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Dr. Béla Kardon

Technology Transfer & Smart Specialisation:
Challenges and Possible Pitfalls

SKIN 3 Workshop – Joining Complexity Science and Social Simulation for Policy

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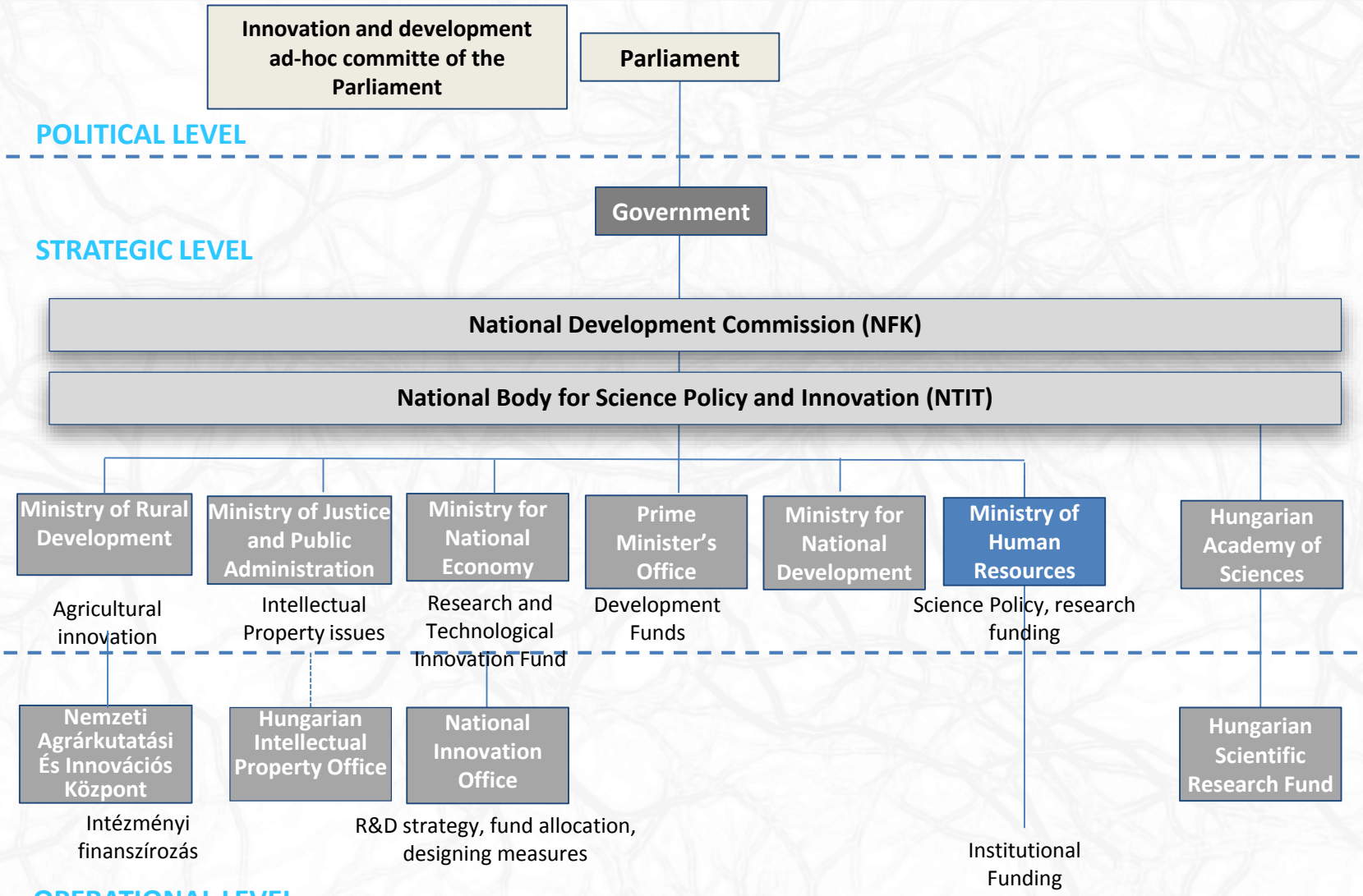
The Structure of the R&D and Innovation Governance



