Best practices in managing the valorisation of academia-industry transfer of knowledge

ECSS Conference, Informatics Europe
Jeroen Klijs MSc
J.Klijs@gmail.com

Outline of the workshop

Best practices in managing the valorisation of academia-industry transfer of knowledge

- About me
- About valorisation
- The assignments for today
- The approach

About me

Jeroen Klijs

- Education
  - Chemical Technology (BSc)
  - Technical Innovation Sciences (BSc)
  - Technology and Policy (MSc)
- Currently: Innovation Manager
  - Management + Research + Consultancy
  - Starting new company that …
    - …turns academic excellence…
    - …into innovative company business

About me

Recent projects

- RoboCom project
  - Billion Euros Flagship proposal on Robotics (ICT)
  - On invitation, I provided consultancy on organisational structure + business processes for Innovative activities throughout Europe
- Ulab project (case 1)
  - Enhanced innovative performance of UPM, Oxford, ParisTech, TUM, Polito
- IDECAT Network of Excellence (case 2)
  - European Commission named IDECAT the best Network of Excellence
  - Out of nearly 200 similar networks
  - Because of its' infrastructure to commercialise the results of academic research

You may appreciate challenging assignments

About valorisation

- Definition
  - … about commercialising the results of academic research
  - … about making these results available to society at large

- Relevance
  - In European research proposals (FP7),
    - Impact (25%)
    - Dissemination (25%)
    - Scientific quality (25%)

Academics in ICT read two papers on "Knowledge Transfer and Valorisation" for every paper they read in ICT

- Open Innovation
  - Concept by Henry Chesbrough
  - Chesbrough worked at Quantum (mass storage devices, ICT)
  - Developed leading model on transfer of knowledge (KT) and valorisation

Proof of concept: Employee of ICT company is very good in KT and valorisation.

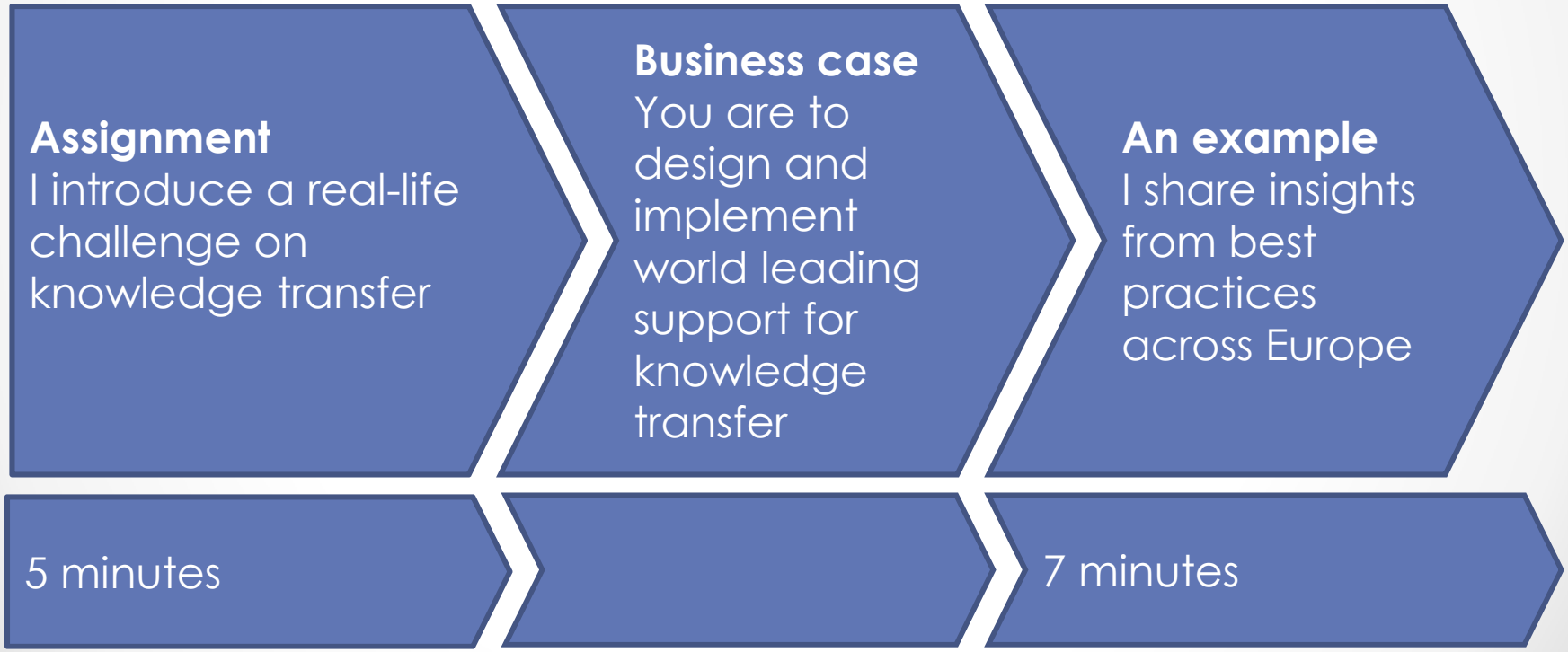
The assignments for today

1. Improve the performance in valorisation of your university
   Convincing third parties to fund your research
   a. Best practices in valorisation
   b. About introducing best practices
   c. Inspired by the **Ulab** project

2. Improve the innovative performance of Oxford, UPM, ParisTech, TUM and Polito
   a. Higher Education Strategy 2020
   b. Why the European Union would want to fund your research
   c. Inspired by the **Ulab** project

3. Implement a European infrastructure for KT and valorisation
   a. Why would you want this?
   b. Enhance the concept of Open Innovation
   c. Implement the enhanced concept
   d. Inspired by the **IDECAT** project

Today's approach



Enhance the valorisation processes at your university

Best practices from the Ulab project
Assignment 1

Ulab project (case 1)

Aim:	Demonstrating how networking and open innovation between universities can contribute to the modernization of management structures in the quest of excellence ✓ WP2 Research ✓ WP3 Valorisation ✓ WP4 Entrepreneurship ✓ WP5 Outreach

Ulab project (case 1)

Partners:	Universidad Politécnica de Madrid – **UPM** (Spain) Politecnico di Torino – **Polito** (Italy) Technische Universität München - **TUM** (Germany) University of Oxford **Oxford** (United Kingdom) Paris Institute of Technology – **ParisTech** (France)
Extended partners:	European Commission (**EC**), European University Association (**EUA**), Conference of the European Schools for Advanced Engineering Education and Research (**CESAER**), European Institute of Technology (**EIT**)
My position:	Coordinator WP3 "Valorisation": Commercialisation of the results of academic research

Ulab project (case 1)

Approach:	1. Collect best practices in valorisation 2. Enhance performance in valorisation by implementing a best practice as a pilot project
Evaluation:	All partners believe the pilot project enhanced their innovative performance
Notes	Resulted in European White Paper www.ulab-fp7.eu

Assignment

- Enhance the valorisation processes at your university
  - Basics:
    - Your university has a Technology Transfer Office
    - Which challenges would you expect?
- Think about
  - Who should valorise the research results of your university?
    - Expertise, skills, …
    - How many staff do you need?
  - How are they organised? What is their organisational structure?
  - What will they do (business process)?
  - Where is their office located?
- About ten minutes

Best practices in valorisation from the Ulab project

Challenges to valorisation processes at universities

Challenges include, but are not limited to:

- Reporting of inventions
- Commercialising patents
  - Low success rate: often only one patent or patent family is responsible for all income
- Not clear which organisational structure works best
- Budgets
  - 1 million Euros per patent after the first year
  - Staff is very expensive (senior researcher + legal qualification)
- Differences in opinion between professional staff and academics
  - Does professional staff support academics,
  - Or should academics do as the professional staff tell them?

