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Innovation from Public Research

**Building a Knowledge Transfer  
Office in Europe:**  
*The Innovation Model*

**Gilles Capart**

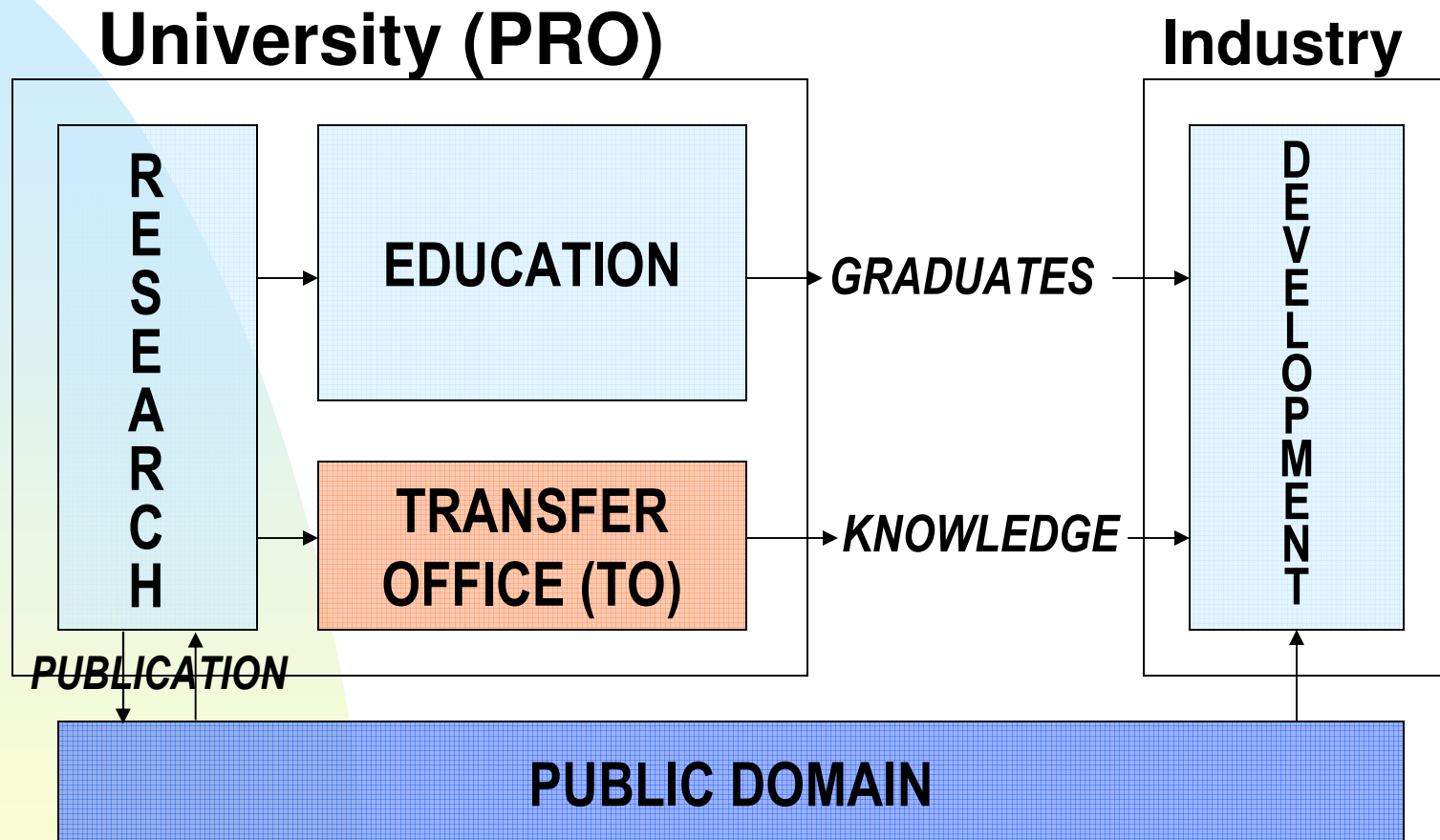
**Chairman of the Management Board  
of ProTon Europe**

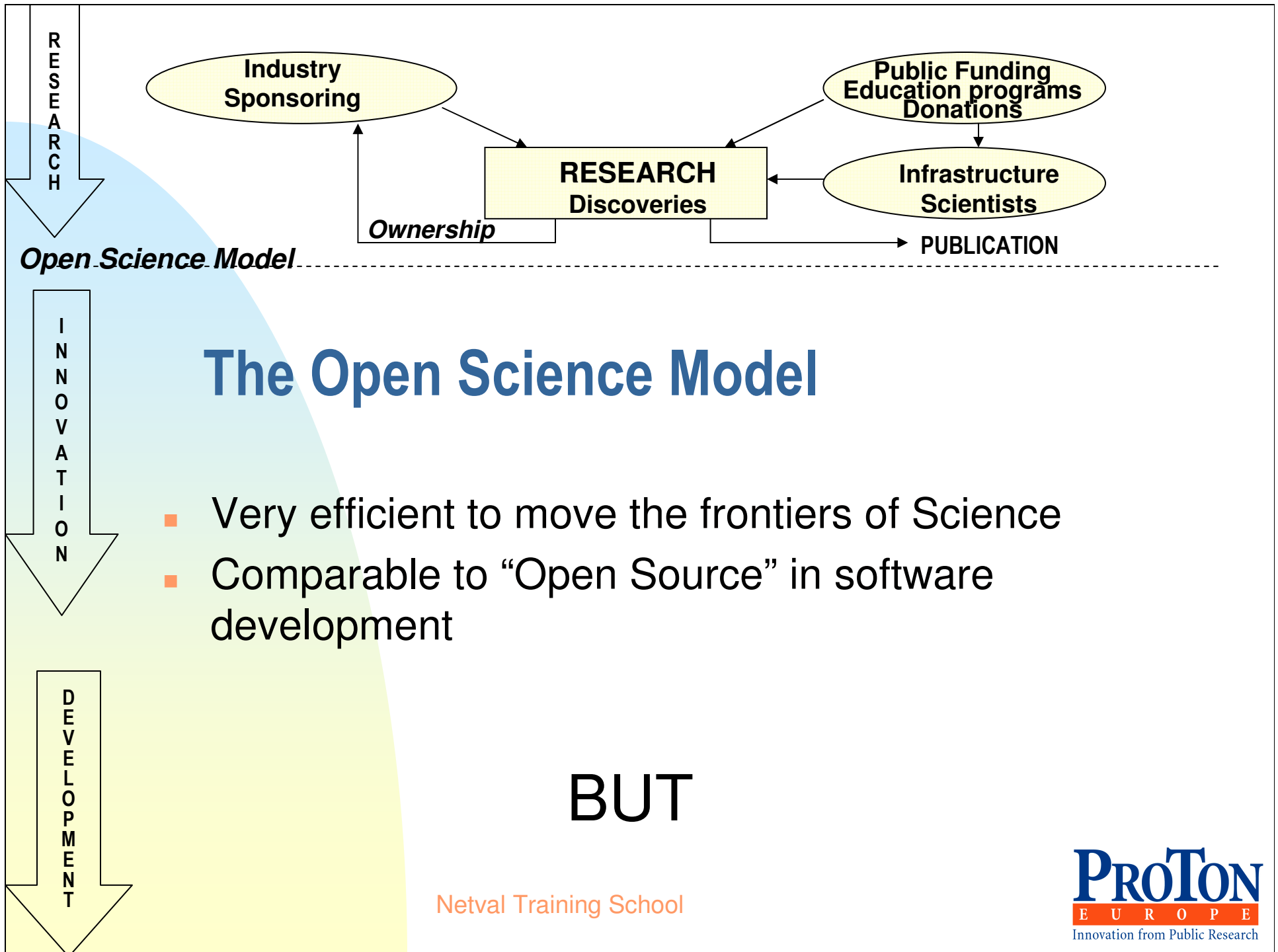
# Innovation and Public Research in Europe

