An evolution of the system of business-science cooperation in Lithuania

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VISIONARY ANALYTICS

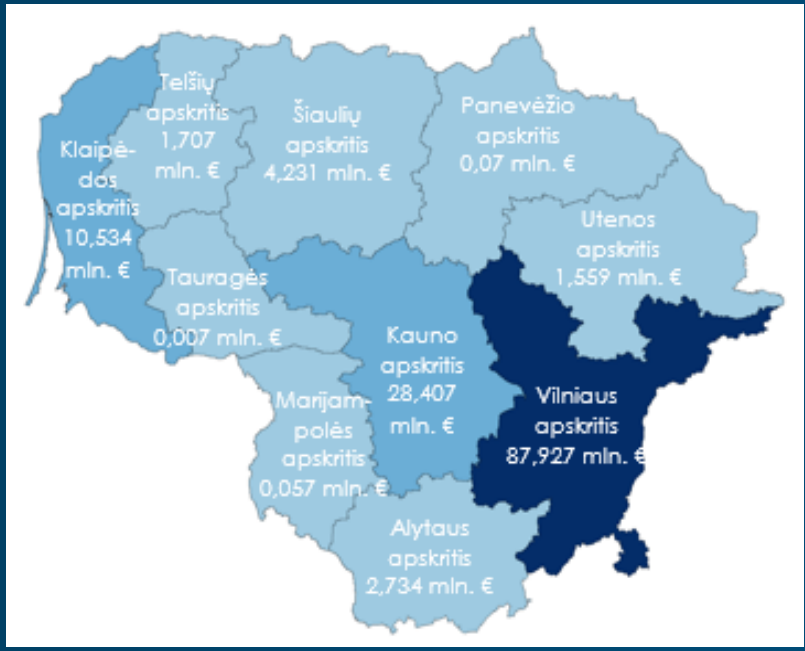
Challenges

Structural vs Cultural:

- Insufficient demand for innovation (incl. firms' smaller stock of knowledge) *vs*
- Low efficiency & entrepreneurship within public R&D sector
- Lack of culture of collaboration & trust