The best practices on the next slides help overcome these challenges

ISIS Innovation as a technology transfer company

Research context			
	Increasing number of partners involved in the commercialisation process	+	Multiple funding partners Partners with different expectations

The solution of the University of Oxford:
Creation of ISIS Innovation as a technology transfer company with responsibility for the commercialisation of Intellectual Property.

Success factors

- Clarification of roles (University of Oxford ISIS Innovation)
- Development of a company for technology transfer with a clear vision
- Quality of research conducted at the University of Oxford
- Talented workforce at ISIS Innovation
- Clear and well-established process for valorisation within ISIS Innovation
- Beacon approach to engaging academics in the process and attracting investors
- Recognition of the importance of the academic to commercialize process
- Flexibility and openness to the changing landscape of technology transfer

Finding licensees through a network of potential customers

Intellectual property is typically presented to a network of potential customers by the university.

Approaches

- Use of the network of the academic inventor
- Collaboration with BayPAT (patent agency of 28 Bavarian universities)
- „It is important to find the right person at the right company."

ParisTech
INSTITUT DES SCIENCES ET TECHNOLOGIES
PARIS INSTITUTE OF TECHNOLOGY

- Academics help developing IP within a company → no transfer required
- Valorisation partners are most commonly found inside research projects

UNIVERSITY OF OXFORD

- Identification of potential partners on an international basis
- ISIS Innovation (http://www.isis-innovation.com/)
- Oxford Innovation (http://www.oxin.co.uk/)
- ISIS Angels Network
- Personal relationships

All of these approaches are important, but **relationship building is recommended as a key priority**.

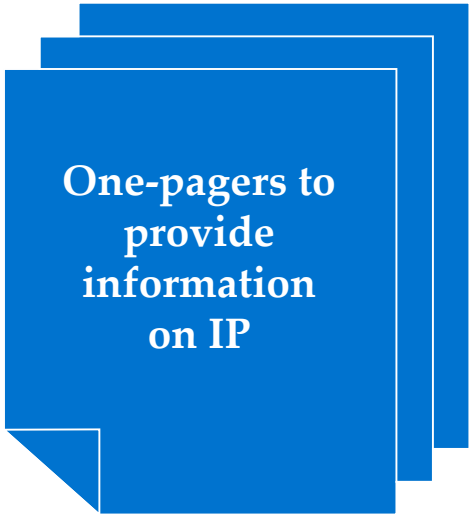
One-pagers to provide information on IP

The concept of one-pagers

- Typically one page of information
- Good compromise between lenght and amount of information

Information provided

- Title of the patent
- Short abstract
- List of inventors
- List of applicants
- Priority details
- Current state of the patent
- Contact person



Collaboration with the inventor

- Provision and check of the technical details
- Quality support for the inventor

Example: Oxford

- Clearly and well structured one-pagers
- Three main headings
  - Marketing opportunity
  - Oxford invention
  - Patent status

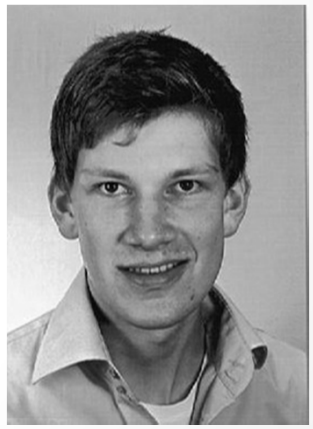
The Ulab team at TUM

Prof. Dr. Isabell M. Welpe

Dr. Philipp Sandner

Jeroen Klijs (Main contact)
j.klijs@gmail.com

Johannes Blümel



Frederik Terschluse

References

www.ulab-fp7.eu

- Best practice reports
- Evaluations of the pilot projects that were introduced
- European White Paper for Technical University of the Future

WP2 Research: management, strategy, …
WP3 Valorisation
WP4 Entrepreneurship
WP5 Outreach

From best practice to best performance

Jeroen Klijs

C. O'Dell & C. J. Grayson (1998). If only we knew what we know: identification and transfer of best practices. *California Management Review, 40*(3).

Aim of this lecture

To provide an understanding on

- The **potential impact** of sharing best practices on company performance
- **How to implement** the sharing of best practices into an organisation

From best practice to best performance

1. Introduction
   a. Examples of radical breakthroughs in performance
   b. The challenges for improving performance through best practices
   c. Why use *best practices* to improve performance?

2. Implementation
   a. Creating a business process to transfer best practices
   b. Embedding the process into the organisational *structure*
   c. Embedding the process into the organisational *environment*

3. Seven keys to effective transfer of best practices

4. Conclusion

5. Questions?

Introduction

- "If only TI knew what TI knows" (Jerry Junkins, CEO of Texas Instruments, TI)
- It is not uncommon that one and the same business process in the same company at different locations has 30 to 50 percent difference in performance
- "You would think that better practices would spread like wildfire through the entire organisation. They don't."
- Best practices in an organisation take long to unidentify. Once identified, it takes on average more than two years before other sites start trying to adopt it (Szulanski, 1994)
- Yet, benchmarking through best practices can help improve performance

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1.a. Examples of radical breakthroughs in performance

By sharing best practices:

- Buckman Laboratories managed to push up product-related revenues by 50 percent over five years
- TI generated 1,5 billion dollar in annual free wafer fabrication capacity
- Kaiser Permanente's benchmarking of internal best practices helped cut the time to open a Women's Health Clinic, and without costly start-up problems
- Chew, Bresnaban and Clark reported performance differences of three to one between the best and the worst of 42 identical food plants. Moving all plants to average performance would increase firm profitability by 20 percent
- Consulting firms build a business on their records of best practices found through earlier consultancy

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1.b. The challenges for improving performance of an organisation through best practices

- Organisational structure promote "silo" behaviour
- A culture can value technical expertise and knowledge creation over knowledge sharing (e.g. a university)
- Lack of contact, relationships, and common perspectives
- Over-reliance on transfer of "explicit" over "tacit" information (e.g. distributing a book on how to play the violin)
- Not allowing or rewarding people for taking time to learn from and share best practices

Note that all these problems can be overcome, once recognised.