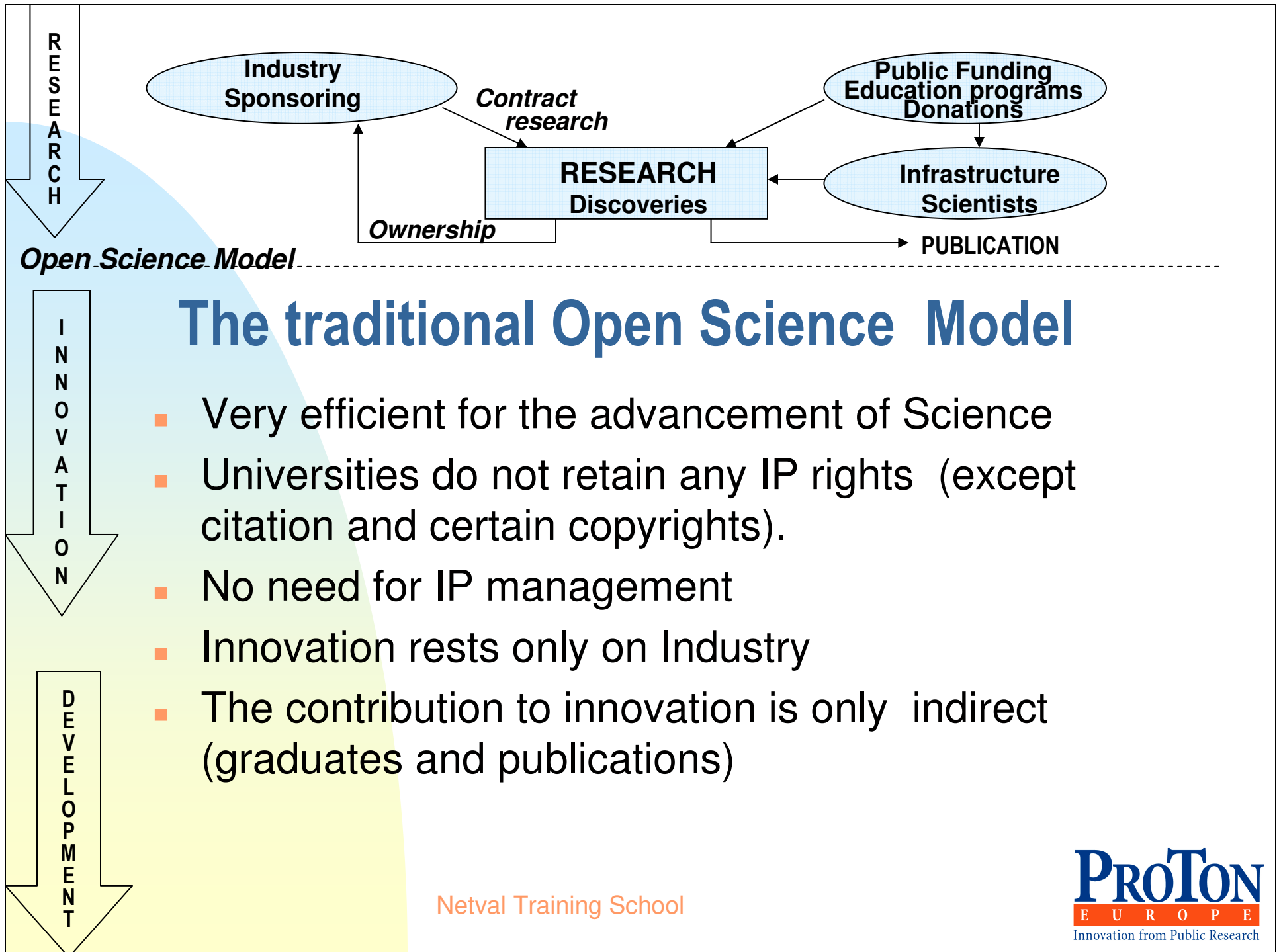
- The Lisbon challenge (myth?) of becoming the most competitive **knowledge economy** by 2010
- 70% of all pre-competitive R&D by PROs (Public Research Organisations)
- 70% of all patents filed by Industry are based on PRO results (source: Narin et al. for USA)
- European Inventor of the year 2006
- But: only 5% of innovation in Europe is attributed to PROs (Source: Innovation scoreboard)

**The participation of Public Research in Europe is still mostly indirect**

# How is Knowledge transferred?



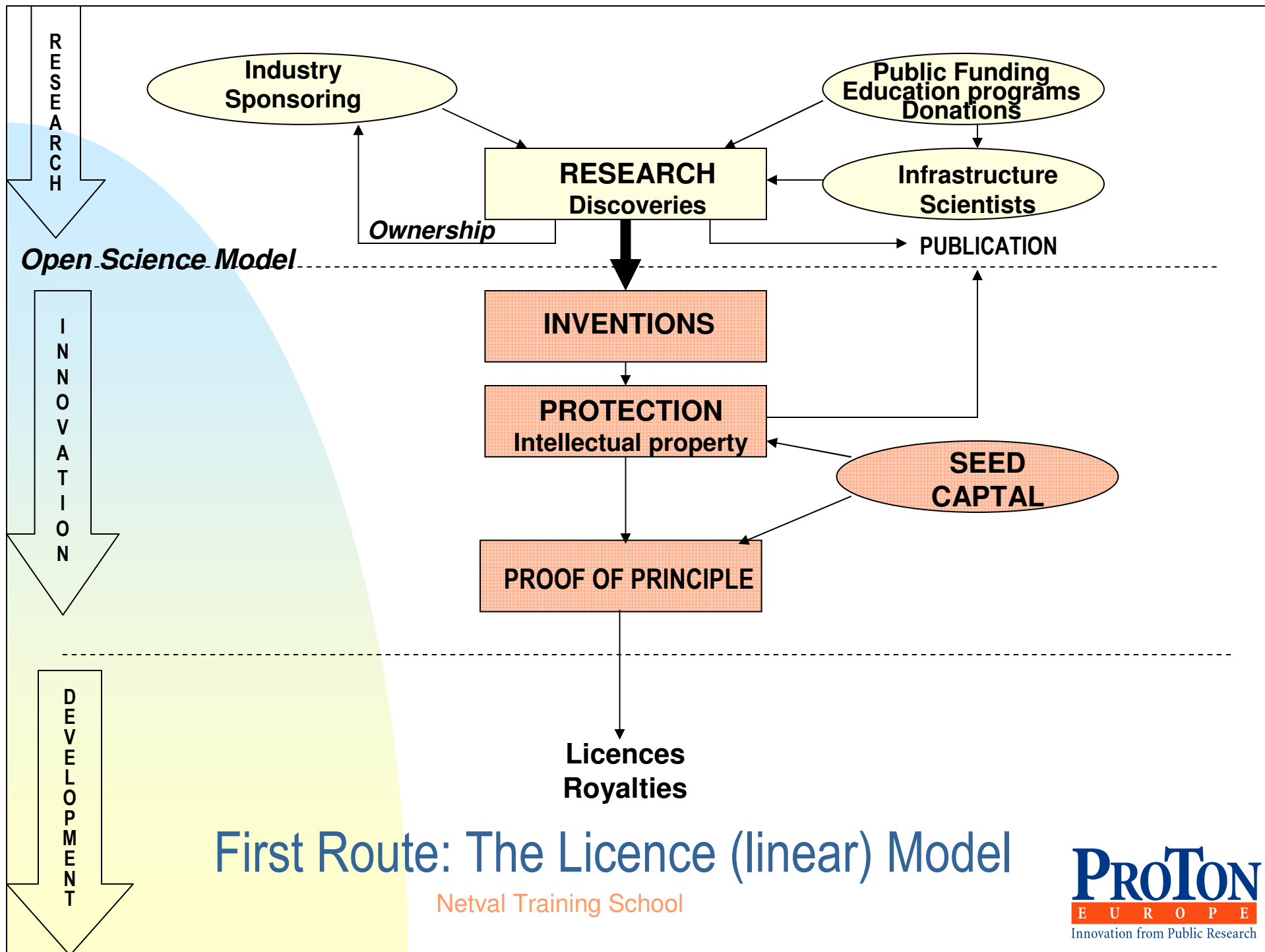




# The Open Science Model

- No Intellectual Property is created or retained (except citation and copyrights)
- Little incentive to invest in applications (both by culture and lack of protection)
- Limited direct effect on European economy
- Innovation rests entirely on Industry

**Conversion of Knowledge into applications is not efficient**



# Why is patenting essential to innovation from universities?

- Cannot rely on trade secrets.
- Must publish without delay to participate in worldwide open science network
- Cannot exploit directly inventions, must licence out.
- Most inventions are early stage and need improvements to become economically attractive.

