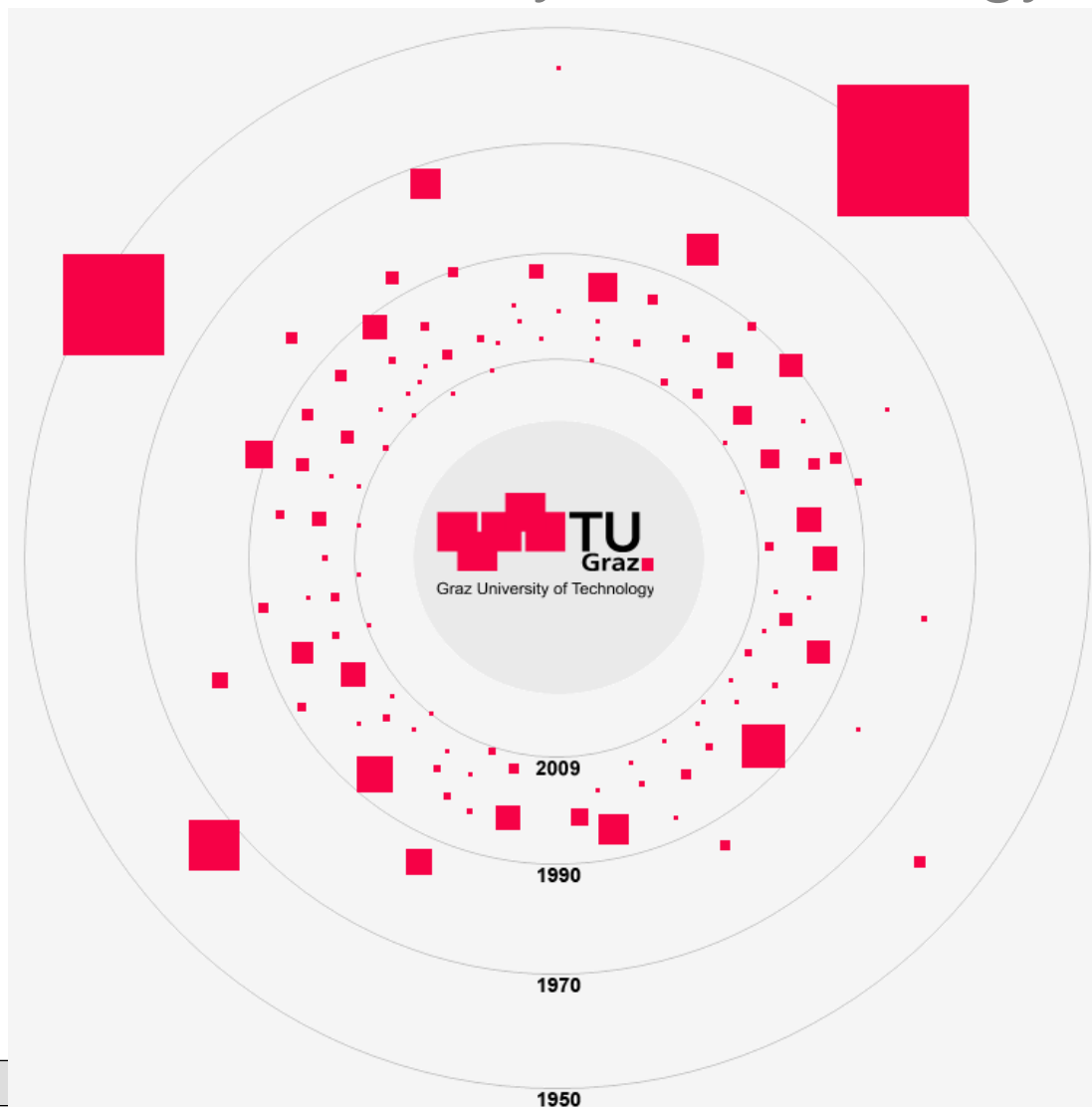
- „Science Park Graz“ (www.sciencepark.at):
- **Academic incubator** for all Graz universities (with a total of 40.000 students and 3.000 employees); TU Graz is majority shareholder)
- Evaluted „best academic incubator“ in Austria
- 10-15 incubation projects p.a., but many of them by alumni with some professional experience → only minority of projects is eligible for university shareholdship (spin-off) → since 2005 just 1 TU Graz spin-off in this strict sense
- founders and start-up funding agencies are often reluctant to accept university shareholdship
- better chances for „strict-sense“ spin-offs in lab-intensive sectors (biotech, life science ...)
- **entrepreneurship support: mostly „outreach“ function**
ie non-monetary; main goal is enhancing regional competitiveness