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1.c. Why use *best practices* to improve performance?

Best practices are:

- A compelling call to action ⇨ dramatic performance increases
- Demonstrated success
- Inspired by decentralisation and downsizing ⇨ requires exchange of best practices between decentralised units
- Benchmarking evidence ⇨ sense of urgency and hope when competitors are outperforming you
- Recognition of potential gain

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2.a. Creating a business process to transfer best practices

- Identification of best practices
- Communicating best practices
- Implementing best practices

2.a. Creating a business process to transfer best practices

Identification of best practices

- Comparing financial and operating performance ⇨ other factors have large influence on performance, thus better practice can come with worse performance & you do not want people to argue over who has the better performance
- Identify breakthrough practices
- Identify where similar processes have very different performance levels
- Deal with differences in measurement methods: "OK, even if it is a little different, the fact is that we are talking about 30 to 50 percent variance in results"

Communicating best practices

Implementing best practices

2.a. Creating a business process to transfer best practices

Identification of best practices

Communicating best practices

Implementing best practices

2.a. Creating a business process to transfer best practices

Identification of best practices

Communicating best practices

- "Bumble bee" approach ⇨ created sibling rivalry: Arguing over who performs better & not providing motivation and information required to transfer the best practice.
- Over-reliance on "explicit" knowledge
- Transfer of people to another location, thus including "tacit" knowledge
- Make lists of phone numbers and e-mail addresses available so people can find each other

Implementing best practices

2.a. Creating a business process to transfer best practices

Identification of best practices

Communicating best practices

Implementing best practices

2.a. Creating a business process to transfer best practices

Identification of best practices

Communicating best practices

Implementing best practices

- R&D experts, technical audits, internal conferences are not enough ⇨ "Research has good ideas, but they don't get used"
- Set challenges for best practice ⇨ "Build me a free fab in 1994 by creating capacity we are not using." (Tom Engibous, TI CEO in 1998)
- Make resources available to implement best practices

2.b. Embedding the process into the organisational *structure*

Possible structures to transfer best practices

- Benchmarking teams (small, one-off)
- Best practice teams (small, continuous)
- Best practice networks (large, continuous)
- Internal assesment and audit, including awards

General requirements for organisational structures

- Bumble bee emmissary ⇨ TI identified better practices at competitors, then send high-level managers as "emissaries" to teach these to TI, only to find that some of their own plants were already outperforming those of the competition
- Teams or networks composed of managers or experts with similar responsibilities, that meet face to face to regularly share issues and practices
- These teams have to be empowered and made accountable for quality and process improvement
  - Provide awards, of which the criteria could be similar to those of the Malcolm Balbridge National Quality Award

2.c. Embedding the process into the organisational *environment*

Technology

- Communication technology helps to enhance and support the transfer of best practices, but does not drive best practices. Is also not enough to transfer the often complex and experiental knowledge on best practices
- Best practice databases requires people devoted to entering, filtering and finding information in these databases
- Databases are recommended to include a general description, the use, and contact information of a best prac
- Databases require a framework fo ess Classification Framework by APQC
- Culture and behaviour are key

Culture

Rewards

Leadership

Measurement

7.0 Manage Information Technology (10008)

7.1 Manage the business of information technology (10563)

7.1.1 Develop the enterprise IT strategy (10570)

7.1.1.1 Build strategic intelligence (10603)

7.1.1.2 Identify long-term IT needs of the enterprise in collaboration with stakeholders (10604)

7.1.1.3 Define strategic standards, guidelines, and principles (10605)

7.1.1.4 Define and establish IT architecture and development standards (10606)

7.1.1.5 Define strategic vendors for IT components (10607)

2.c. Embedding the process into the organisational *environment*

Technology

Culture

- Can be influenced through motivation and reward: from individuality and competition to collaboration and sharing
- Supportive culture: "Why are you spending time doing this?"
- Provide time, support and resources where required to implement best practices
- Common vocabulary
- Do people share a common purpose?

Rewards

Leadership

Measurement

2.c. Embedding the process into the organisational *environment*

Technology

Culture

Rewards

- Are (financial) reward structures encouraging competition? Or sharing?
- People and units exchanging best practices should benefit intrinsically from them by being able to better do their job. Sharing should be self-rewarding
- PWC: recognise tutoring and training as positive for a career path
- Acknowledge efforts taken, e.g. TI Not Invented Here But I Did It Anyway (NIHBIDIA) award.
- Formal rewards can be an insult to an expert

Leadership

Measurement

2.c. Embedding the process into the organisational *environment*

Technology

Culture

Rewards

Leadership

- Tie initiatives to your vision: mission, vision and values should endorse learning and transfer
- Have success stories told
- Remove barriers to progress: not looking for new ideas, not-invented-here syndrome
- Reinforce and reward positive behaviour and promote the right people
- Lead by example: show commitment to learning, get upward feedback
- Tell employee groups that the most important thing is to use and share best practices

Measurement

2.c. Embedding the process into the organisational *environment*

Technology

Culture

Rewards

Leadership

Measurement

1. Measuring to identify a best practice
2. Measuring the impact of single initiatives or best practice transfer as a whole
3. Note that
   - Measurement does not provide understanding
   - The impact of the situation is large: the better practice can have worse performance
   - Benchmarks can be misleading
   - Measuring can result in internal competition that hinders sharing best practices
   - It is better to look for breakthrough performance

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3. Seven keys to effective transfer of best practices

1. Use (external) benchmarking to create a sense of urgency, or find a compelling reason to change
2. Focus initial efforts on critical business issues with high payoff that are aligned with the values and strategy of the organisation
3. Make sure that you can see a best practice through from identification to implementation (you have limited time and resources)
4. Do not let measurement get in the way: inconsistencies in measurement, impact of the situation can lead to discussion and competition instead of an effort to improve performance
5. Change the reward system to encourage sharing and transfer of best practices
6. Use technology to support sharing best practices, but do not see it as the solution

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Conclusion

- Sharing best practices
- ... has an interesting impact on performance
- ... is a people-to-people process
- ... requires an ongoing effort
- ... requires specific skills and capabilities in organisations and people
  - An orientation towards process improvement
  - A common methodology for improvement and change
  - The ability to work in teams
  - Technology to support cataloguing and collaboration

Ultimately, sharing best practices comes down to an organisational and personal desire to learn

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European Strategy for Higher Education 2020

Jeroen Klijs

Relevance of HE2020 Strategy

- For all research grants (Horizon 2020, national grants) you will be expected to help implement this strategy

- Think of the grants under the European Research Framework (FP7) being judged on
  - Research quality (25%)
  - Dissemination (valorisation, knowledge transfer)
  - Research management
  - Education and training activities
  - …