**Patenting is the only way to reconcile publication with innovation**



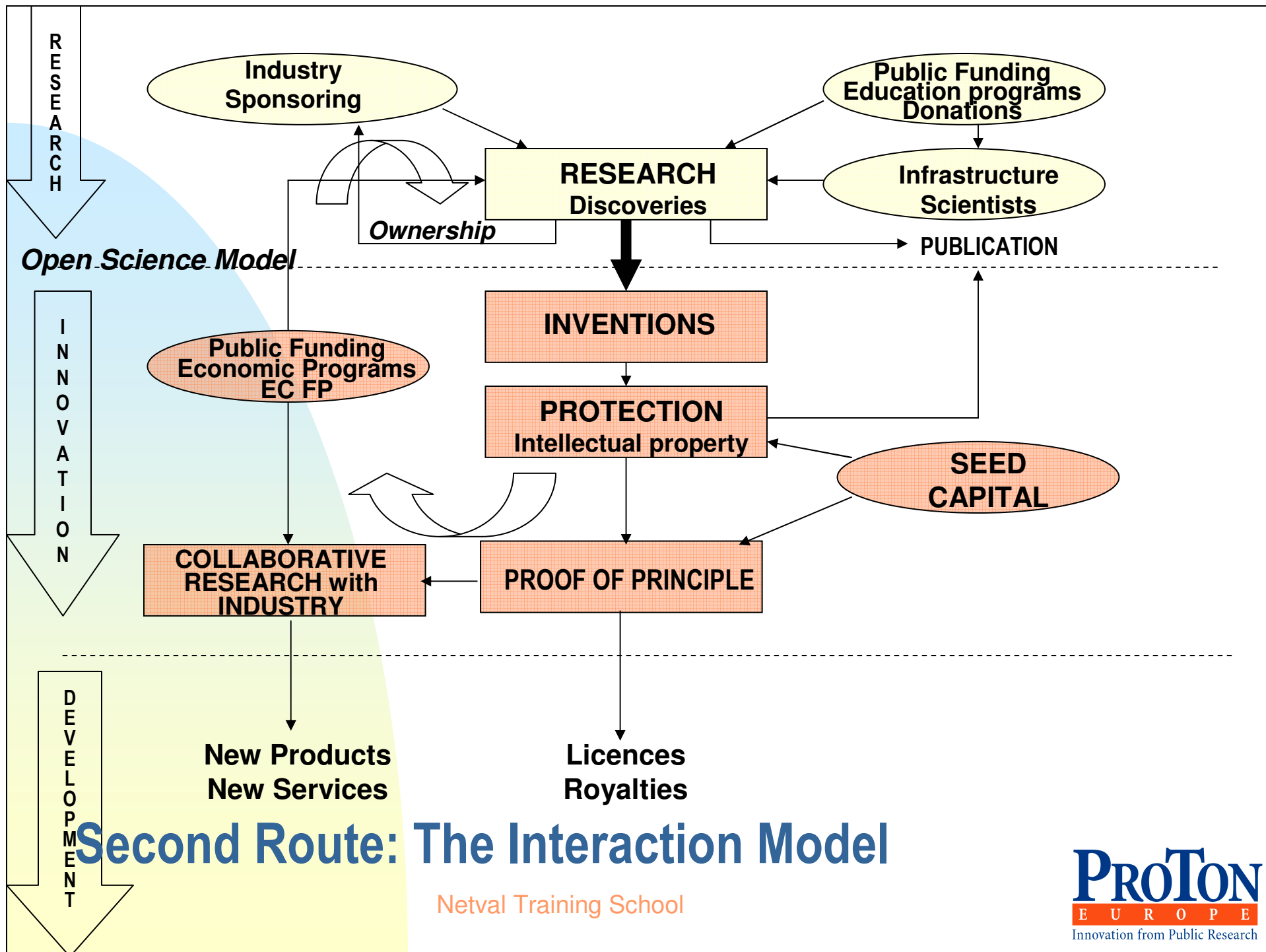
# The licence model

- Widespread in the USA since Bayh Dole Act (1980)
- Very successful in the USA
  - ◆ License revenues for PROs and inventors
  - ◆ New products
  - ◆ New companies
- Does not work well in Europe
  - ◆ Ownership of results by PROs not (yet) recognized as good practice
  - ◆ Patenting costs are prohibitive (5xUS)
  - ◆ No grace period nor continuation in part
  - ◆ Lack of funding of Proof of Principle
  - ◆ **Not enough uptake by European industry**
  - ◆ Most deals are with non-European licensees: does not support European economy

# Comparison of KT indicators

Average per Institution	Europe (N=172) <sup>1</sup>	US + Canada (N=232) <sup>2</sup>
Number of invention disclosures/year	18	73
Priority patent applications/year	7	45
Number of options & licenses/year	4	21
License revenues/y	157 K€	4,974 K€
Turnover of Industry sponsored research	2.0 M€	5.6 M€
Number of spin-outs created/year	1	2

1. ProTon Europe FY 2004 Survey
2. AUTM FY 2004 Survey



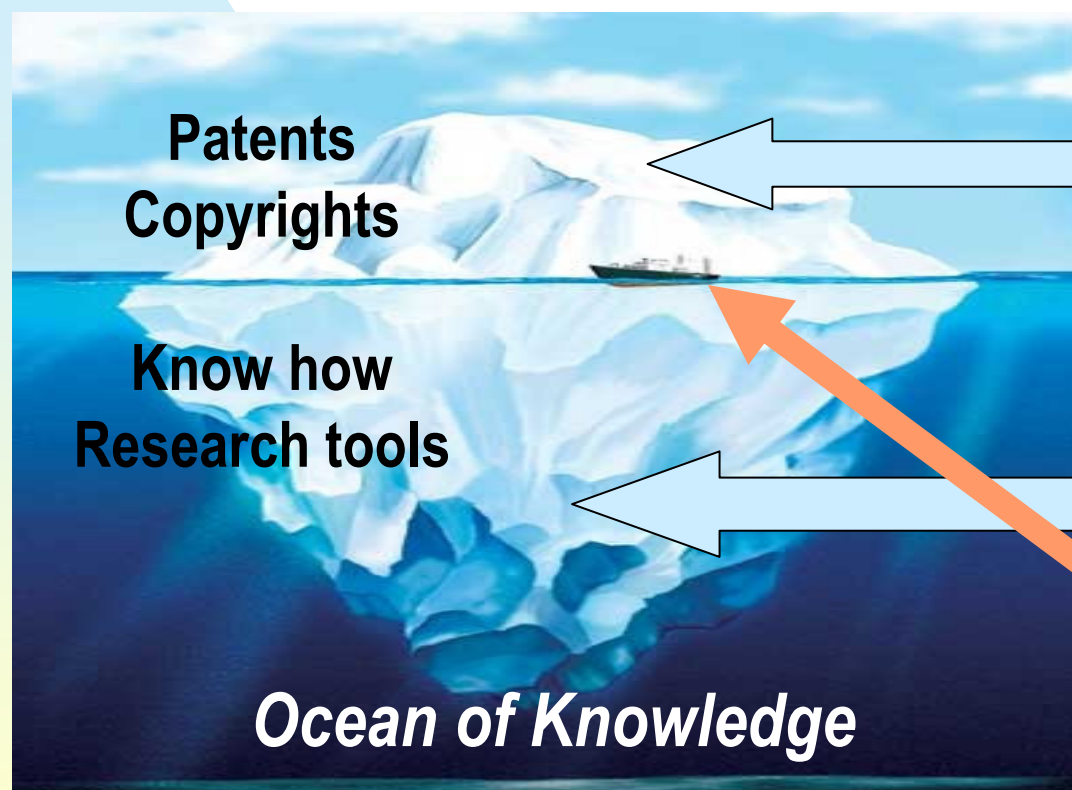
# The interaction model

- Builds on the Licence Model and IP management
- Background technology & patents become **tools** to seed development
- Proof of principle is made in collaboration with industry
- Demonstration funded in part by public money (example EC framework programs)
- Compatible with University mission IF:
  - ◆ Contributes to Science
  - ◆ University can capitalize on foreground
  - ◆ Fair share of returns to motivate scientists
- Works in Europe, but could work a lot better through the development of strategic partnering with Industry.

# Why is strategic partnering with Industry so important ?

- Fosters innovation through interaction
- Benefits the regional economy
- May bring sizeable benefits in a reasonable time frame
- Makes use of the whole know-how of the institution