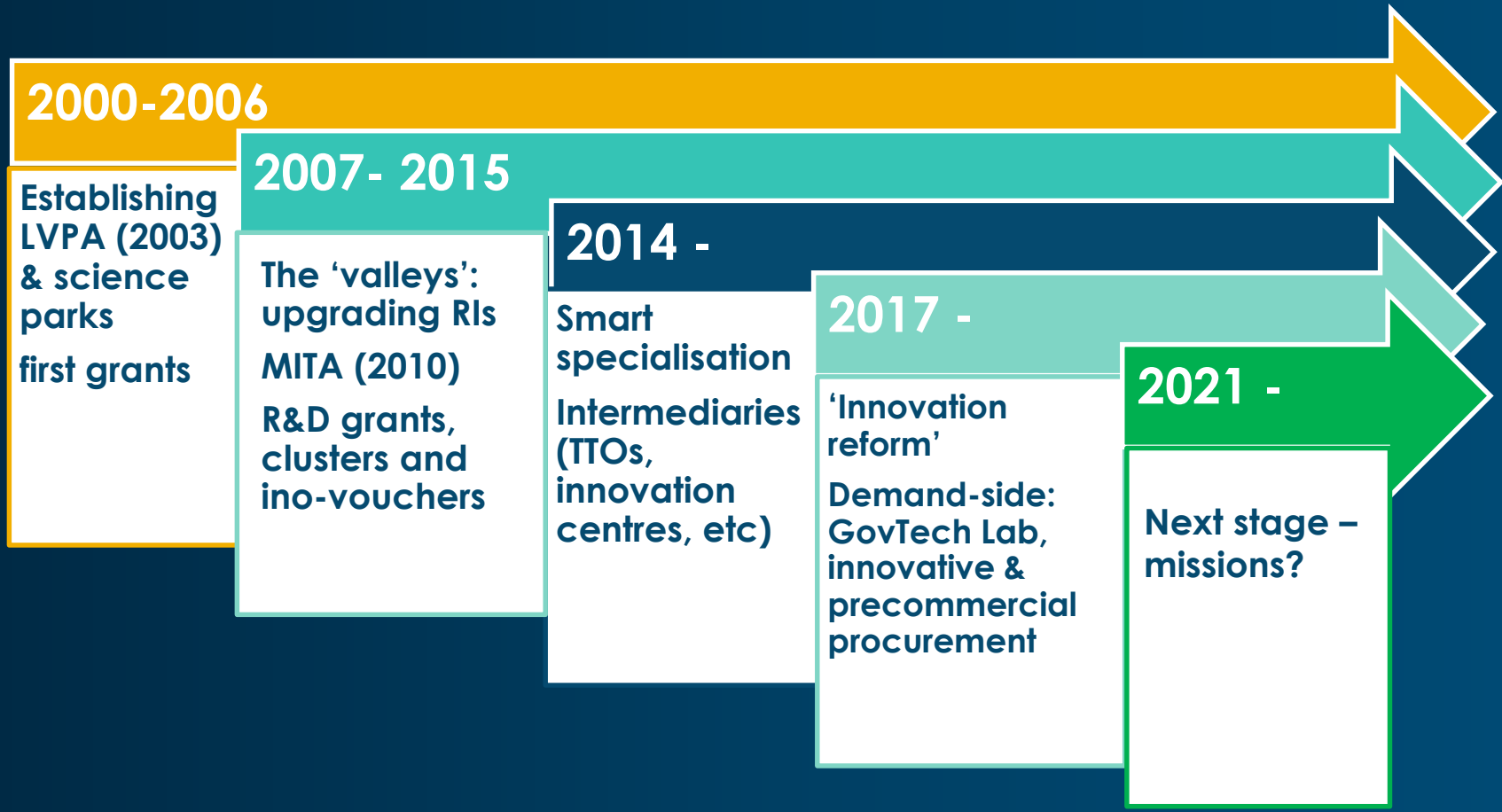
Institutional:

- Inconsistent and unsustainable national R&D funding
- Unattractive research careers
- Outdated RIs