Understanding European Policy: A tree of objectives

Lisbon objectives
- Economic growth
- Jobs

Sustainability of energy and natural resources

Environment, consumers and health

Regions and local development

One European market, also for research

Business

Justice and citizens' rights
- Data protection

European Higher Education Strategy 2020

We are here

Science and technology
- Horizon 2020
- EIT

http://ec.europa.eu/policies/

Key challenges for Higher Education

These are the European challenges for Higher Education

1. Increasing attainment levels to provide the graduates and researchers Europe needs
    1. Attract international talent
    2. Shift in attainment levels (more academic schooling)
2. Improving the quality and relevance of higher education
    1. Soft skills, entrepreneurship, …
3. Strengthening quality through mobility and cross-border co-operation
4. Making the knowledge triangle work: Linking higher education, research and business for excellence and regional development
    1. Regional knowledge transfer
5. Improving governance and funding
    1. Diversification of funding (companies pay)

Meeting these challenges

This is what the European Commission will do

***Read*: this is what the European Commission will ask YOU to do**

- Supporting reform through policy evidence, analysis and transparency
- Promoting mobility
- Putting Higher Education at the centre of Innovation, job creation and employability
- Supporting the internationalisation of European higher education
- Strengthening the long-term impact and complementarity of EU funding
  - Education Europe: The single programme for education training and youth
  - Horizon 2020: The Framework Programme for Research and Innovation
  - Cohesion Policy instruments (e.g. European Regional Development Fund)

Summary

- Universities (and academics) have increasing REGIONAL responsibility
  - Education
  - Provide knowledge to local companies
  - Jobs
  - Collect budgets

} Knowledge transfer and valorisation

- Education changes
  - Shift towards higher levels of attainment
  - Soft skills (entrepreneurship, …)
  - Excellence in research and education

- International issues
  - Collaboration with other regions
  - European mobility

} Knowledge transfer and valorisation

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Enhancing the valorisation performance of European universities

Jeroen Klijs

Assignment

- Design a pilot project to step up the commercialisation and valorisation of university IP
- Your team:

- This pilot is to give other European universities the confidence that they can implement the strategic aims of the European Higher Education Strategy 2020
  - Diversification of funding streams
  - Academia-Industry knowledge transfer
- Think about European aims, and the interests of universities and academics
  - One European market

- What would you do?
  - What challenges would you expect?
  - Why would your approach improve the current performance?

The pilot of the Ulab project

Visiting international fairs to enhance the commercialisation of university IP

Concept design

Concept design

- Aim to create value
- Taking university regions to the international level
- Expectations on benefits gained by visiting fairs
- Enhancement of efficiency through topical focus

Concept:
Aim to create value

IP Pooling

"the whole is greater than the sum of its parts: the true value of patents lies not in their individual worth, but in their aggregation into a collection of related patents—a patent portfolio" (Parchomovsky & Wagner, 2005)

→ A pilot that **pools the IP of various partner universities** promises to enhance the performance in IP activities

Internationalising patents

Chances of internationalisation

- Patents representing large **international patent** families are particularly valuable (Harhoff, 2003)
- **European patents** (i.e., patents filed with and granted by the European Patent Office) are more valuable than national patents (Deng, 2007)

Risks of internationalisation

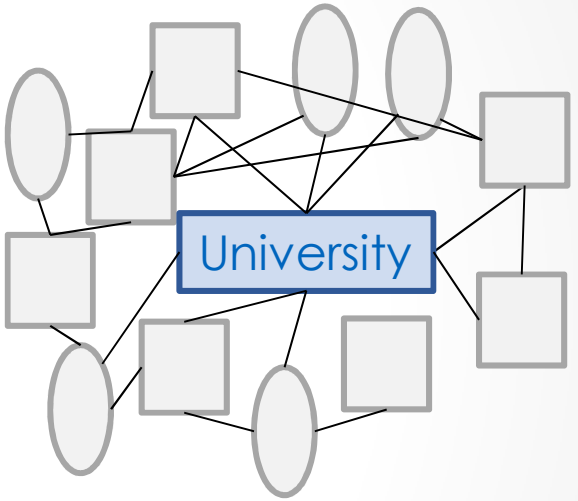
- *"the risks of international operations compound the usual liabilities […], but […] the risks of domesticity may be just as high when markets are global"* (Oviatt, 1995).

→ A pilot on the **internationalisation of IP** protections promises valuable insights for increasing the performance in IP activities.

Concept:
Taking university regions to the international level

Universities play an important role in regional innovation systems

- Knowledge is mostly bound in regions representing the size of an extended city (Verspagen, 2000)
- These "regional innovation systems" (RIS) (Cooke, 1997) commonly contain at least one university or research centre.



Growing importance of the universities' role through shift :

FROM		TO	
	Only creating knowledge (research and education)		taking responsibility for knowledge transfer

Internationalisation of regional innovation systems is likely to gain relevance

Currently, knowledge is bound in geographical regions

- Limited focus on regional firms and regional organisations as source of innovation (Charles, 2000)
- However, some knowledge is already transferred beyond the region (Verspagen, 2000)

Vision on the future

"*In an open, globalised world, where the knowledge base necessary for the development of firms is growing in diversity and complexity, such a* ***closed approach is unlikely to be successful****.*" *(Charles, 2000, p. xiv)*.

- So far, it is not clear how regional clusters can be integrated in national and international networks (Cooke, 2006b)
- One idea for regions is to internationally promote their competitive advantage in research and innovation (Reichert, 2006)

Probably universities can step up and promote a region's international knowledge transfer

For companies, it is **often too expensive** to maintain ties to transfer knowledge over long distances (Chesbrough, 2006).