# Most of the potential is not visible.

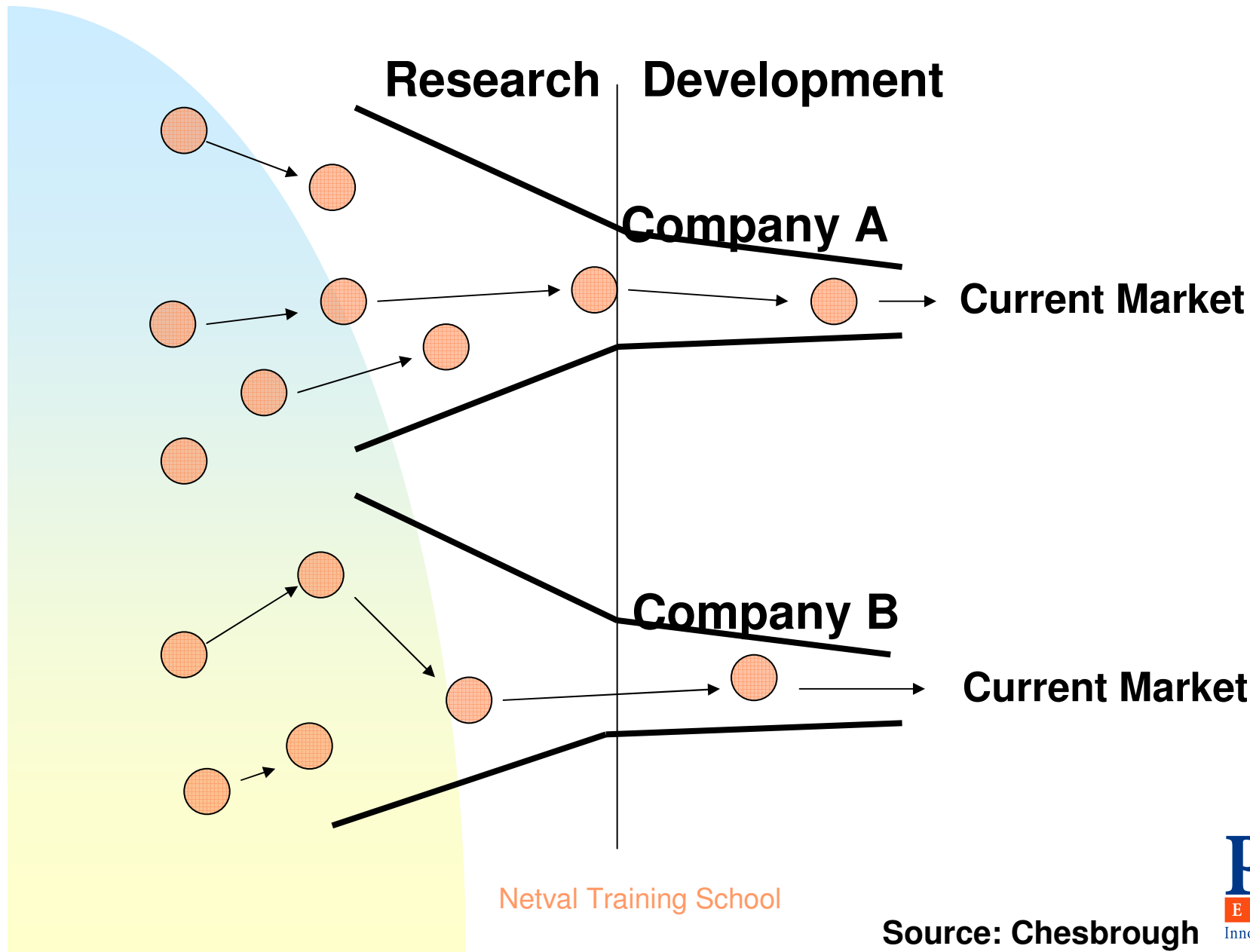


***Intellectual  
Property available  
for licensing***

***Collaborative  
Research  
Opportunities***

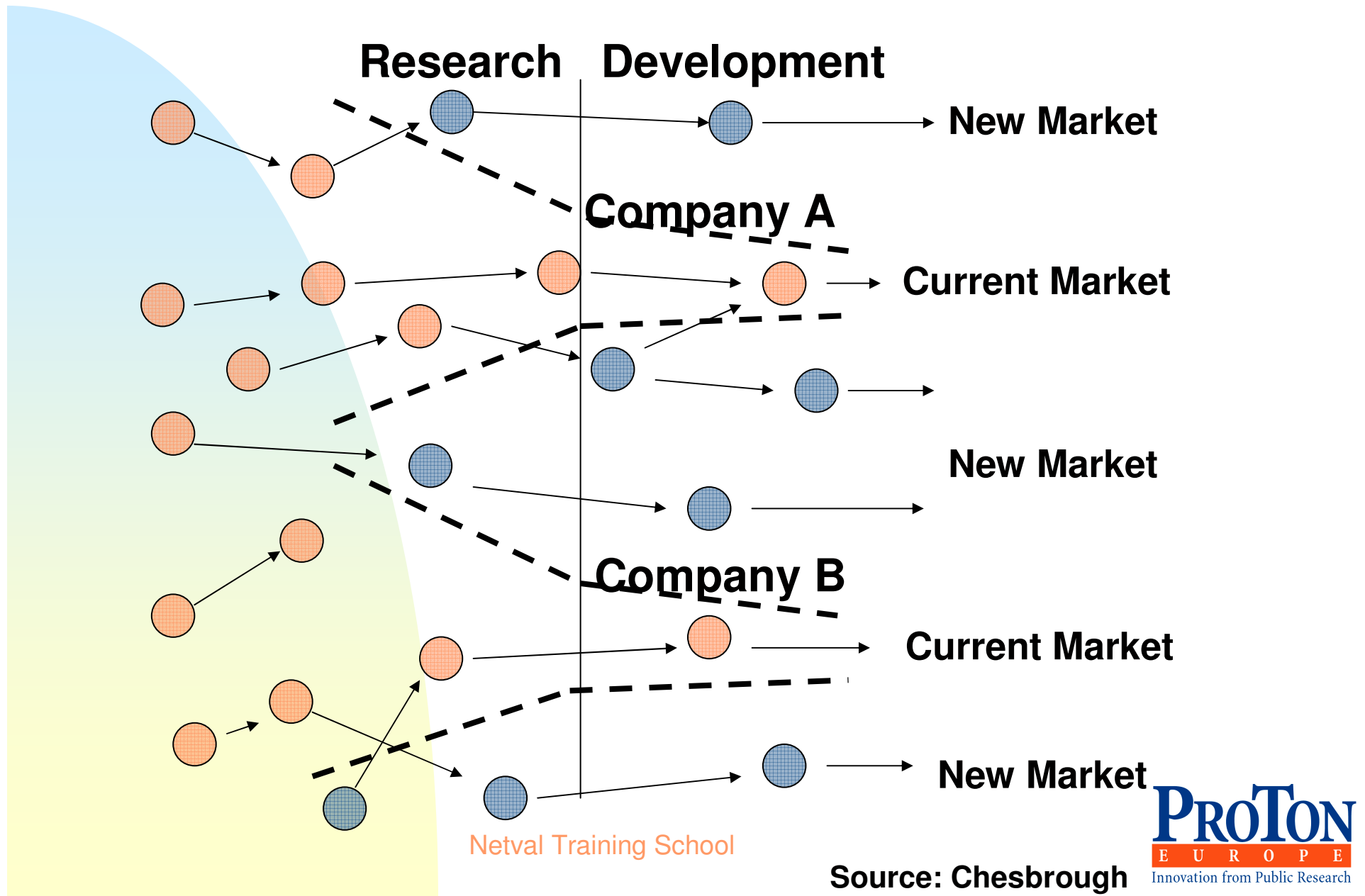
***Spin-outs***

# Traditional (closed) Innovation in Industry



Source: Chesbrough

# New “Open Innovation” paradigm





# Contrasting the mindsets

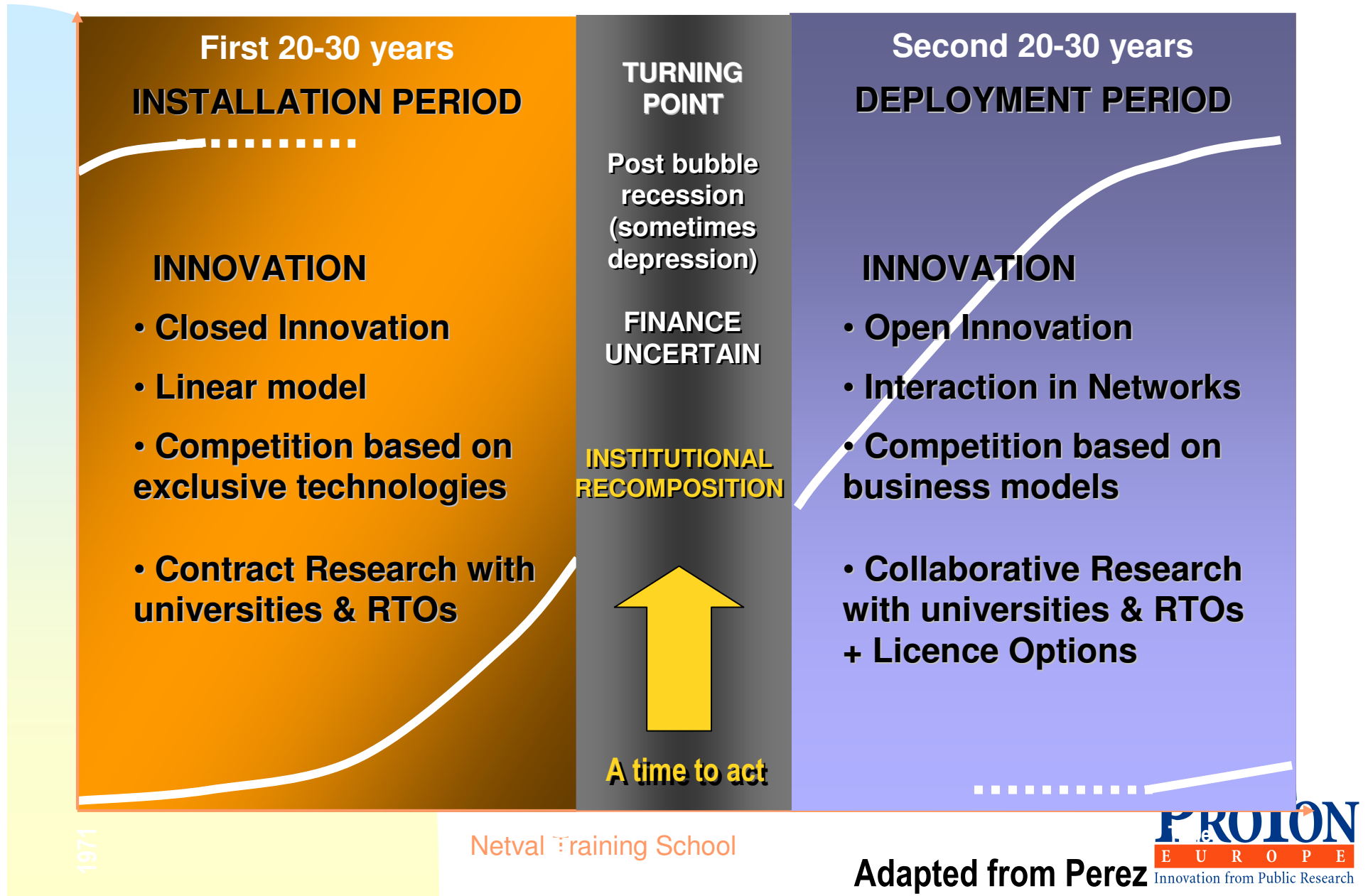
Closed innovation	Open innovation
The smart people in our field work for us	Not <i>all</i> smart people work for us. We need to work with smart people inside <i>and</i> outside the company
To profit from R&D, we must discover it, develop it and ship it ourselves	External R&D can create significant value. Internal R&D is needed to claim some portion of that value
The company that gets innovation to market first will win	Building a better <i>business model</i> is more important than getting to market first
If we create the most and the best ideas in the industry, we will win.	If we make the best use of internal <i>and</i> external ideas, we will win.
We should control our IP, so that our competitors cannot profit from it.	We should profit from other's use of our IP ( <i>license out</i> ) and we should <i>license in</i> other's IP whenever it advances our business model.
We will <u>own</u> all results from contract research with universities	We will <i>partner</i> with universities to create knowledge and encourage use outside our field