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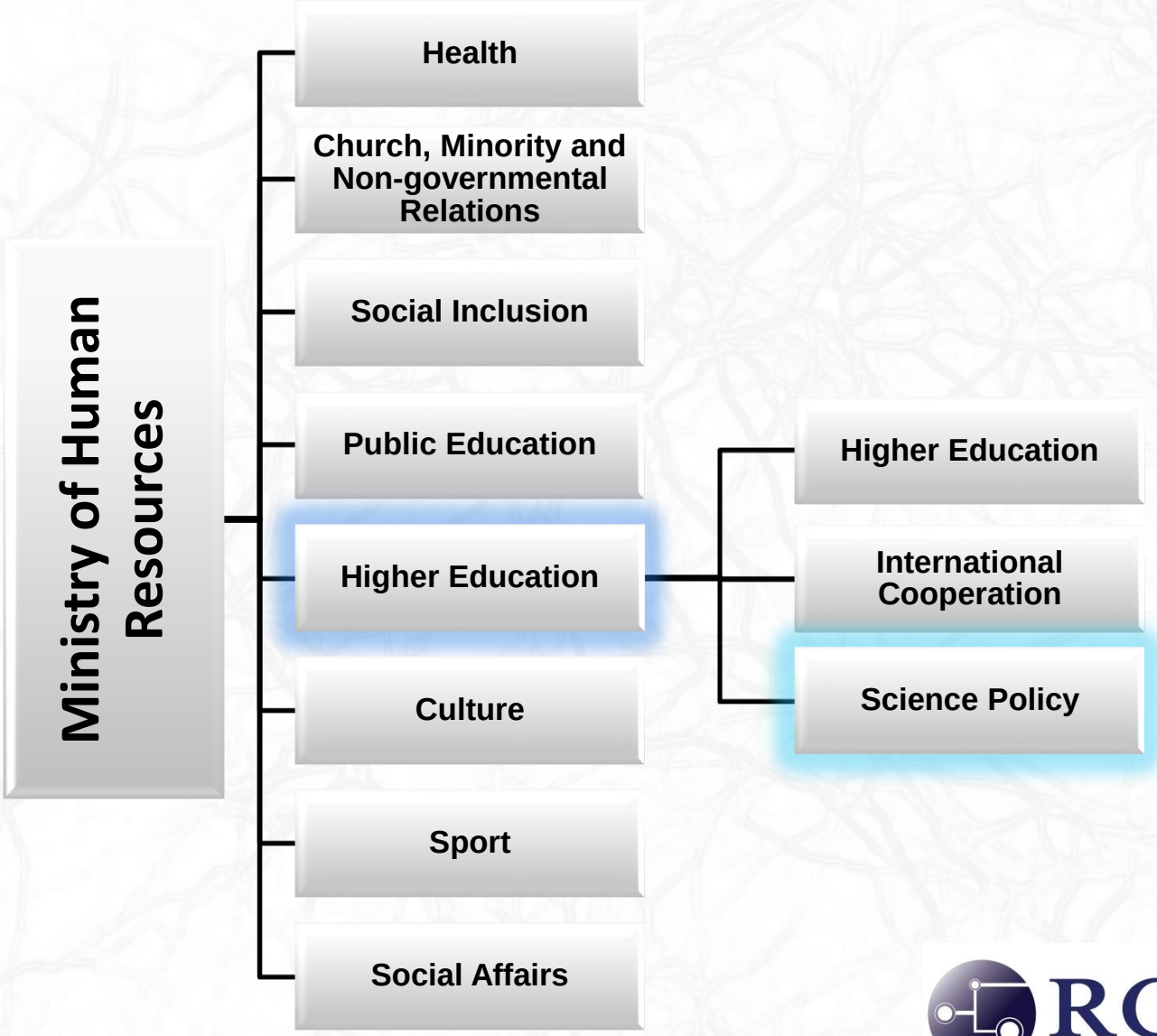

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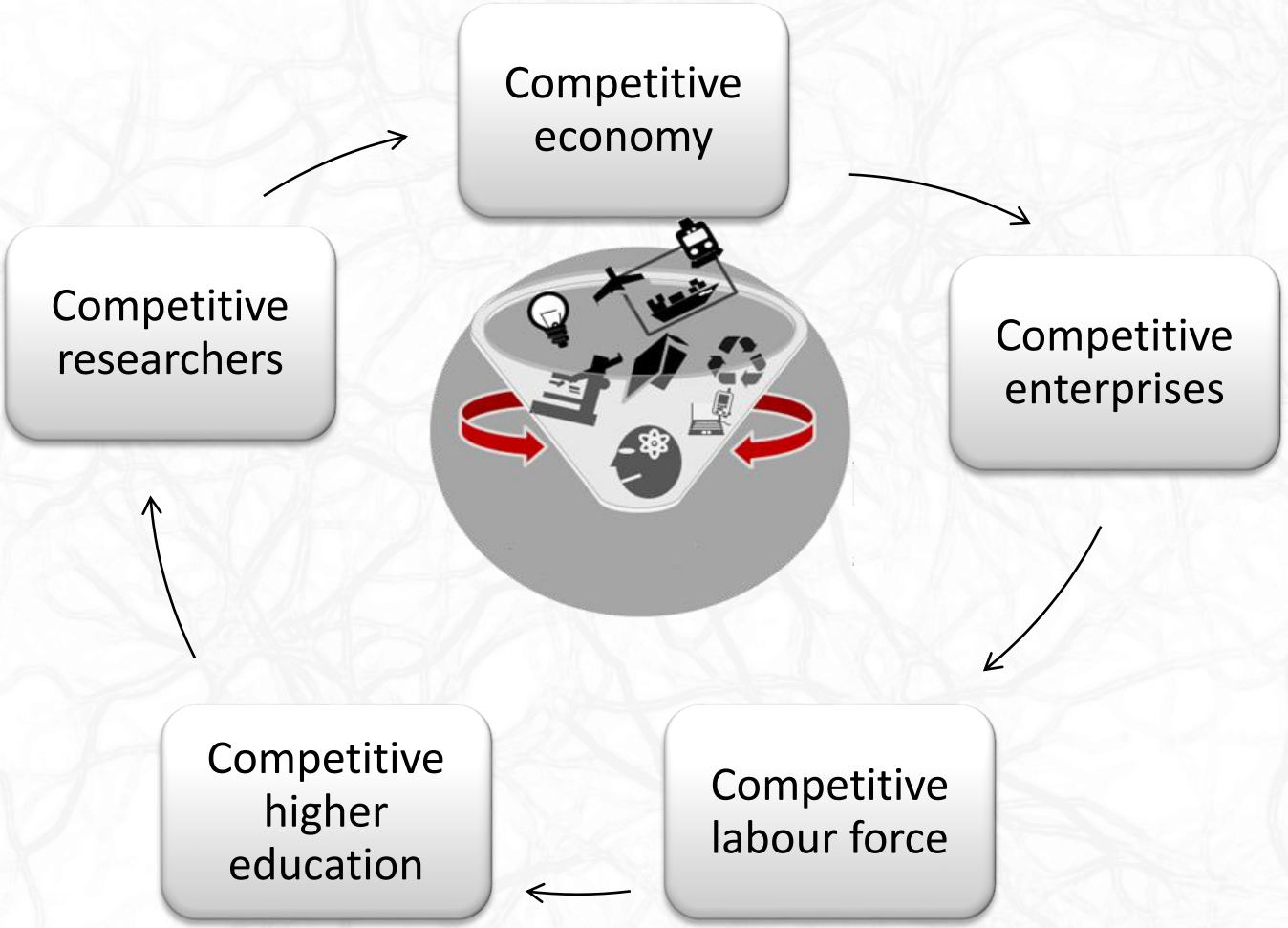
R&D – Key to Competitiveness