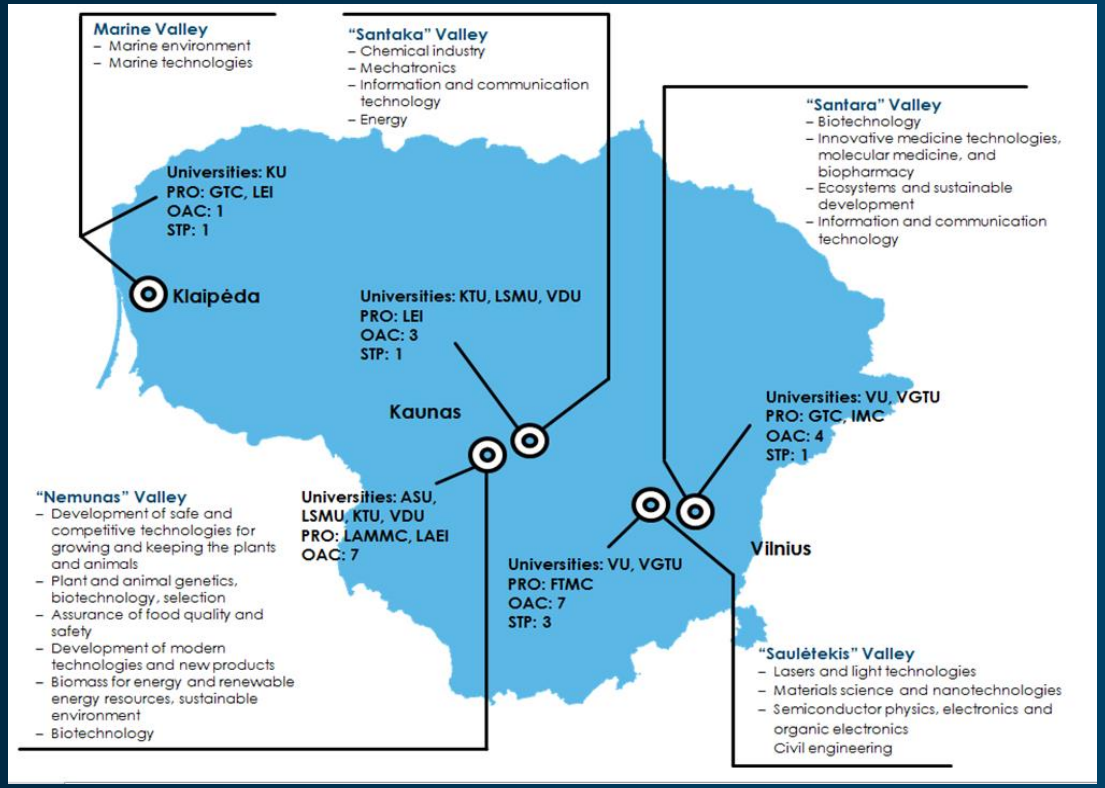


Majority of business R&D grants are absorbed by Vilnius region. Source: Visionary Analytics (2019)

Evolution of the policy mix



The ‘valleys’ (2007)



- The location-based approach.
- €364m from the ERDF invested in 25 public RIs which would enable the public research system by providing services to external users.
- The concept of ‘valleys’ also foresaw ‘joint/complex’ programmes and R&D collaboration projects, but cooperation remained low.

Key lessons from 2007-2013

1. Focus on upgrading infrastructure vs skills and human resources.

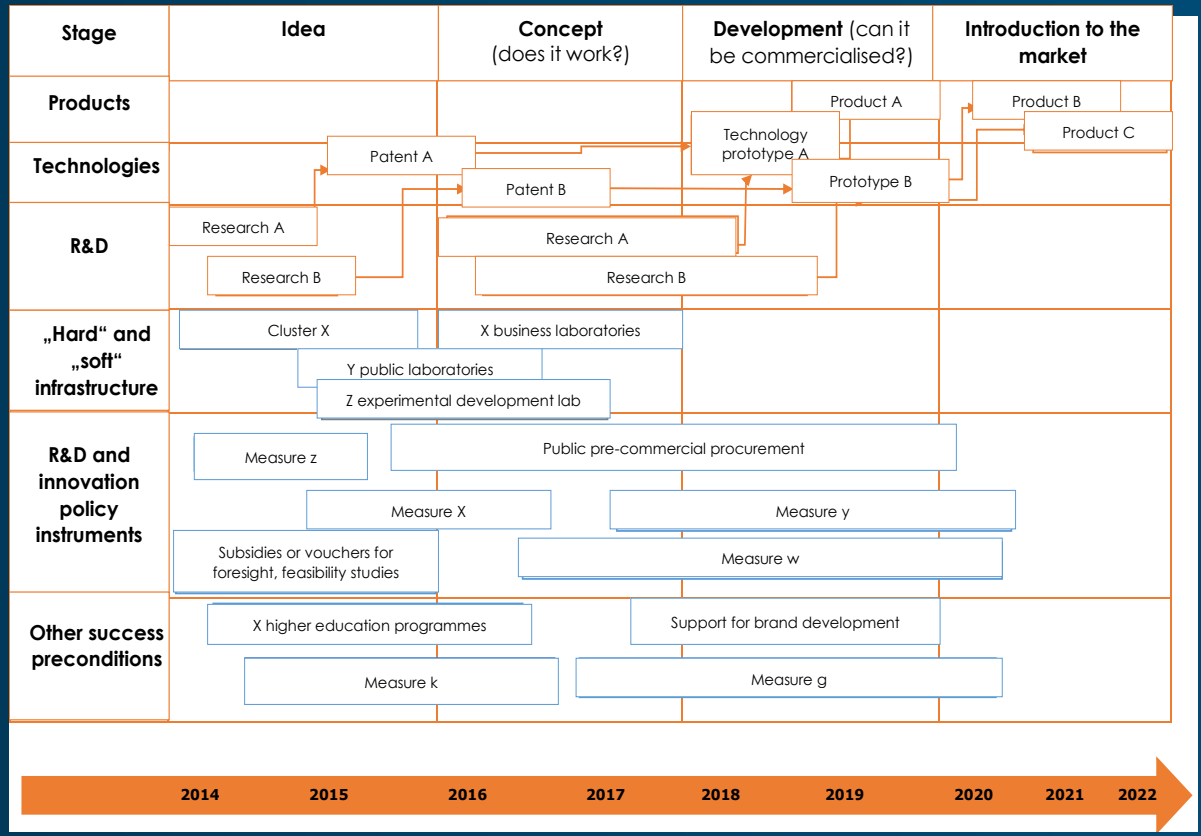
2. A lack of coordination and strategic vision led to fragmentation (for example, clusters disconnected from 'valleys', majority of the updated RIs lacked critical mass).