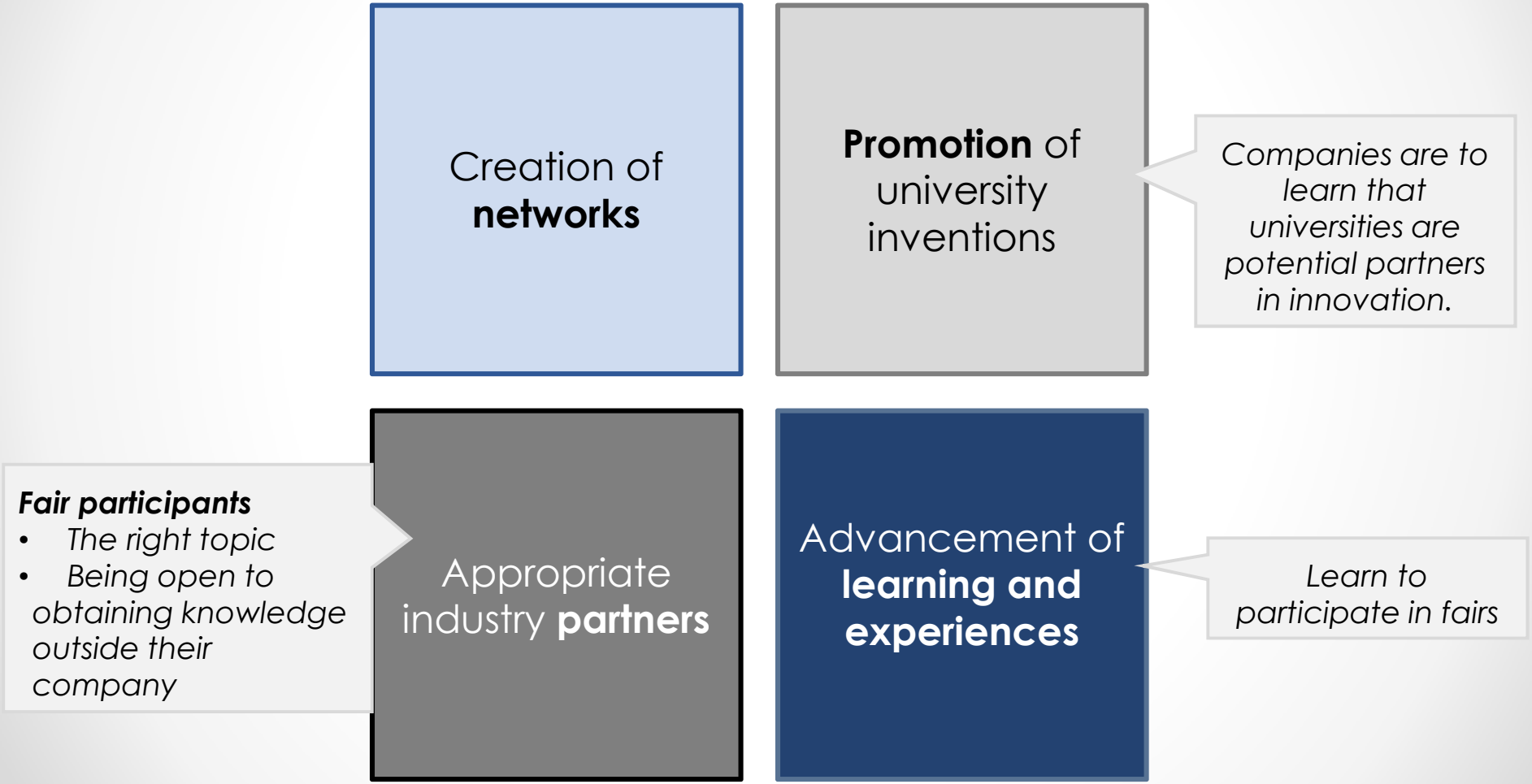
In academia, it is not uncommon to maintaining knowledge ties over long distances when working in the **"world library" of academic knowledge**

It appears to be highly interesting to gain more insights:

- If universities can actually step up the internationalisation of regional networks that are used to transfer knowledge and technology
- If universities can internationally promote the region's competitive advantage in innovation through their academic ties

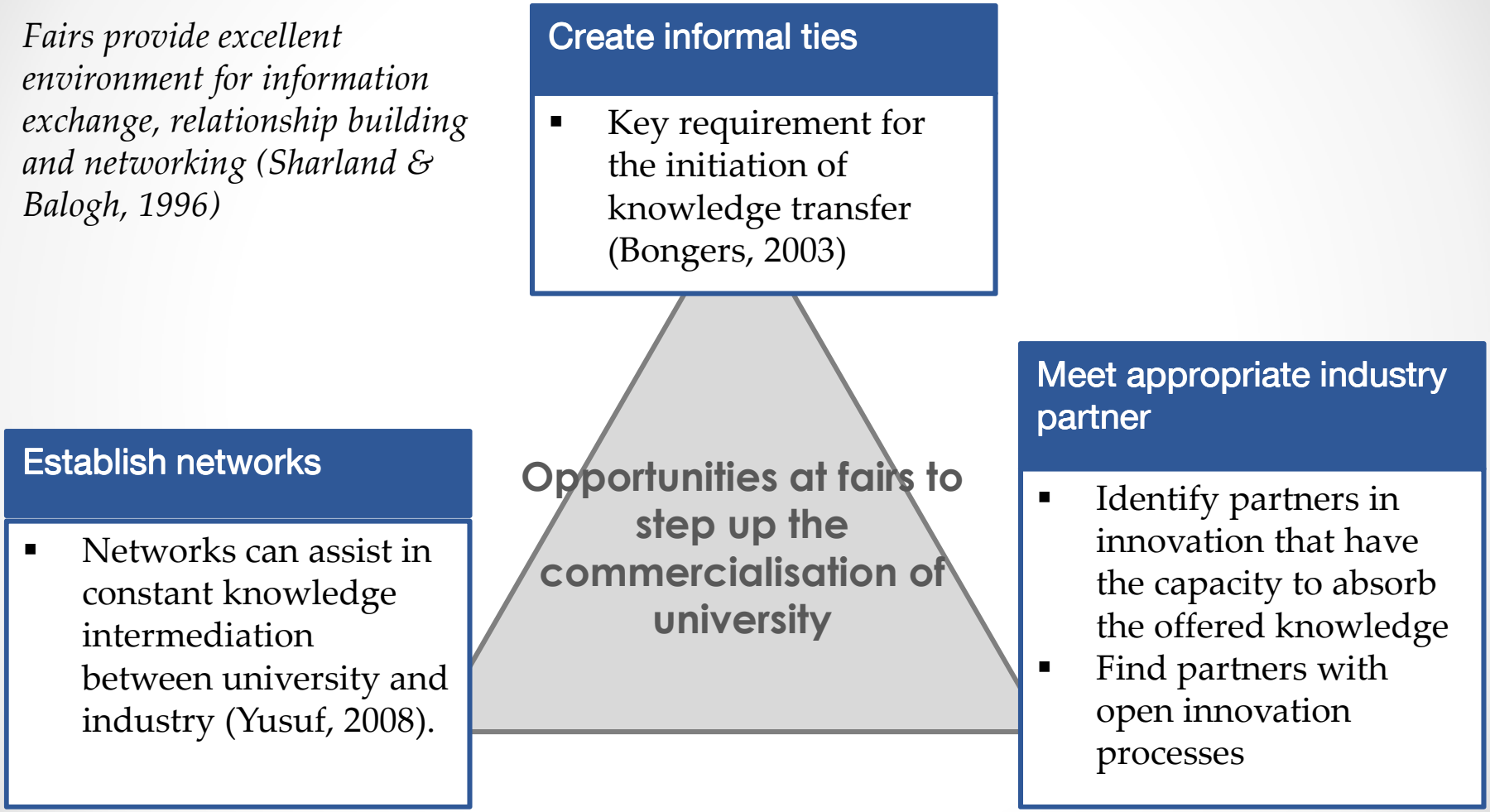
Concept: Expectations on benefits gained by visiting fairs