The link between research and competitiveness is efficient technology transfer

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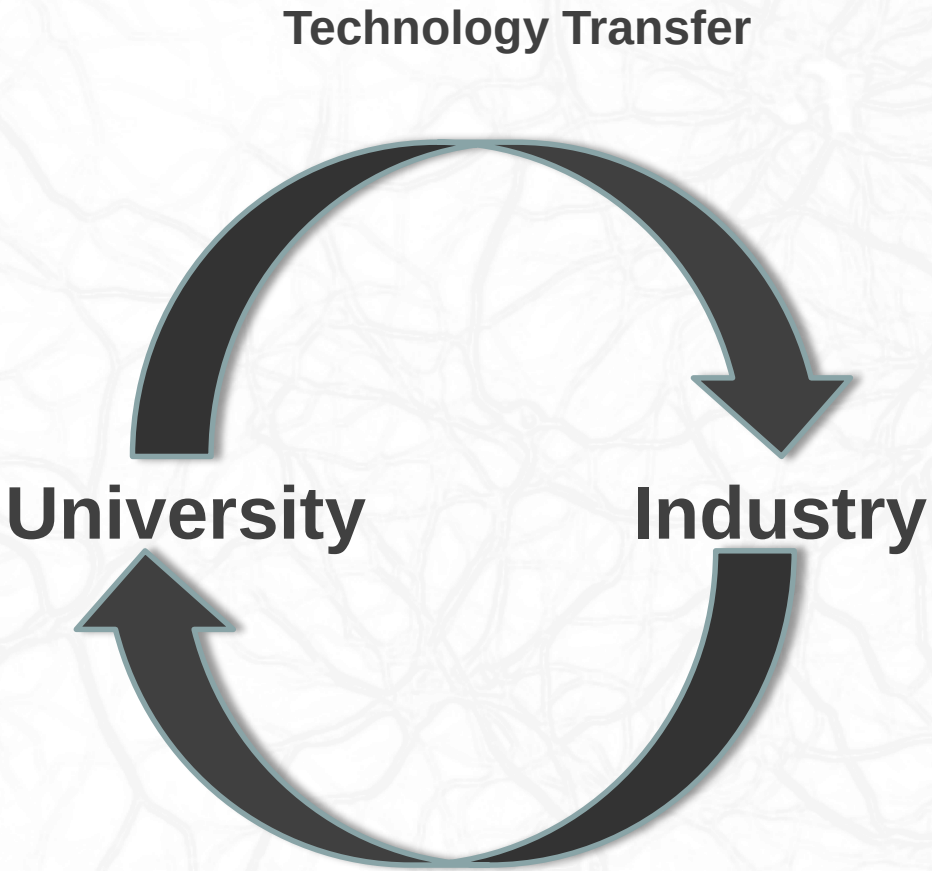
The classical European perception of university-industry synergies



- Research contracts
- Gifts
- Patent royalties

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Market Pull
Innovation based on market needs

Science

Contracts between higher education institutions and the entrepreneurial sphere

Spin-enterprises, issuing patents

Market

Technology push
Innovation based on research results

Research → Development → Innovation

Obstacles to efficient technology transfer in Hungary

Inherent historical obstacles

- Technology transfer within institutions is not centrally organized, not functioning on an institutional level
- Successful researchers are not willing to share their business partners with other researchers
- No real acknowledgement of the third mission of higher education insitutions (a general characteristics of Humboldtian institutions)

Attitude of the entrepreneurial sphere to the R&D activity of universities

- As techtransfer activity on universities are fragmented (organised not on an institutional but on an individual level), the R&D potential of universities is not visible enough
- There is no real need for sophisticated R&D activity of universities, requests of companies are below the dignity of researchers

Regulatory framework, market environment

- Entrepreneurial schemes and good practices are imported from the United States without adjusting them to national characteristics
- Entrepreneurial culture is underdeveloped, researchers do not have the necessary transversal, and entrepreneurial skills to make themselves visible.
- Insufficient continuous funding of technology transfer activity

Misunderstandings about the nature of the of HEI–industry cooperation (through the example of the Stanford University and Silicon Valley)

First misperception :

Industry supports research at Stanford

Source	Stanford
US Department of Energy	28.9%
US Department of Health and Human Services	25.5%
NASA	12.6%
US Department of Defense	9.4%
National Science Foundation (NSF)	6.0%
Industry	**15.0%**
Others	2.6%

Industry support represents only 15% of total at Stanford and generally less than 20%

Stanford Facts 2013; J.L. Clément, Kiev, 21 May 2013

Misunderstandings about the nature of the of HEI–industry cooperation (through the example of the Stanford University and Silicon Valley)

Second misperception :