# The world of innovation has changed

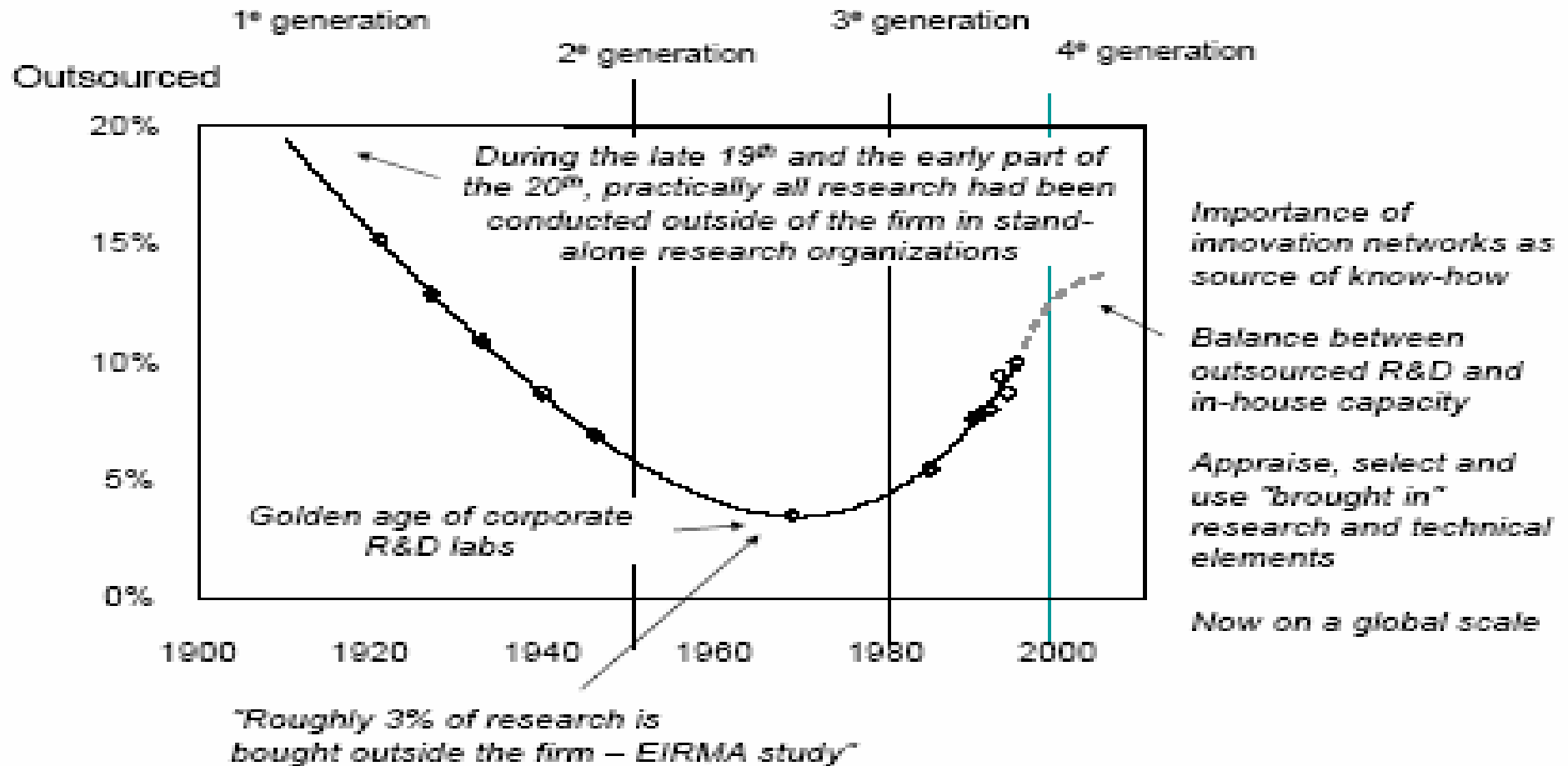
- 2 driving forces:
  - ❑ Low cost of accessing vast knowledge
  - ❑ Multi-technology nature of new products
    - » **Economies of scale in R&D have disappeared**
- New model of innovation (**Open Innovation**)
  - ❑ Networking, collaborative research
  - ❑ Business model has become more important than technology edge (opportunity for SMEs)
  - ❑ Revisiting the use and function of IPR to facilitate exchange rather than protecting market shares
  - ❑ Ability to trust partners for strategic components

**A change of mindset is required to fully benefit from the Knowledge Economy**

# The Knowledge Economy Cycle



# Trends in outsourcing research: towards Open Innovation



# Most common problems

- Ownership of results
- Project management and performance of PROs
- Compensation of indirect costs
- Volatility of relationship
- “Fair” share of returns in case of success
- Lack of professionalism on both sides

# Success stories of strategic partnering

- Mostly long term (strategic)
- Contribute to Science, publications and doctoral thesis
- IPRs retained by PROs in most cases, subject to certain option rights or rights of first refusal in certain fields
- Interaction clearly benefits both parties
- May take many innovative forms: from collaborative research to joint ventures

# The Responsible Partnering Initiative

- **Maximum Beneficial Use** of the knowledge generated by PROs for the relevant public
  - ◆ Excellence in generating knowledge
  - ◆ Protection and use of IP
- **Responsible Use.** Voluntarily adhered-to policies to sustain the research function of PROs and prevent misappropriation of the knowledge generated