3. Failure to attract business investments into the 'valleys'.

Smart specialisation (2013-2014)

Initial idea:

1. *Abandoning the sectoral approach* and focusing on priorities of cross-cutting nature exploiting existing public and private R&D capacities in several fields and sectors.
2. Orientation towards results – *staged approach.*
3. Entrepreneurial discovery



Lessons – smart specialisation

1. Cross-cutting priorities and the suggested 'stage-gate' approach posed a threat to smooth administration of funds since it required additional programme management and intelligence resources.

2. Different maturity of priorities *vs* difficulties in prioritising (killing unpromising priorities)

3. Entrepreneurial discovery implies that it is a continuous process that should also encourage experimentation and risk-taking. This goes counter to the logic of ESIF framework that is supposed to monitor (and help accounting for) outputs and results.

4. As a result, majority of R&I programmes in Lithuania fund sectoral projects serving the needs of one company.

Lessons 2014-2020 – key programmes

- National science programmes & 'needs-based R&D' (partnership – optional)
  - Rigid and restrictive conditions
- The "Joint business-science projects / Intellect" (partnership – optional)
  - Criticised for low attractiveness to research institutions. As a result, business and research entities collaborate unofficially, with businesses subcontracting researchers directly.
- Innovation vouchers – a success story
  - Popular + evidence of impact

Results

There is progress, but so far BSC support measures following a targeted sectoral approach did not deliver substantial results.

- Only **8%** of Lithuanian innovative enterprises collaborate with public research institutions. (STRATA, 2020)
- Total income from contract R&D (from Lithuanian or foreign businesses) was **€16m** in 2018 (STRATA, 2020), less than one Fraunhofer research unit contracts per year.

Recent developments

Innovation Reform (from 2018)

- Law on Technology and Innovation foresees NSTPs
- Increased attention to 'experimental development' ('Eksperimentas')
- Digital Innovation Hubs
- Increased investments into procurement of innovation (up to 20%)