Visiting technology fairs as a pilot project implies promising advantages for universities



Direct advantages expected at technology fairs: Benefit of network creation and target group

Fairs provide excellent environment for information exchange, relationship building and networking (Sharland & Balogh, 1996)



Implementation

Implementation

Best practice on hosting access to a fair

- Each participating university hosts access to a fair
  - Often, financial support is available through the government
  - Selection of fair: topical focus, size, …
  - Host invites one central contact at a befriended university to send a delegation

Best practice on participation

- A researcher or a member of the TTO participates
  - This participant knows how to sell his product in 30 seconds
- At the stand make sure you have something to show, that draws attention
- Details are commonly arranged at a moment later in time

Evaluation

Evaluation method

- Method: questionnaire plus open questions
- Questionnaire send out 1-2 weeks after fair participation

Evaluation: Return on Investment

Research Questions

Participation in technology trade fairs has the potential to step up university valorisation (RQ1) and can assist to initiate contacts for knowledge transfer (RQ2)

Findings

- ✓ Visiting technology trade fairs is felt to allow stepping up the valorisation of universities' intellectual property
- ✓ Participation in fairs is positively evaluated
- ✓ Though, as expected, there is no significantly measurable gain in "hard" commercialisation indicators (immediate sales or licensing contracts)

Conclusion

- ➢ Positive evaluation refers to the possibility of networking and contact building
- ➢ Contacts are of international character at fairs abroad
- ➢ Support for the theoretical consideration: Building networks is crucial for future deals and the performance of TTOs

"Our experience in Genera and Venturefest has been very positive, since we have established contacts from both fairs."

More time may be needed. For the "Hannover Messe," an expert mentions that returns of about 60.000 Euros are expected

Evaluation: Return on Investment

Research Questions

The benefit of visiting trade fairs compensates for the effort (RQ4)

Findings

- ✓ Majority of participants and hosting institutions agree to the statement that "effects of fair participation were worth the effort for organisation"
- ✓ Positive feedback in both open and closed questions

Conclusion

Fair participation withholds benefits that exceed the efforts involved

Evaluation: Learning effects

Research Questions

Participation in technology trade fairs advances learning of participants (RQ3)

"We improved our presentation methodology and interacted with other participants in an international atmosphere."

Findings

Fair visits seem to positively advance:

- ✓ Presentation and communication skills in general
- ✓ Presentation techniques for TTOs' technologies
- ✓ Organisational capabilities and experience building with regard to technology fairs

Conclusion

Support for the theoretical consideration: Fair visits have the potential to advance learning and competence building capabilities of participating staff.

Conclusion

Universities should **further explore** the possibilities of fair participation

- To strengthen their **link with business**
- To enhance the **visibility** of its research results and technology
- To **promote** themselves as business partners in innovation
- To establish their role as a **region's "gates"** to international knowledge and technology transfer
- To act as (innovation) **ambassadors for their region** of origin
- To attract **international customers**
- To **draw companies to the region** the university is located in

For further pilots, the high-level Ulab Advisory Panel recommended to explore the use the **platform of the European Enterprise Network** for the participation in technology fairs.

References

Parchomovsky, G., & Wagner, R. P. (2005). Patent portfolios. *University of Pennsylvania Law Review, 154*(1), 1-77.

The evaluation (including full references) of the pilot project on valorisation (D3.2) is available from www.ulab-fp7.eu

The Ulab team at the TUM

Prof. Dr. Isabell M. Welpe

Dr. Philipp Sandner

Jeroen Klijs (Main contact)
j.klijs@gmail.com

Johannes Blümel

Felix Krol

Johanna Glauber

Questions

Building an innovation economy in Mougin

A pilot project executed by ParisTech
under the Ulab project

Assignment

- The European Higher Education Strategy gives universities a responsibility for the regional economy
  - YOU (academics) are responsible, due to **funding requirements** (FP7: impact, dissemination, …)
  - Typically, you are to provide knowledge to a regional innovation economy

- However, the regional innovation economy is at this moment limited, e.g.:
  - There never was much innovative activity around in the first place
  - There are challenges due to an economic crisis
  - …

- Assignment
  - Apparently, you need to obtain a healthy regional innovation economy
  - Please construct one

The ParisTech dependance in Mougin

Aim

- Aim for ParisTech
  - Bring together different groups of people and institutions that usually do not work together intensively, e.g.:
  - Bring together researchers and companies that do not (yet) do a lot of research
  - Enable contacts between private inventors and research laboratories
  - Inventors, researchers, start-ups, venture capitalists, business angels, sociologists specializing in the study of innovation, regional incubators, …

- Aims for Europe
  - Regional development
  - Innovation economy
  - Academia-Industry linkages
  - University as a central role in innovation

Implementation

- Moug'Innov exhibition and conference organised in September 2012
  - The event was designed to enable communication and discussion among these groups by mixing them at the event
  - To provide the event with sufficient scale, several conferences with the aim to attract venture capitalists took place simultaneously

  - 70 exhibitors with stands
    - 40 private inventors
    - 15 technologies from laboratories, engineering schools and universities
    - more than 10 technology projects

- Host: ParisTech
- Cost to host Moug'Innov: about 30.000 Euros
- Extended partners: Mougin City Council,

Results: Typical outcomes

- A young company on isothermal and recycled building materials, already in touch with a local certification center, but needing further support, was **directed to the regional incubator**
- Another project proposing photovoltaic strips for wave like roofs, and looking for **technical and financial assistance**
- An emblematic project is Antegrin, a young company created by a private inventor, Kham Bounpraseuth. Antegrin created and patented a new TV passive antenna, lighter (420 g), more compact and cheaper than any other existing competitor. The technology also uses some environmentally-friendly materials (wood and resin casing). Before creating its prototype, the company had conducted a patent search on 850 patents. Since Mougins, an **audit of the project and of its patent has been undertaken by several ParisTech researchers and senior experts**. Their opinion is very favorable. At the same time, Mr Bounpraseuth expressed a need to create a next-generation product that will request the support of electronic and signal processing laboratories. **Cooperation now is initiated between Antengrin and ParisTech** and is due to become effective probably in the end of 2012.