A handbook has been published by  
ProTon, EIRMA, EARTO and EUA

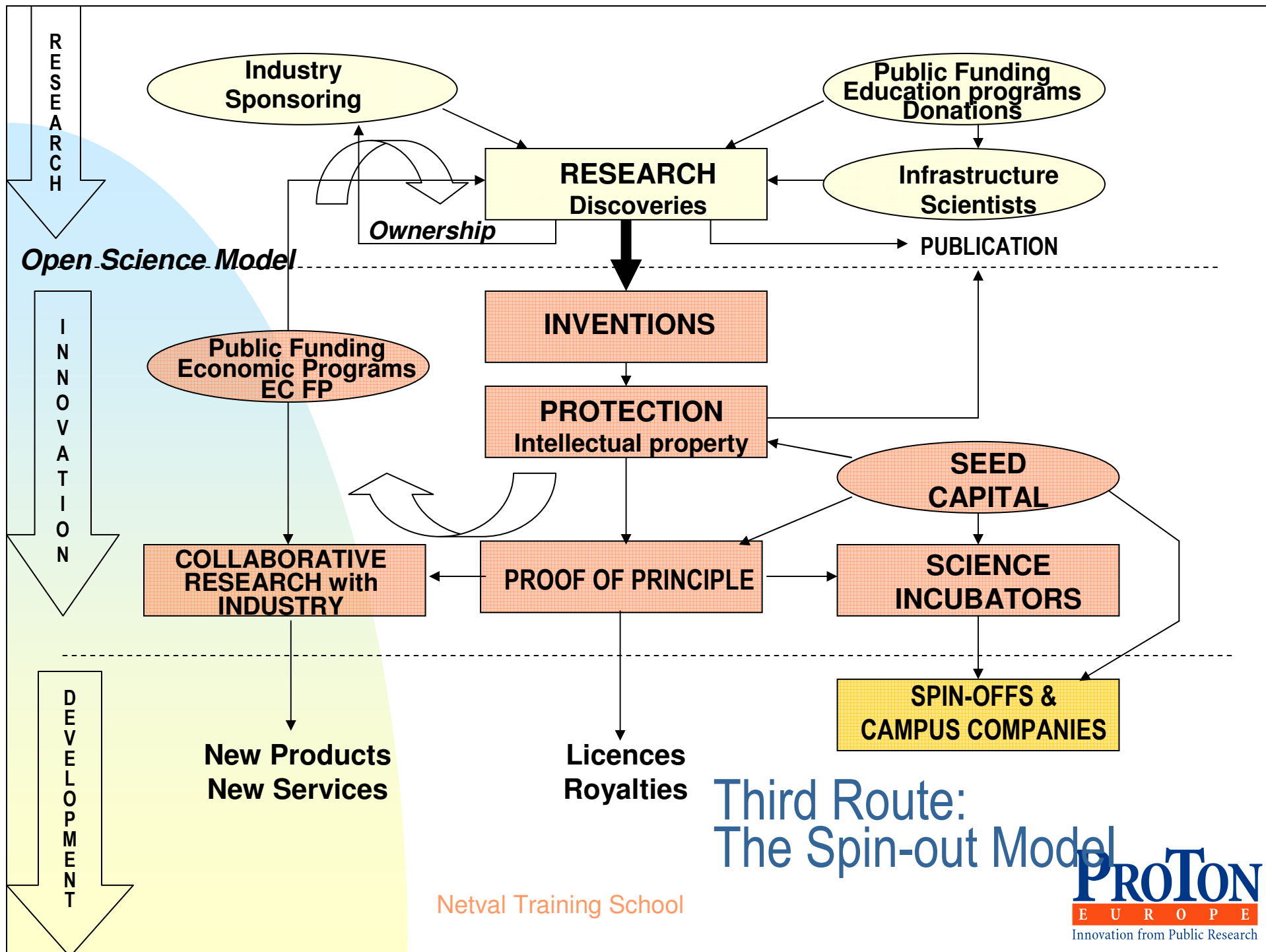
# Responsible Partnering



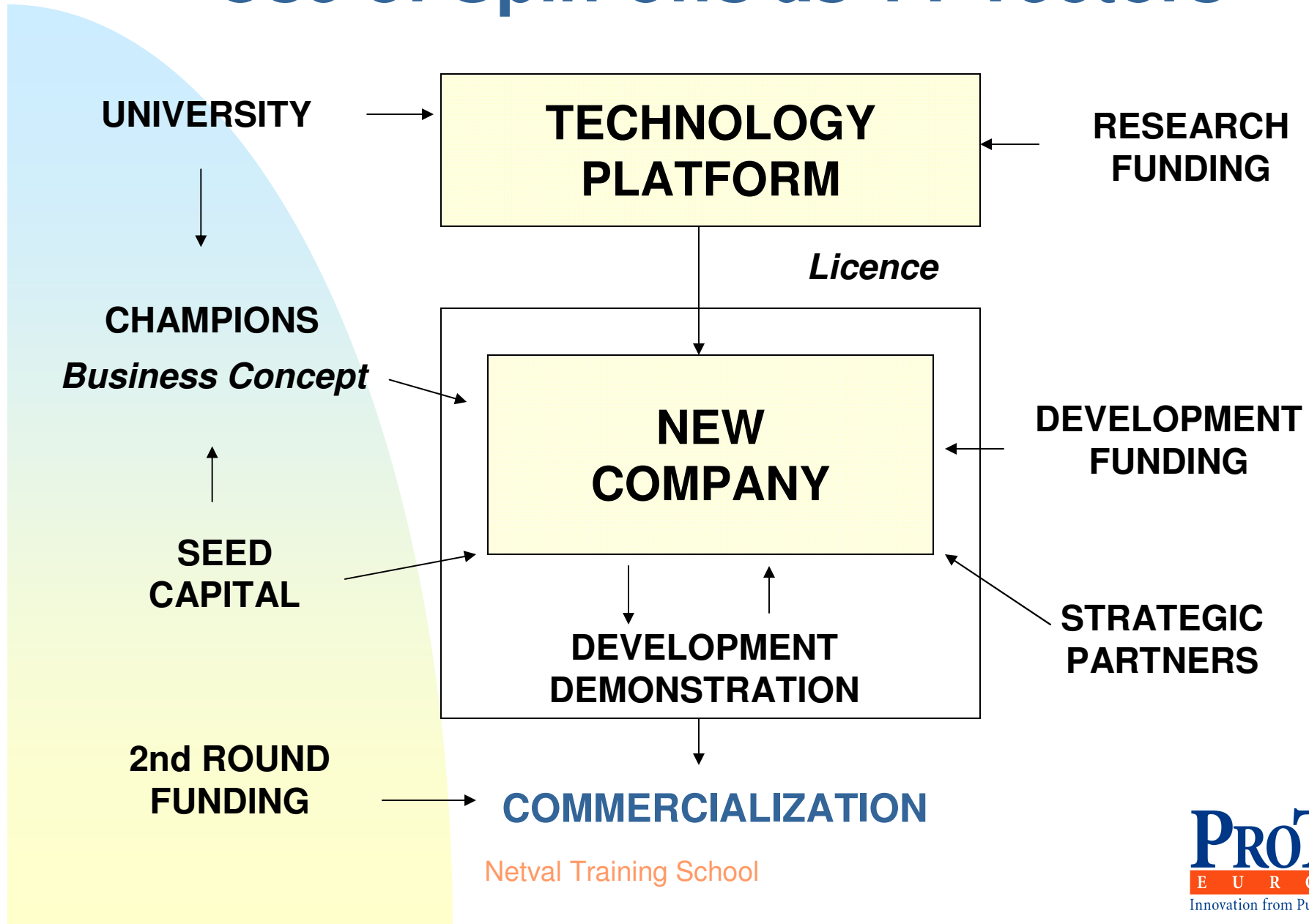
- Responsible Partnering is a voluntary code of conduct to develop collaborative research
- Designed by practitioners on the basis of successful experience
- Endorsed by ProTon Europe, EUA, EARTO and EIRMA
- Supported by Commissioners Potočník and Verheugen
- Fully endorsed by the recent Esko Aho Report on Innovation

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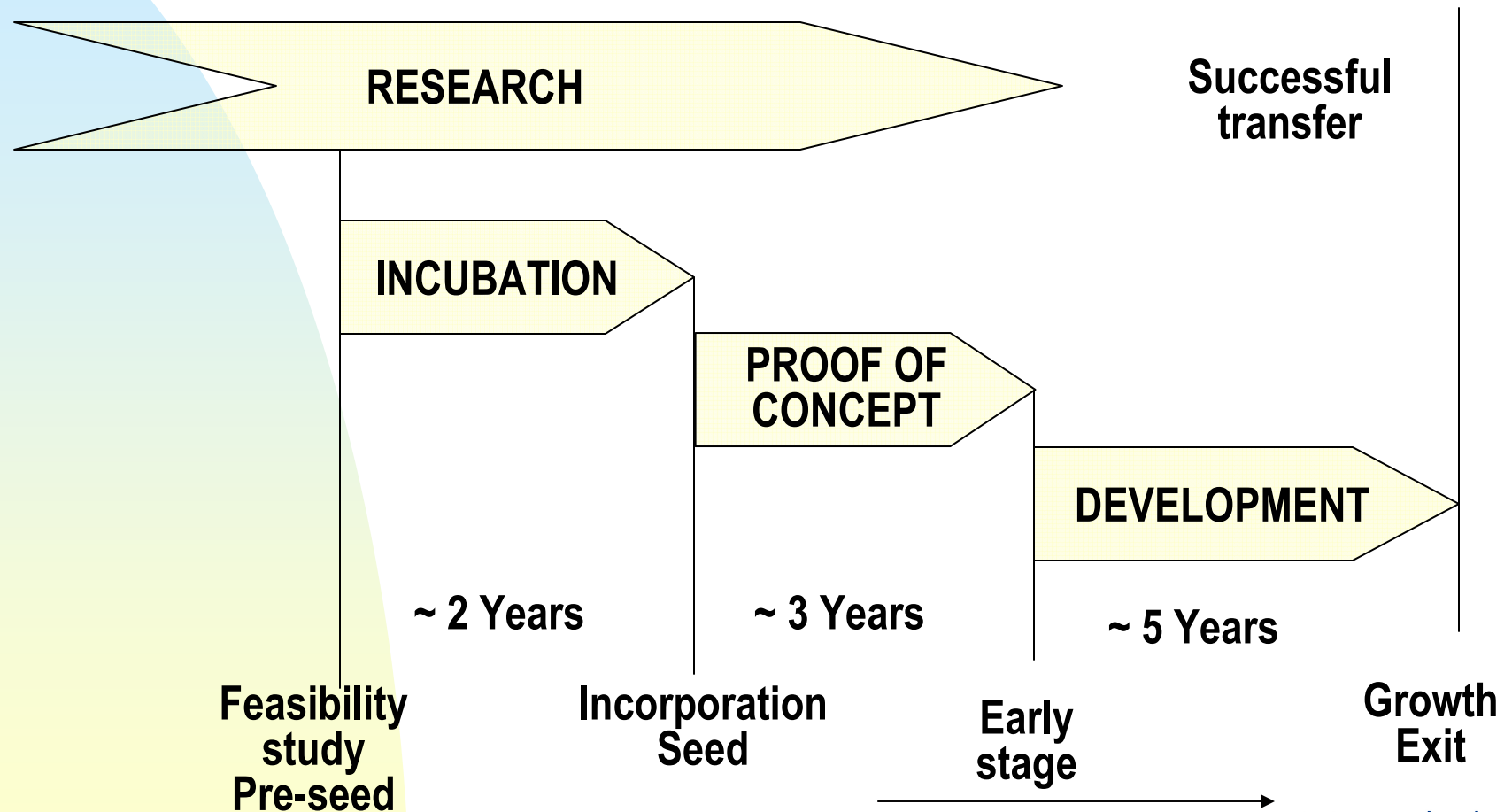




# Use of Spin-offs as TT vectors



# Typical timeline of a spin-out process



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# The Spin-out Model

- Builds also on the licence model
- Background technology used as platform to develop new business concepts
- Proof of principle by the researchers themselves
- Development housed in company structure funded by seed capital and virtual capital
- Contributes to rejuvenating the economy
- Contributes to regional development
- Slow process: more than 10 years for mature companies
- Works in Europe, but can be improved

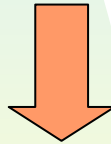
# Spin-out versus licensing

## Interaction model

Existing business models



Improve interaction with existing companies



Responsible Partnering

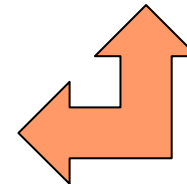
Medium term development  
<10 years

## Spin-out model

New business models



Support creation of new  
“spin-out” companies



Long term rejuvenation  
>10 years

# Summary: The Innovation Model for PROs

- Knowledge Transfer from PROs in Europe can be made effective only by the combination of 3 policies:
  - ◆ IP management as common core
  - ◆ Interaction with industry for medium term development
  - ◆ Creation of new companies for long term rejuvenation of the economy.
- This process is very complex to manage and requires the development and staffing of a professional knowledge transfer office

# What is involved in implementing a KT function?

- Clear mission statement, consistent with nature of institution and expectations of stakeholders
- Reflected in adequate policies and incentives (*less than 50% of the survey institutions had policies*)
- Agree on realistic objectives (benchmarking)
- Obtain involvement of the academic community (*less than 15% in surveyed institutions*)
- Organize accordingly:
  - ◆ Good practices
  - ◆ Professional staffing (business development skills)
  - ◆ Structure and infrastructure
  - ◆ Funding

# Conclusions

1. The knowledge economy is leading to products and services combining many technologies to serve higher level needs, including public needs.
2. We can compete if we succeed in partnering between:
  - Universities, RTOs, SMEs and larger undertakings
  - Technology and social sciences
  - Public and private organisations
3. A change of mindset is needed from all stakeholders. This is easier to achieve at regional level.
4. The knowledge market must become efficient as well:
  - Training and education in the use of IPRs
  - More efficient instruments, patents in particular.