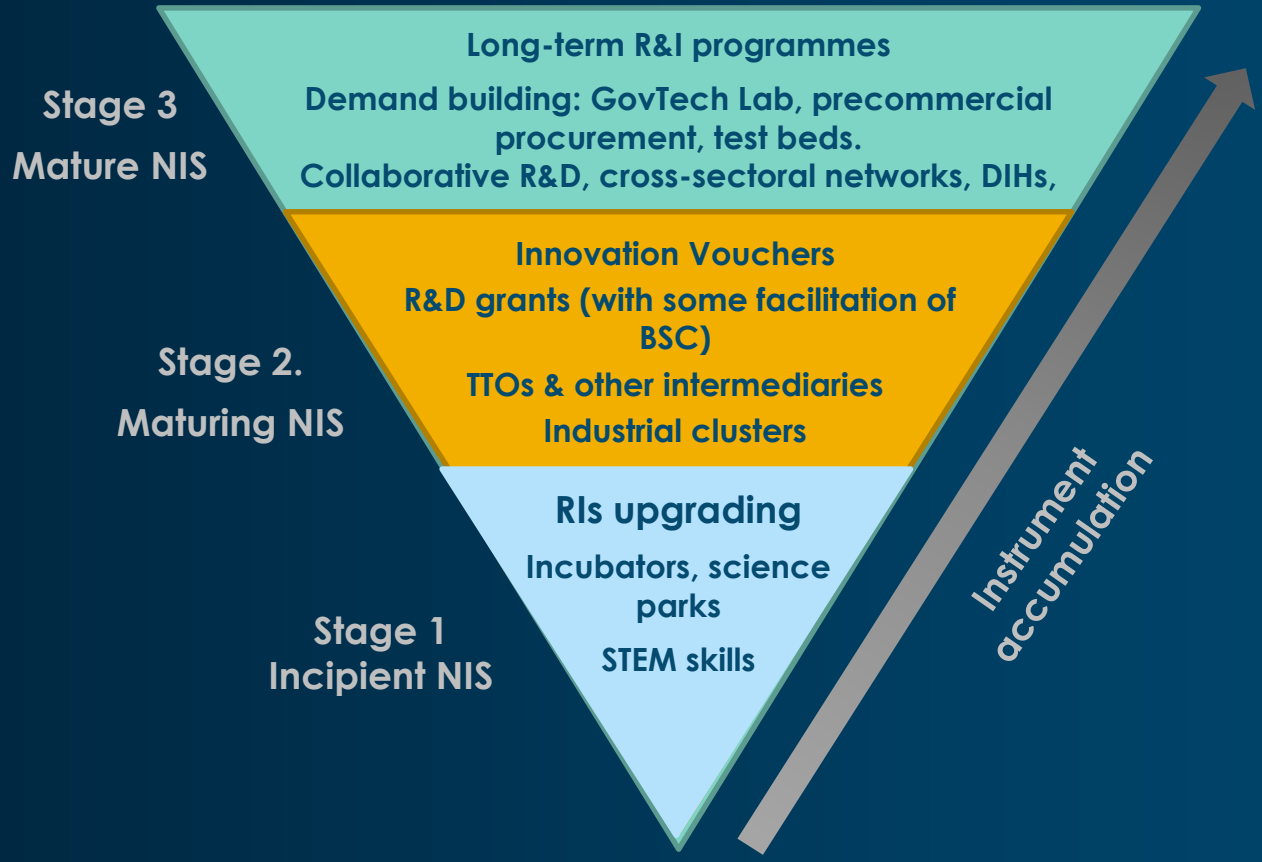
Experimentation with demand–based funding (from 2017):

- GovTech Lab
- Precommercial procurement
- From market fixing to market making – success story of the LT fintech sector

Economy DNA plan (2020):

- More funding to public RIs (AGAIN!) and R&D addressing COVID-induced challenges

Lithuanian NIS maturing?