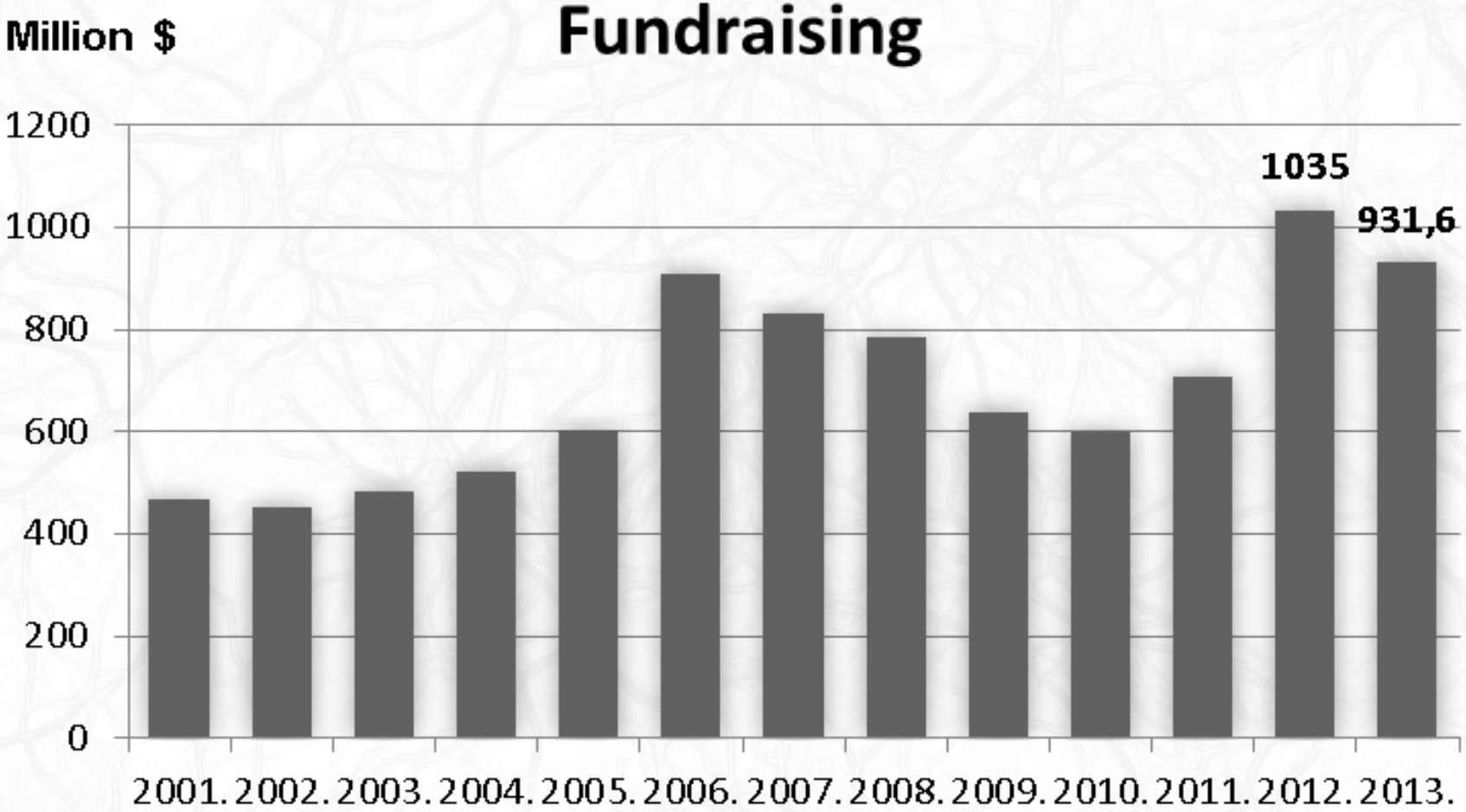
Patents bring significant resources to Stanford!

- **In 2012–13 Stanford concluded 103 new licenses**
- **Stanford received gross royalty revenue from 622 technologies**
- **42 of the inventions generated $100,000 or more in royalties**
- **3 inventions generated $1 million or more.**

Stanford received more than $87 million in gross royalty revenue less than 1.8% of the total budget of $4.8 billion

Stanford Facts 2013; J.L. Clément, Kiev, 21 May 2013

Third misperception: industry versus successful individuals



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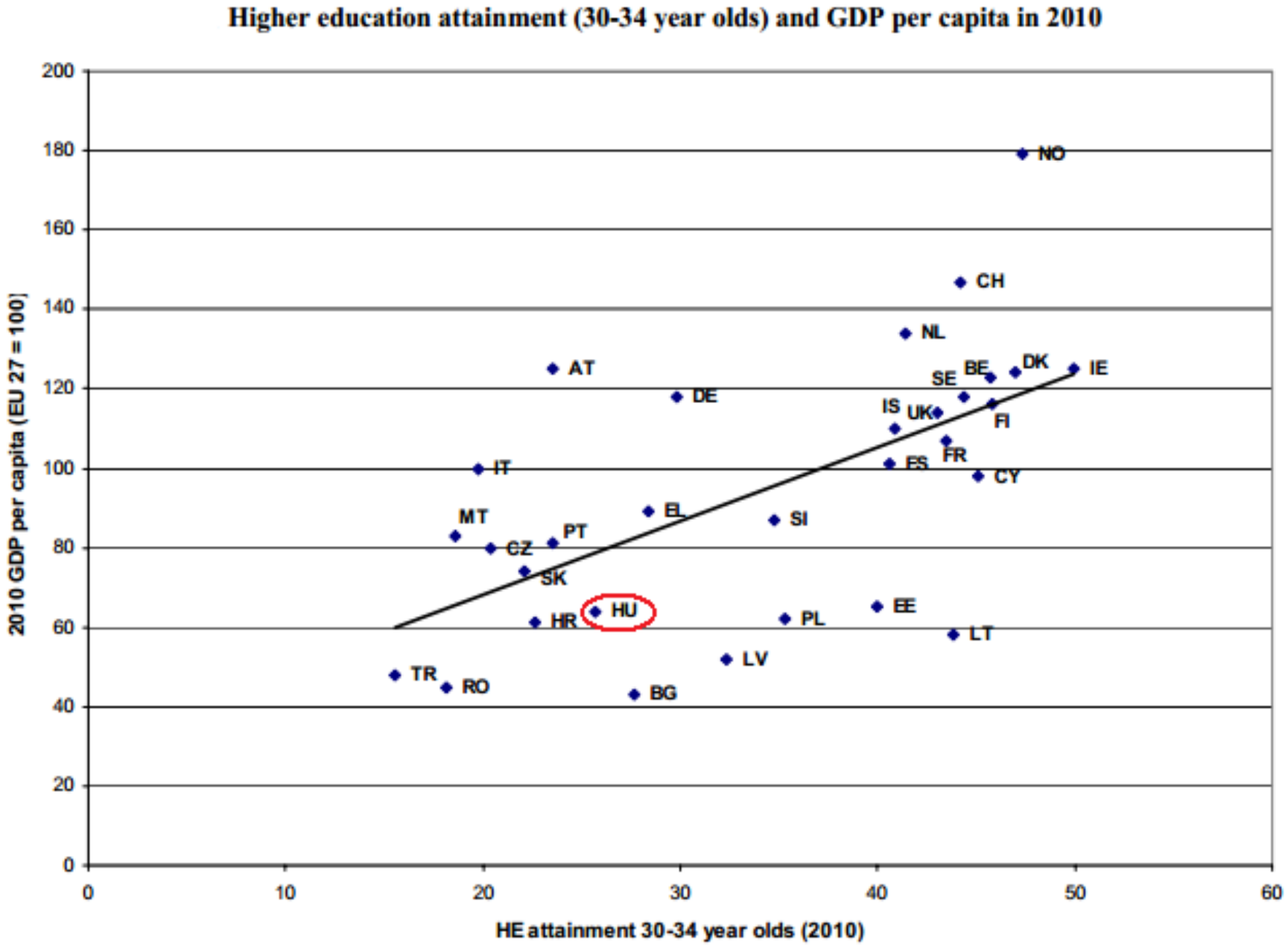
In summary…