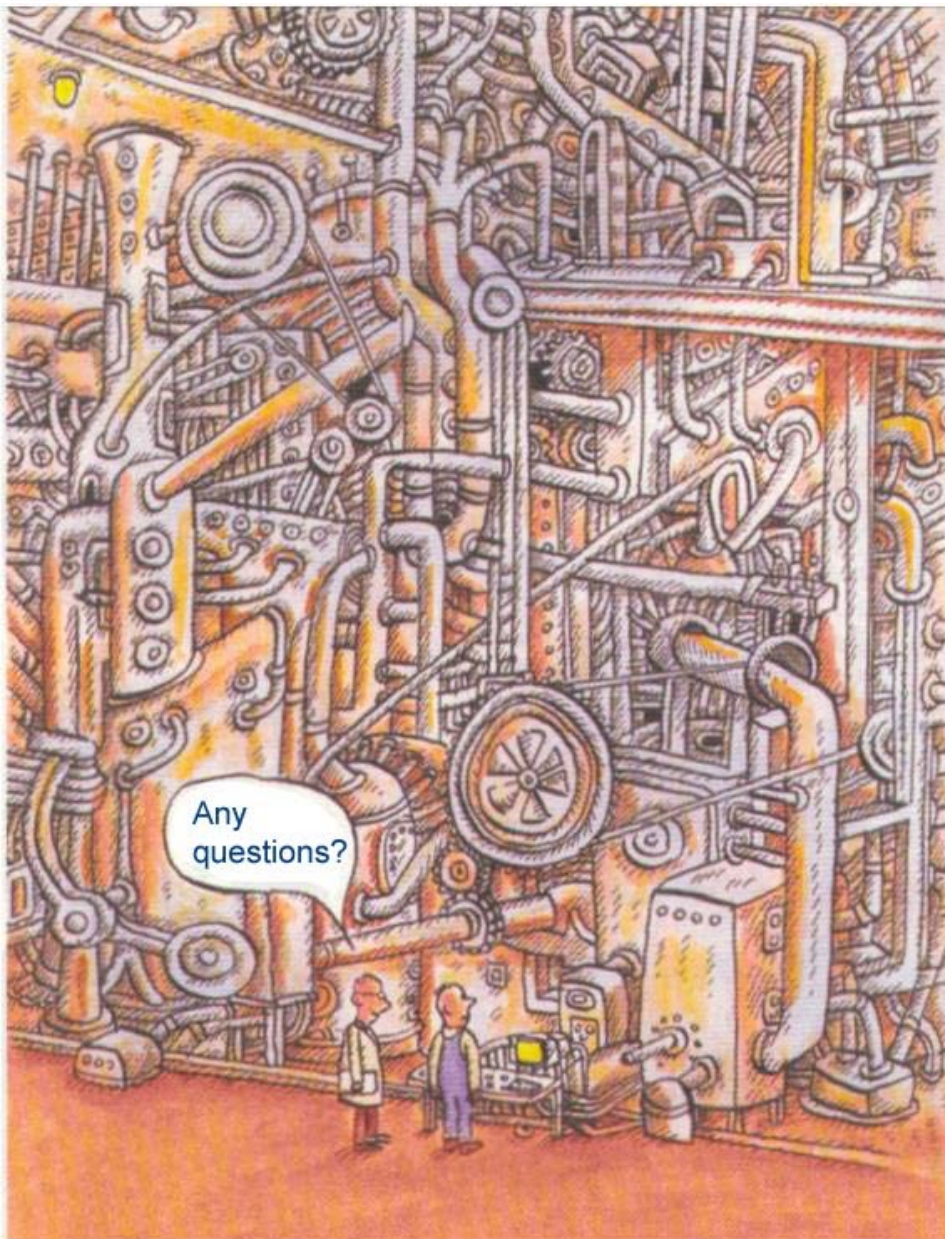
When a spin off company

Spin-off company could be a perfect valorisation tool when:

- there is a potential new market
- the licensing activity was not effective
- Someone in the research team wants to become an entrepreneur

Map of Spin-Offs and Start Ups from Graz University of Technology





THANK
YOU !

Hans **Schnitzer**

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