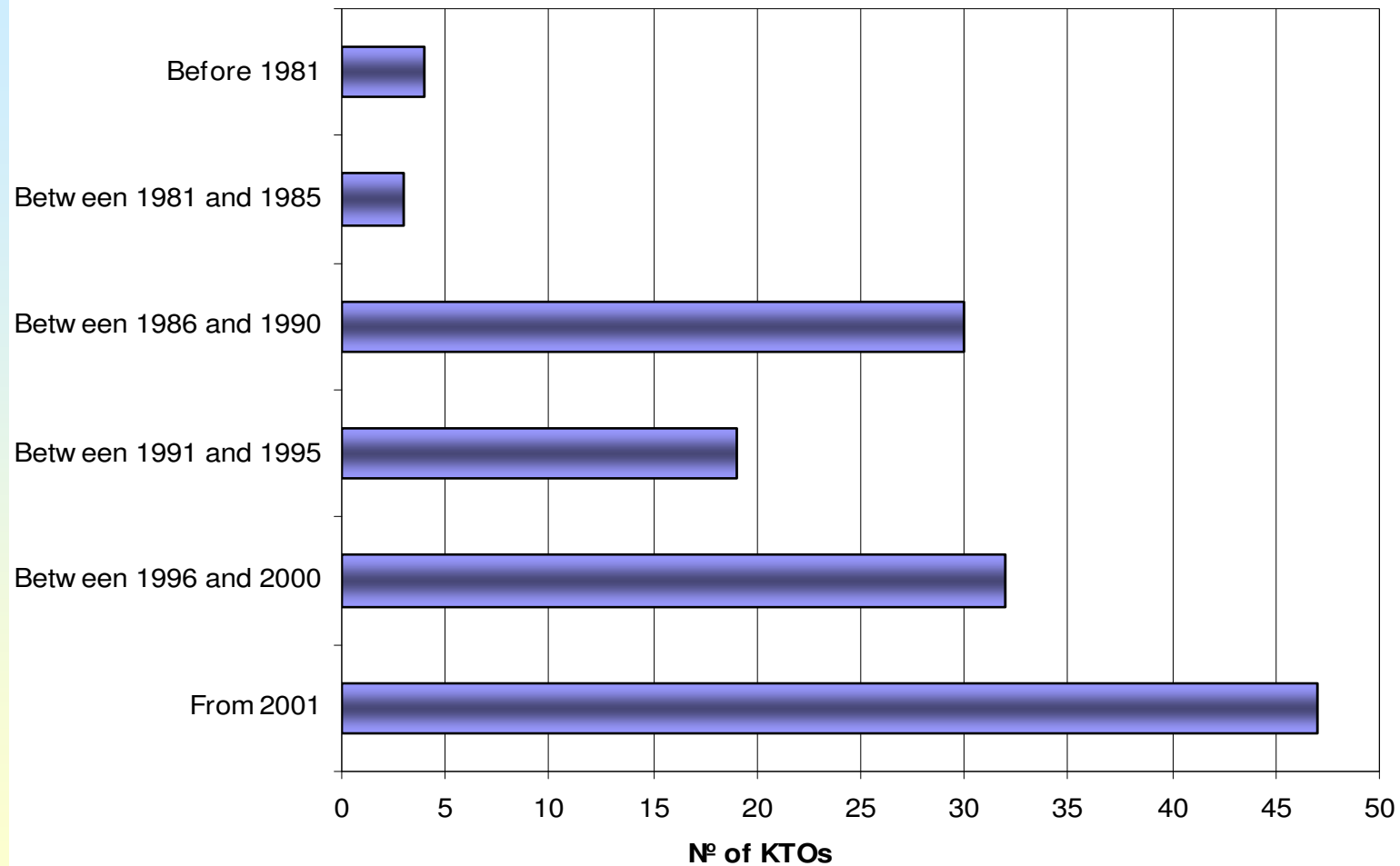


# There is a need to develop the KT profession at Europe level

- Lisbon Agenda and the knowledge economy
- Recognition and financial support of the research function of European Universities
- Support of trans-European knowledge transfer
- Exchange of good practices
- Influence European policies
- Challenges of Open Innovation