In summary	• Donations come mainly from **successful individuals** • Research funding comes mainly from the **government** • Patents create 1.8% of the revenue
So why the impression of such strong connections between Stanford and Silicon Valley?	~33% of the Silicon Valley revenue is from Stanford spin-offs
What proportion of enterprises have used Stanford technology either directly or indirectly?	Of the 1200 enterprises issued from Stanford, only 5% have used technologies developed at Stanford!
Stanford's contribution to Silicon Valley?	**Technology** <<**The Myth**>> **Educated People** <<**The Reality**>>

Probably the most important contribution that Stanford has made to the development of Silicon Valley was to attract and to educate talented students, many of whom preferred to stay in the area.

Stanford Facts 2013; J.L. Clément, Kiev, 21 May 2013; courtesy of Prof. Bob Byer, Stanford



Source: Eurostat (Data for EU-27 + Norway, Switzerland, Croatia and Turkey)

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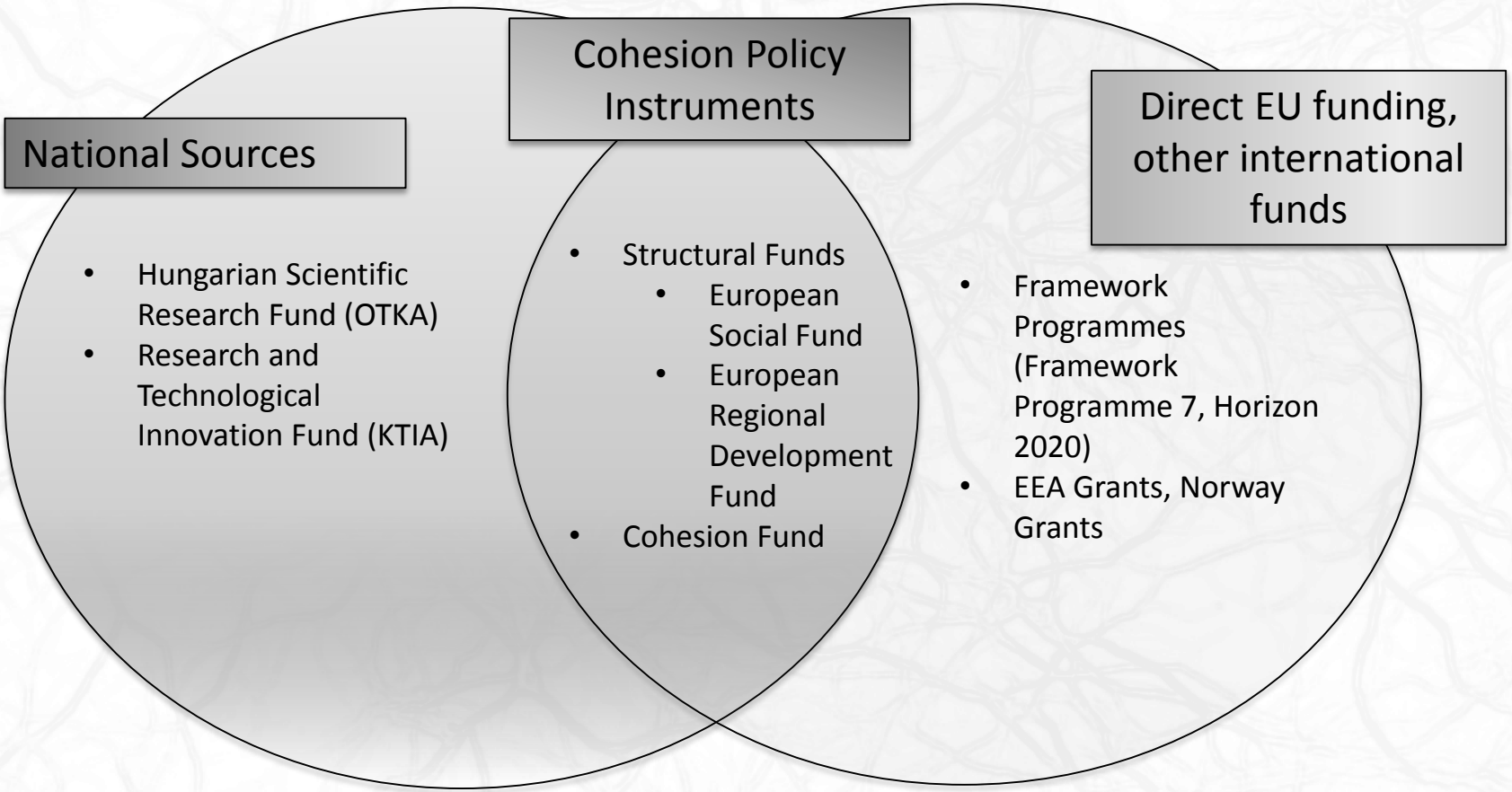
Sources of R&D Funding