Evaluation

- Mougins city council will fund the event in 2013
- Venture capitalists want to participate again in 2013
- More universities will participate in 2013 (from Paris, Nice)
- The possibility to copy this event are being investigated
  - From Mougin to Paris
  - Focus on ParisTech students
- The Moug'Innov team has been invited to Tuniesia in Tunis to implement a similar event in Sfax (Tuniesia)

- Multiple inventions received interest from investors

- The link ParisTech – Mougin is expected to deepen
  - Research collaborations

Open Innovation 2.0

The evaluation of the first implementation of Open Innovation 2.0

Assignment: Design a valorisation infrastructure for a European innovation network

The example of the
IDECAT Network of Excellence

IDECAT NoE (Case 2)

Aim:	Set up a sustainable research structure (~EIT) for the European catalysis sector
Partners:	37 academic laboratories over 12 European Countries ✓Network of Excellence: best researchers of Europe in Catalysis ✓2 Nobel Laureates ✓CNRS, NRSC-C, CSIC, University of Southampton, CNR, KU Leuven, MPG, EPFL, …
My position:	Associate research and education (Eindhoven, Strasbourg, Southampton) WP12: Technology Transfer to the industry

Catalysis is …

A catalyst is…

- Think of the catalyst under a car
- Yeast is a catalyst used to brew beer
- A catalyst is a substance that influences a chemical reaction, in order to:
  - Reduce waste
  - Lower energy consumption
  - Make new medicine possible

An animated introduction to catalysis
http://www.youtube.com/user/proftromp/videos

Catalysis as an enabling technology

- European catalyst market: 1.500 million € / year
- 80 per cent of all chemical industrial processes use catalysts
- EU chemical industry: 1.400.000 million € / year

Assignment

- The European Commission has set the following aims:
  - One European market, also for research
  - There is a belief that Europe should move towards Open Innovation
    - I will explain this in the next slide
  - A target for growth and jobs
    - Innovation driven economy (Why an innovation economy? Why 3%?)
    - Academia-industry collaboration

- Your target is to
  - Design infrastructure that benefits **Informatics Europe, IDECAT** or a similar network
  - While making Europe the most attractive continent for research and innovation in the world… WHY?
  - … by designing and implementing enhancements to Open Innovation WHY?

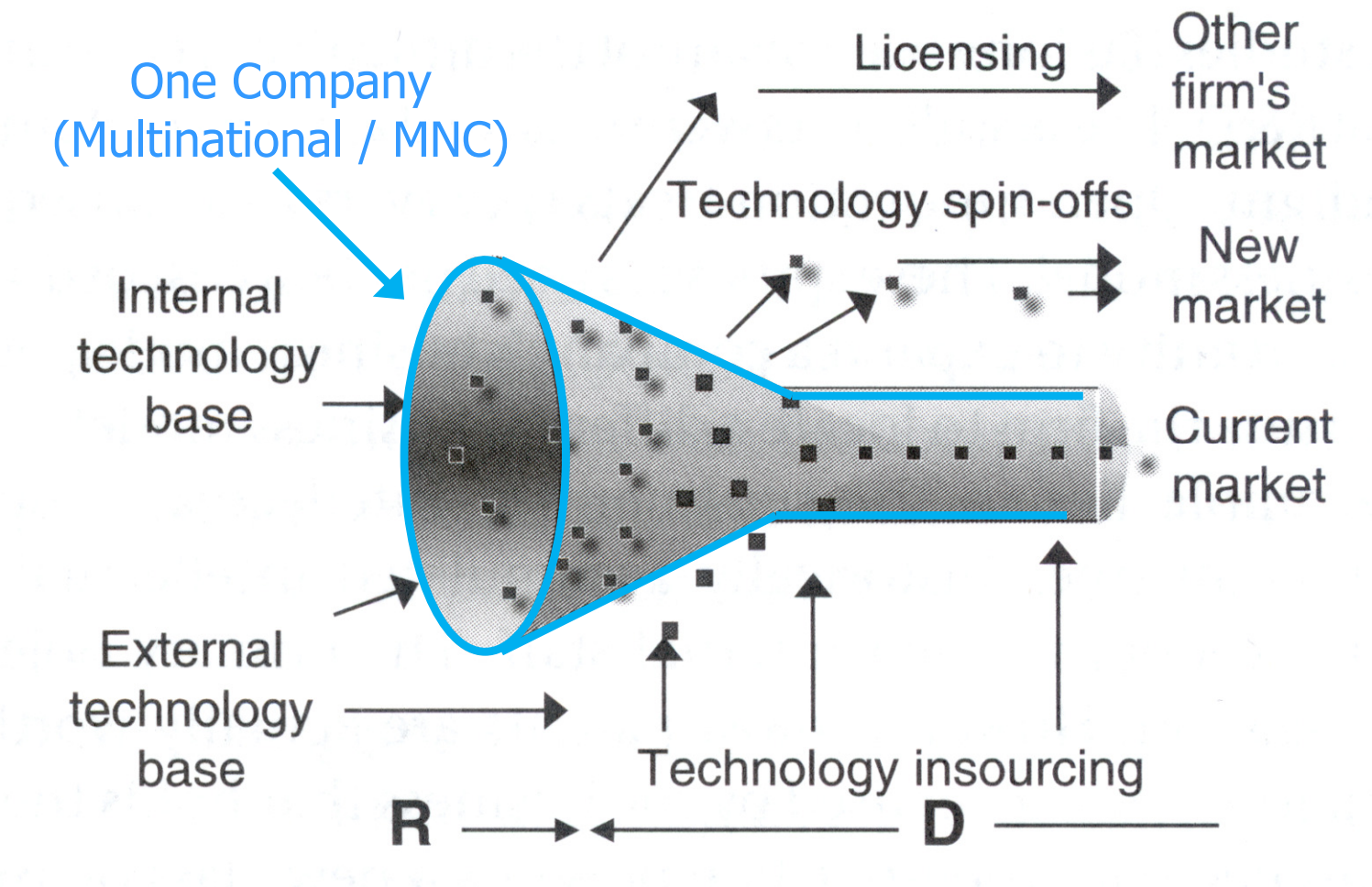
- I will introduce "IDECAT" and the "open innovation" challenge in the next slides

Inside information on IDECAT

- IDECAT
  - used to be three networks of excellence on catalysis, thus 2/3 of staff made redundant at start
    - emotional stress
  - Project objectives not clear
  - Professor are in the network most only for
    - Research funding
    - Prestige
  - **Notice**: IDECAT budget can not be spend on research