# KT is a recent phenomenon in Europe

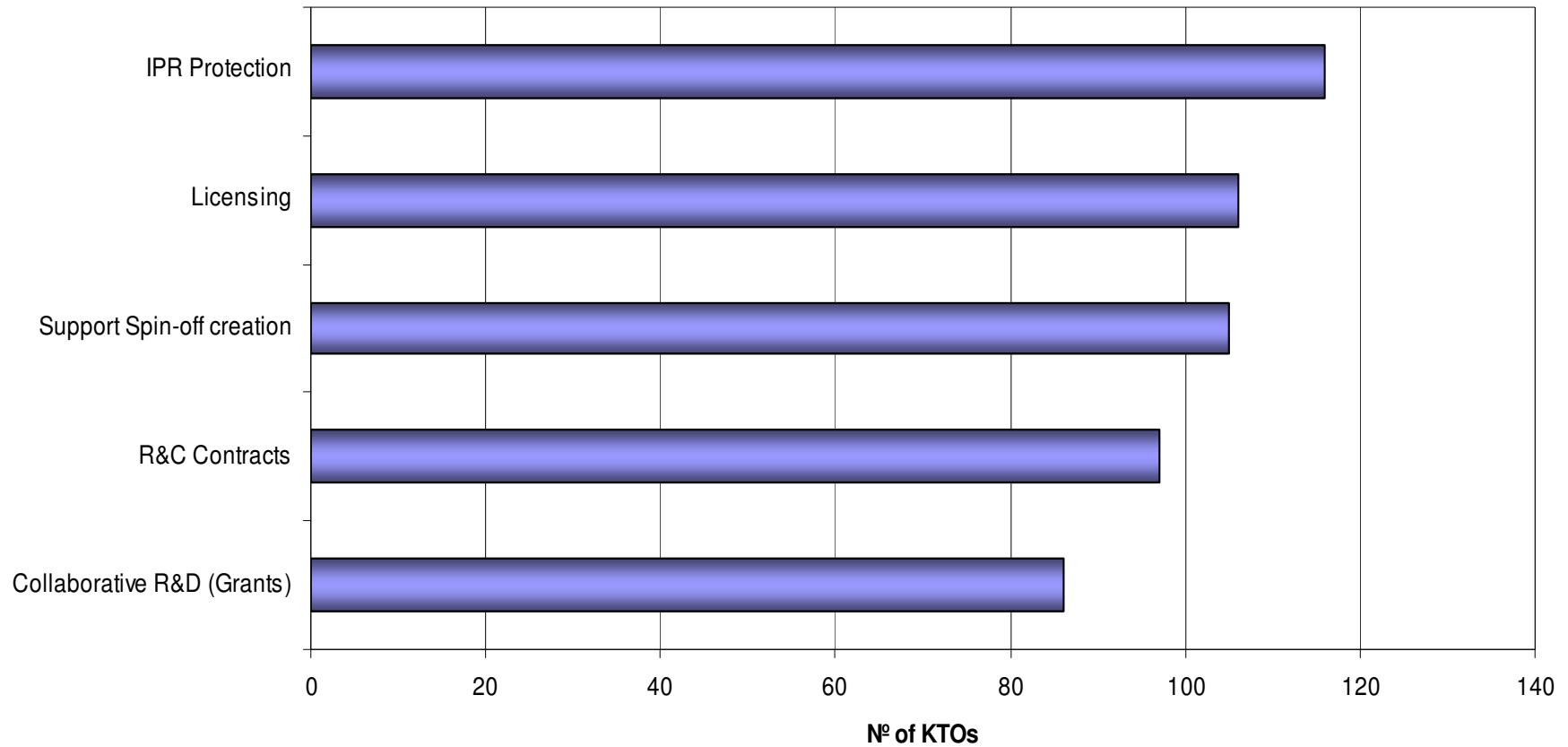
## Year of KTO creation



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135 responses

# Functions served by KTOs

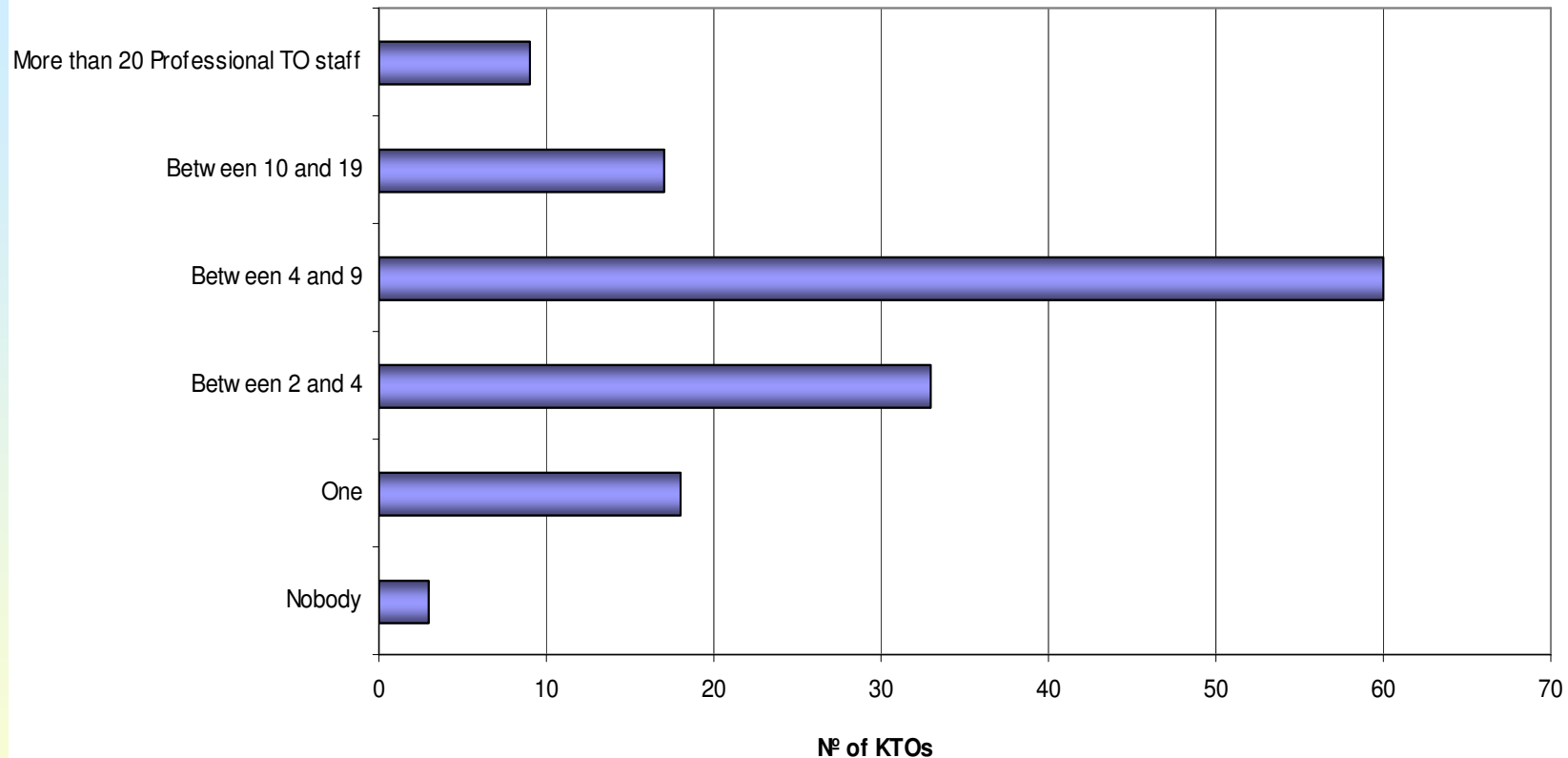


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155 responses

**PROTON**  
EUROPE  
Innovation from Public Research

# Professional Staff FTE)



140 valid responses

**1066 professionals (62% of total KTO staff)**

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# Contrasting PROTON with AUTM

	AUTM Actual 2004	PROTON Actual 2005
<b>Year started</b>	1975	2003
<b># of countries</b>	2 (US + CA)	>30
<b># of languages</b>	1	>20
<b># legal frameworks</b>	2 Bayh Dole in USA	>30 Few countries have Bayh-Dole-like laws
<b>Scope</b>	Mainly licensing	Licensing + interaction + spin-out
<b># members PROs<sup>(1)</sup></b>	235	>270
<b># individuals from PROS</b>	1,700	2,000
<b># individuals other</b>	1,700	NA
<b>Political strength</b>	Yes	Being earned

(1) Responding to AUTM surveys

# What are the problems in Europe?

- Mindset
- Shortage of entrepreneurs
- Low efficiency of knowledge transfer from U
- Low demand for technology from Industry
- Shortage of good KT professionals on both sides
- Market is still very fragmented in Europe
- Shortage of early stage venture capital

# National KT associations remain essential

- Europe is far from homogeneous
- Funding schemes for research are different
- IP laws are different
- Practices are different
- National Innovation policies are different
- The languages spoken are different

**The common guidelines need to be consolidated,  
“translated” and disseminated with national associations**

# The vision of ProTon Europe

## 4 Missions

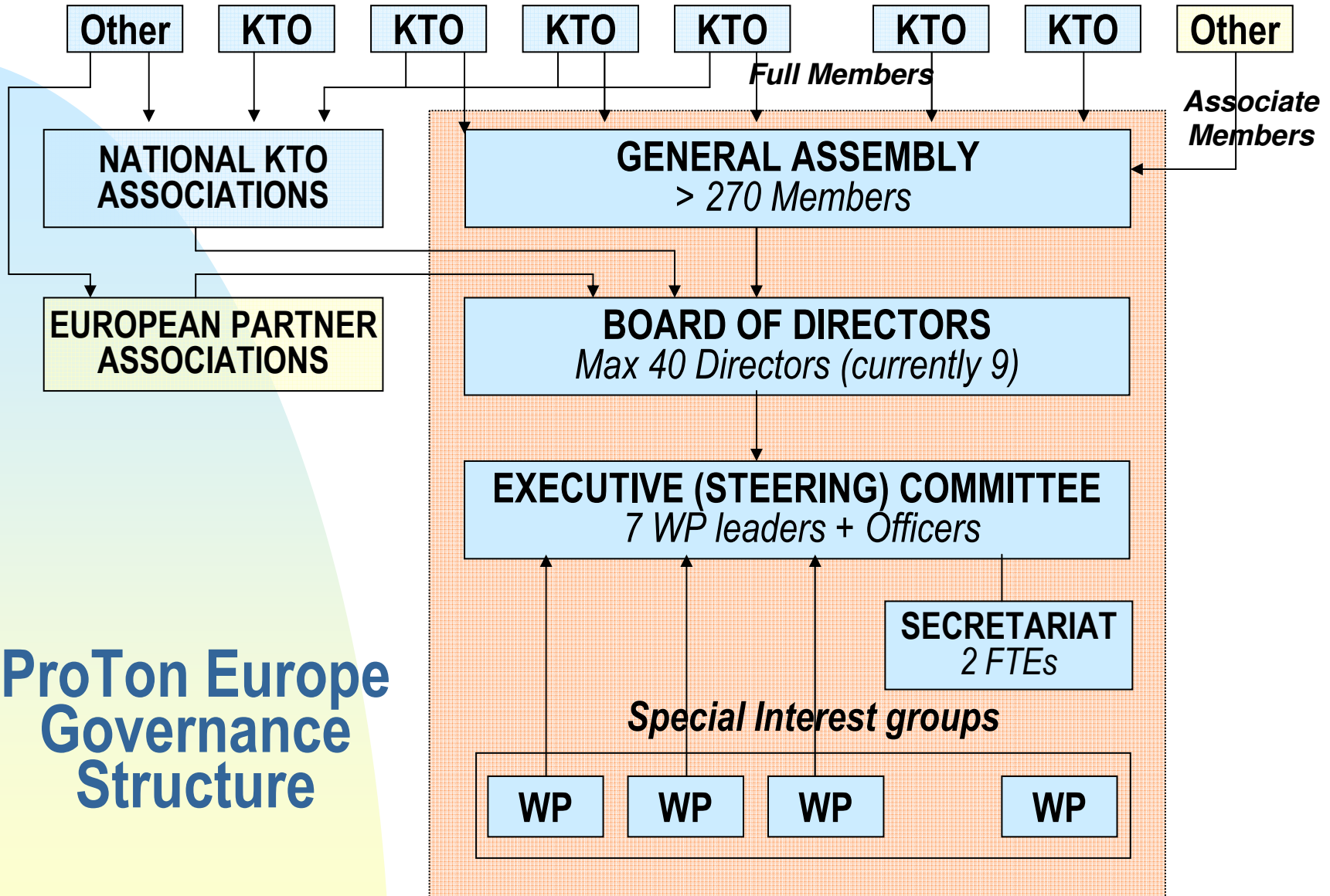
1. **Represent** the profession of Knowledge Transfer from public research at European level, complement existing national associations and support the creation of new ones in the countries where they do not exist yet;
2. Contribute to the **development** and **recognition of the KT function** within PROs in Europe;
3. **Boost knowledge transfer** by providing a comprehensive range of services and benefits for its members and by facilitating trans-European knowledge transfer;
4. Provide the EC and other international organisations with **policy proposals** for improving knowledge transfer from public research.



# Mission 1: Establish representative association

- International not-for-profit association incorporated on September 14, 2005
- The by-laws and governance structure ensure democratic representation at board level through representative national associations
- Membership is by Institution: 270 direct members from 27 countries and growing
- Partnerships signed already with 7 national associations: Spain, Poland, Germany, France, Italy, UK, Ireland. Denmark and Portugal in the works

# ProTon Europe Governance Structure



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## Mission 2: European-wide guidelines, code of conduct & raise profile of KTOs

- Guidelines adopted at Valencia conference
- Repository of Good Practices and Tools available on the web site
- Code of conduct in the membership conditions
- European surveys conducted for FY 2003 and 2004. FY 2005 to be launched in June
- Metrics and reporting guidelines
- Knowledge Transfer Plan contest launched in 2006
- Project of professional accreditation (IKT)

# Mission 3: Boost knowledge transfer

- Professional Development and Training
- Dissemination of Good Practices and Tools
- Expert workshops
- Staff exchanges
- Annual conferences
- Special conferences on interaction with industry
- Networking, special interest groups, forums.
- Tools for partnering with Industry and SMEs, developed in collaboration with IRC
- Development of Training (ip4inno project)
- Investment forums for spin-outs

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# Mission 4: Policy contributions

- Guidelines for KT from public research (Valencia 2003)
- Responsible Partnering (Dublin 2004 and Brussels 2006)
- Grace Period (Dublin 2004)
- FP7 rules of participation (Brussels 2005)
- Technology Transfer Accelerator (EIF)
- Knowledge Transfer with SME (Berlin 2005)
- Guidelines for Knowledge Transfer from Public Research (to be issued by the Commission in 2006)
- Patent Policy in Europe (in progress)
- State Aid (in progress)

# Annual Conference

## Vienna, December 11 & 12, 2006

- Theme: funding of Knowledge Transfer Function
- Coincides with several policy debates at European level:
  - ◆ KT guidelines
  - ◆ State Aid
  - ◆ EIT
- First edition of KTP awards

**Participation of EIF welcome**

# Benefits from efficient KT

- Recognition of the utility of the research function, hopefully leading to better funding
- Attracting more funding from private sources, leverage more public funding
- Conducive to excellence in research
- Attracting good scientists for recognition and career opportunities

**The sustainability of the research function  
of universities is at stake**

# Conclusions

- Universities are called by the Public to play a more active role in the Innovation Process
- Good practices exist and have been shown to be successful by those practising them
- ProTon Europe can help.