Main goal: bridging the resource gap

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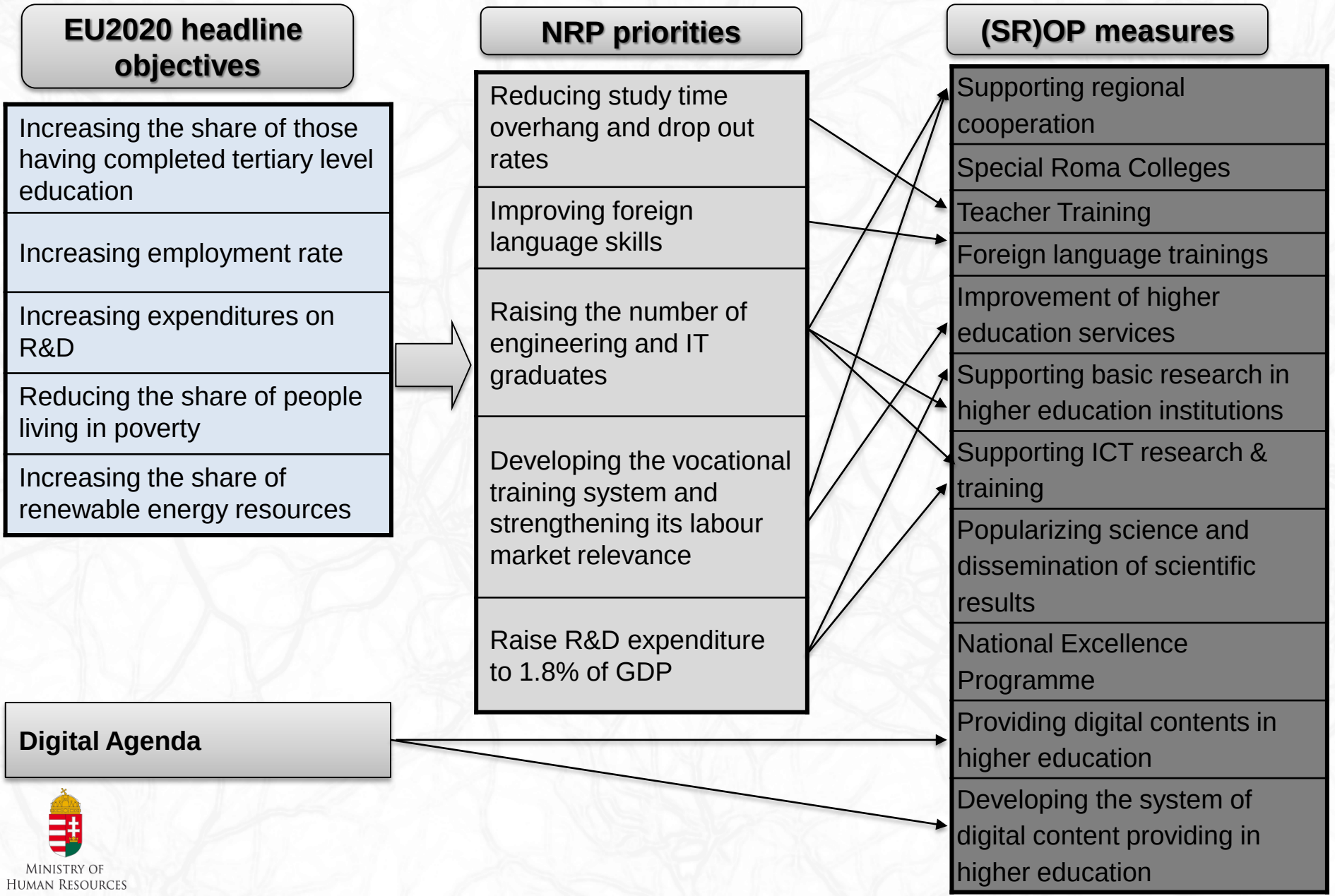
Strategic goals of higher education development - relevant measures