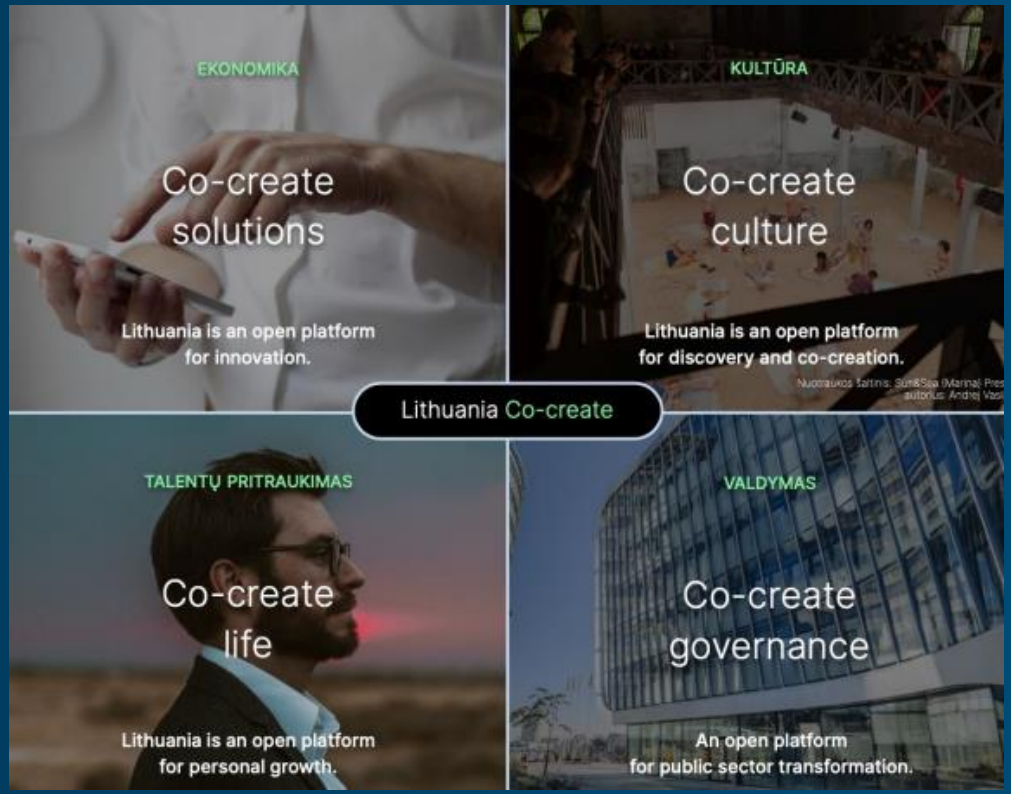


The 'Capabilities Escalator'. The policy mix evolves from less to more sophistication, following NIS development (from incipient to mature innovation system).

Cirera, Maloney, 2017. The World Bank Productivity Project

2021-2030. A new phase?

- NDP2030 foresees innovation as a horizontal priority
- Lithuania's branding strategy 'Lithuania Co-create'
- **Strong push from the EU.** Missions-based approach to Horizon Europe (and 'ripple effect' in many EU MS)
  - *'The green revolution (redirecting all sectors) requires a major push (kick in the ….) not a nudge'. M.Mazzucato*



Conclusion

1. There is a reason to be optimistic. But there is also a lot of work to be done!
2. Personal relationships drive BSC. It's a people game!
3. Removal of barriers (eg. funding, bureaucracy) does not create BSC. Having a shared goal does!

~~Bureaucracy & rigid~~ conditions

Attractive, inclusive, flexible programmes. Remove regulatory barriers

~~Fragmentation & silos~~

A functioning ecosystem - synergies btw policies, programmes and institutions

~~Competition & lack of~~ trust

Shared goals

~~Inconsistent R&D funding~~

More R&I funding (not just more RIs funding)!

'N~~ot enough innovative firm~~s'

Building firm capabilities (incl FDI) & bringing more actors into cooperation mix.

Lack of incentives at ~~individual level~~

Attractive research careers & stronger culture of academic entrepreneurship

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Thank You!

Why facilitate BSC?

- **INDIRECTLY: BSC seen as a major factor in knowledge diffusion and development of knowledge economies**
- **DIRECTLY:**

HEIs	• The relevance of research and teaching content • The third mission (knowledge transfer) • Third-party money
Researchers	• Opportunities to fund projects • Publishing opportunities
Business	• Access to / training future employees (skills and knowledge) • Future income
Society & Gov	ROI: • Future income • Solving societal challenges

Success story: Thermofisher Scientific

1995 ***Fermentas*** is established as a separate entity from the Institute of Biotechnology

2009 Expands to China and opens a distribution office **Fermentas China**

Receives 2 m EUR from the ERDF and invests another 2 m EUR from its own budget for R&D infrastructure upgrade

Receives 830 000 EUR from the ERDF to increase export and upgrade the manufacturing process

2010 ISO 13485 certificate for medical devices

2009-2014 Receives 2 m EUR from the ERDF and invests another 4 m EUR from its own budget for R&D projects to expand product range