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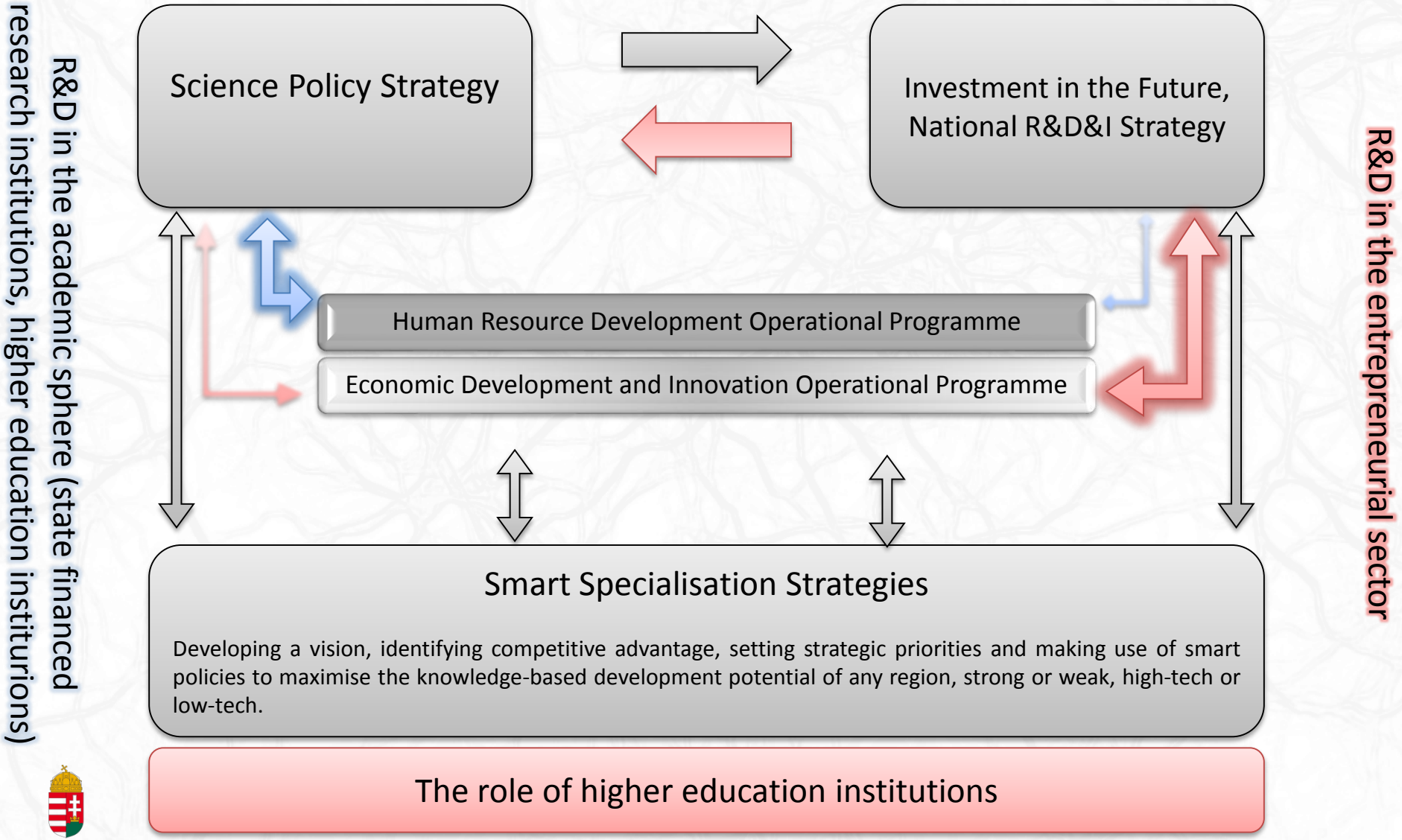
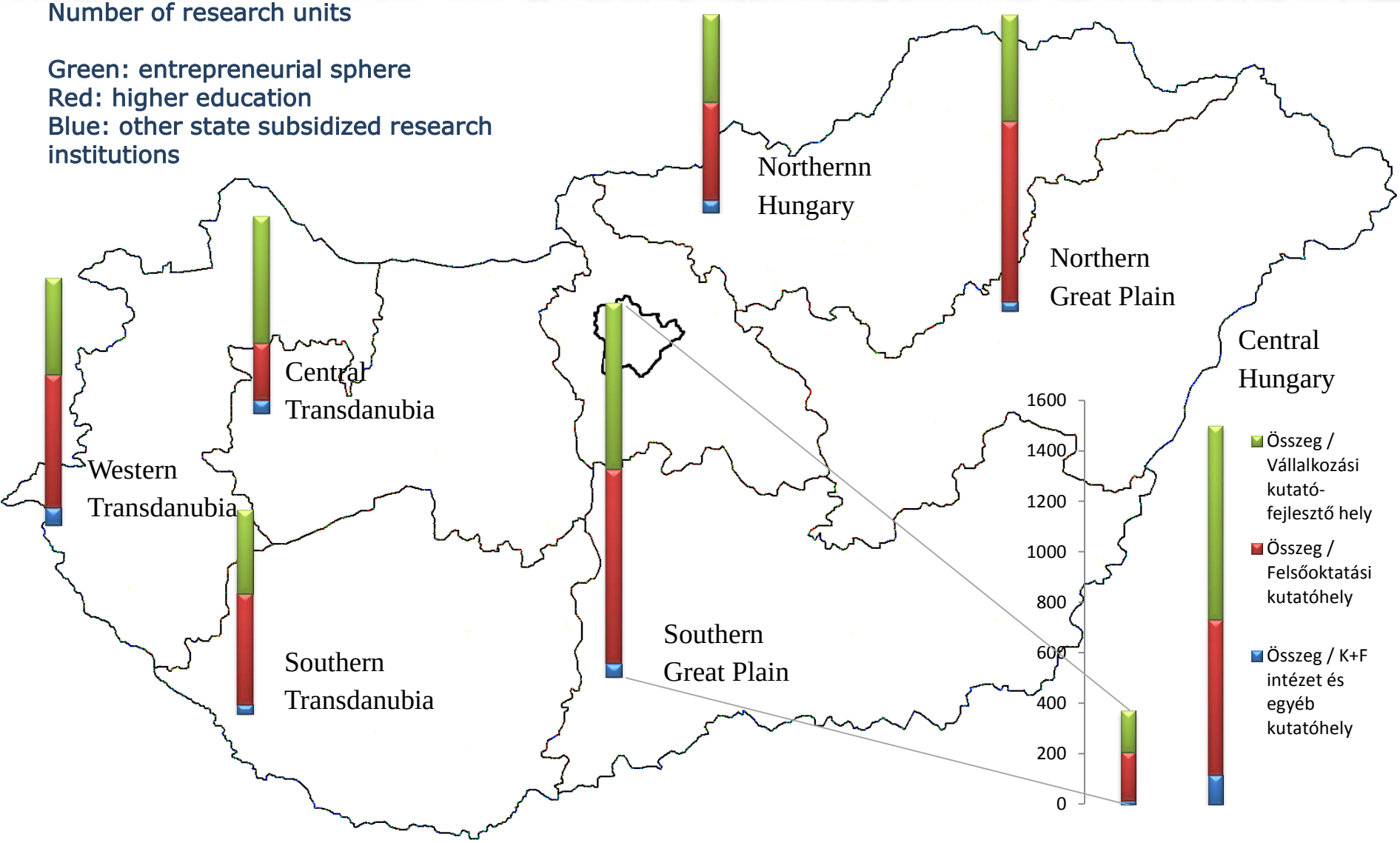
Relevant Strategies and Operational Programmes in Research & Development and Innovation