Fermentas is sold to *Thermo Fisher Scientific*

Thermo Fisher Scientific Baltics established

Recognized as the **Competence Centre of Molecular Biology of Thermo Fisher Scientific**

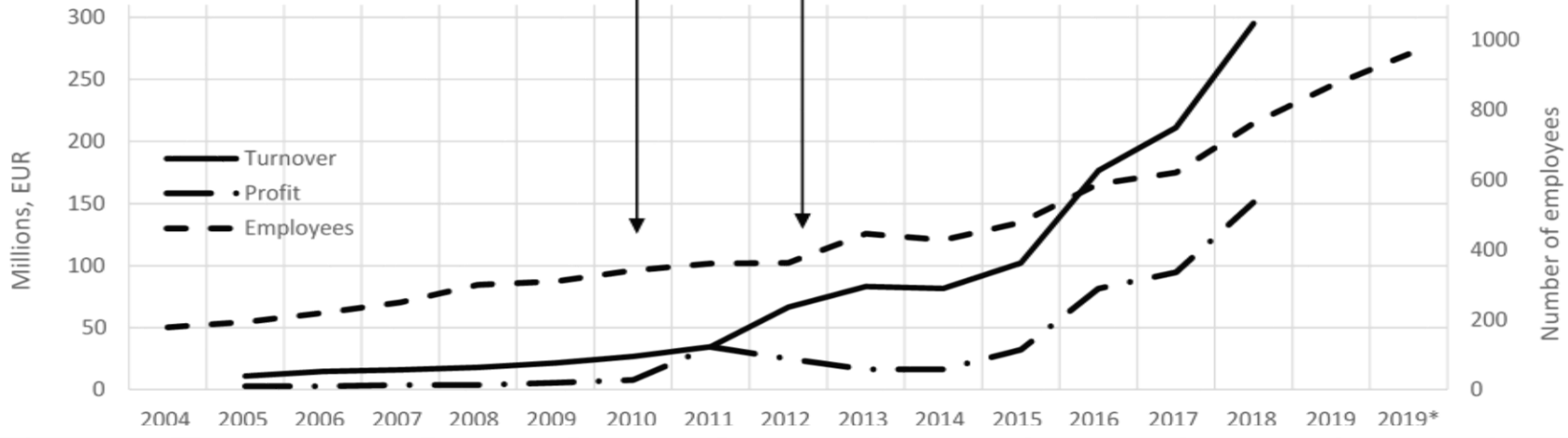
2011-2012 13 m EUR investment to build additional facilities for R&D, manufacturing, warehousing

2014-2015 Expands product range to include molecular biology products for life sciences and diagnostics

Invests 7 m EUR from its own budget in sterile A and B class manufacturing labs

2017 Shingo Prize for Operational Excellence

2019 Three new subsidiary companies established



Drivers for collaboration

	Lifesciences	ICT	Engineering & lasers	Food & Agro
Close proximity and well established ties	√		√	√
Interdisciplinary collaborations	√	√	√	√
Seeking human resources		√		
GovTech initiatives	√	√	√	
Access to open data	√	√		√

Remaining barriers

	Lifesciences	ICT	Engineering/ lasers	Food
Capital-intensity	Capital intensive	Much less capital-intensive	Capital-intensive sector.	Capital-intensive
Regulatory barriers	Yes, eg. access to data	Relevant	Especially relevant	Relevant
Ineffective public policy instruments	Insufficient incentives to introduce innovations into the national health system is an important barrier	Need for alternatives to precommercial procurement (too complex / long, restrictions for startups)	Public authorities could be more involved in promoting experimentation on large-scale solutions in such cases where they may act as first users	
		Lack of instruments at the earliest stage. Long timeframes between the calls.		Seasonal change is sometimes a barrier
Culture of collaboration	'Papers vs patents'	Lack of incentives for 'traditional' cooperation routes.	More efforts needed to advance use of laser technology in other domains.	Maturity of capacities - the most significant barrier.
Skills base	Lack of interdisciplinary know-how limits opportunities.			