Why is Smart Specialisation Important from the Perspective of Higher Education

Number of research units

Green: entrepreneurial sphere
Red: higher education
Blue: other state subsidized research institutions



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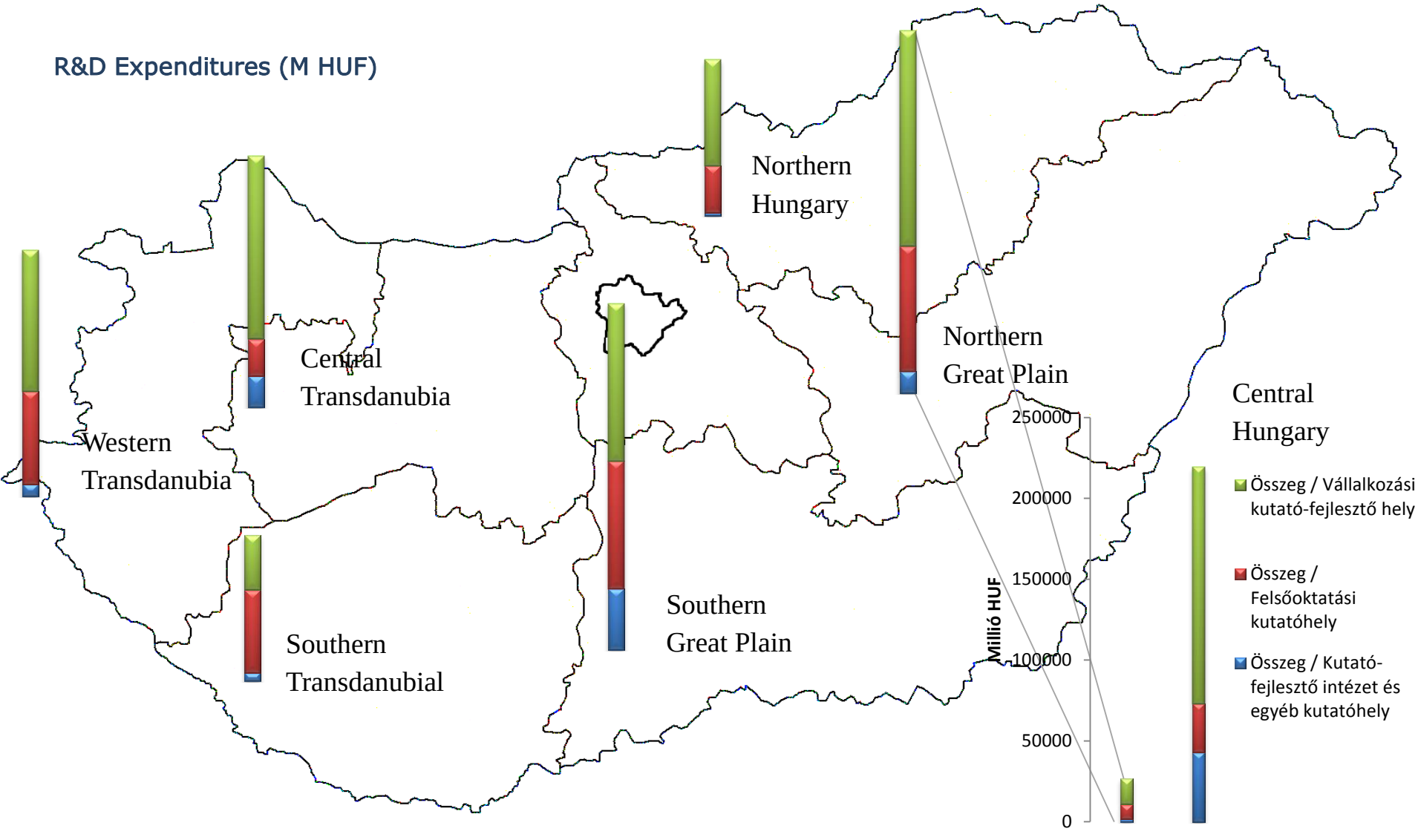

Main goals of the Science Policy Strategy

- Improving the funding system of basic research
- Improving quality of human resources & talent support
- Renewing and improving research infrastructre
- Improving accessibility of scientific databases, strengthening the impact of Hungarian research
- International cooperation, participation in scientific networks
- Harmonising cooperation between the industry and the academic sphere (strengthening the knowledge triangle)

Horizontal goal: Active involvement of higher education instiutions into the drafting and implementation of Smart Specialisation Strategies

Goals of the Human Resource Development Operational Programme

- Fighting Poverty
- Strengthening social cohesion
- Promoting health, improvement of health services, healthy ageing
- Improving public education with special emphasis on combating early school leaving
- Increasing the proportion of those with tertiary education
- Talent support and improving quality in R&D
- Strengthening good governance

Possible paths to support competitiveness of Hungarian higher education

Institutional excellence

A “university of national excellence” qualification can be awarded to those institutions that bear significant scientific results and their position in the international rankings is expected to improve.

“Research University” qualification can be awarded to the university or one of its faculty if the R+D+I intensity is high or shows tendency to develop.

“College of applied research” qualification can be awarded to the college where the intensity of applied researches is high or shows tendency to develop and has important business and industrial relations.

Personal excellence

In order to increase the ability of retention of the academic carrier path excellent students, doctoral candidates, teachers and researchers are sponsored on the basis of excellence within the frames of the National Excellence Programme. Promotion and motivation of talented students to become teachers is essential in ensuring the rising generation’s education.

Special institutions of talent cultivation

Colleges for advanced studies are responsible for providing high quality training programmes and preparing for self-gathering and holding public function.

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Thank you for your attention!

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