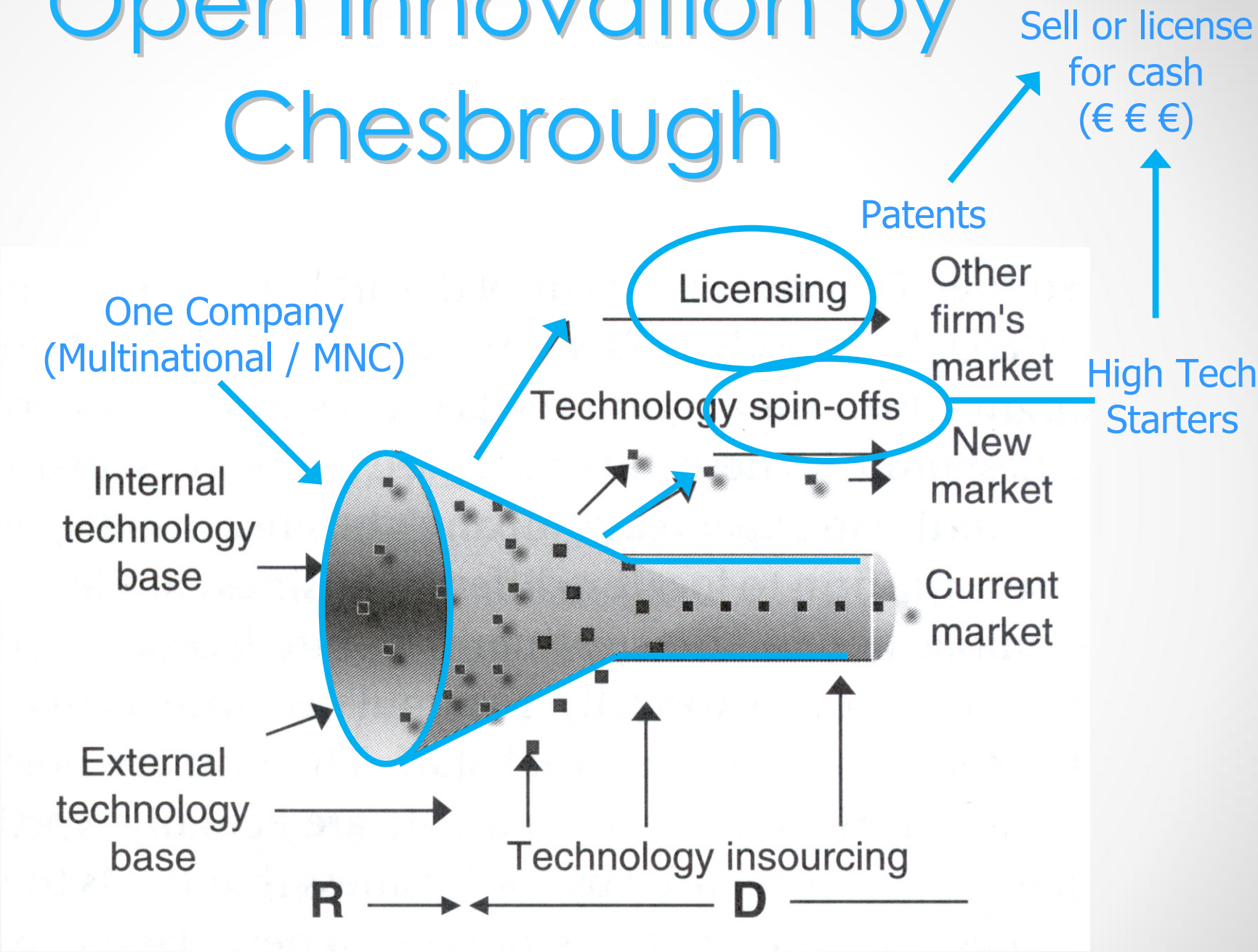
- Participants
  - Do not know each other (information)
  - Are individualistic, as opposed to working as a group
  - Highly political environment (they are competitors, not colleagues)
  - Cultural differences

Open Innovation by Chesbrough



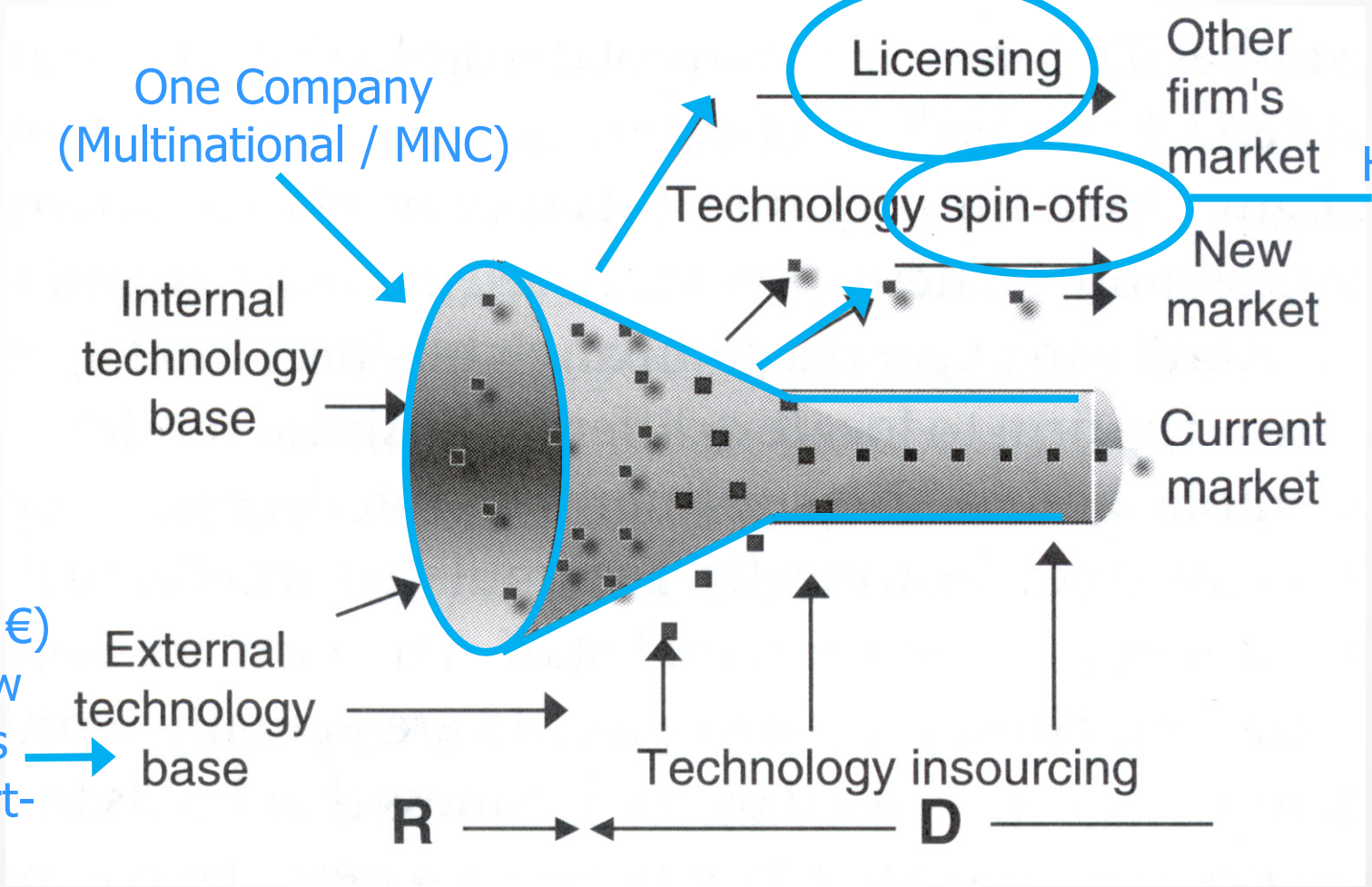
Source: Chesbrough (2003)

Open Innovation by Chesbrough



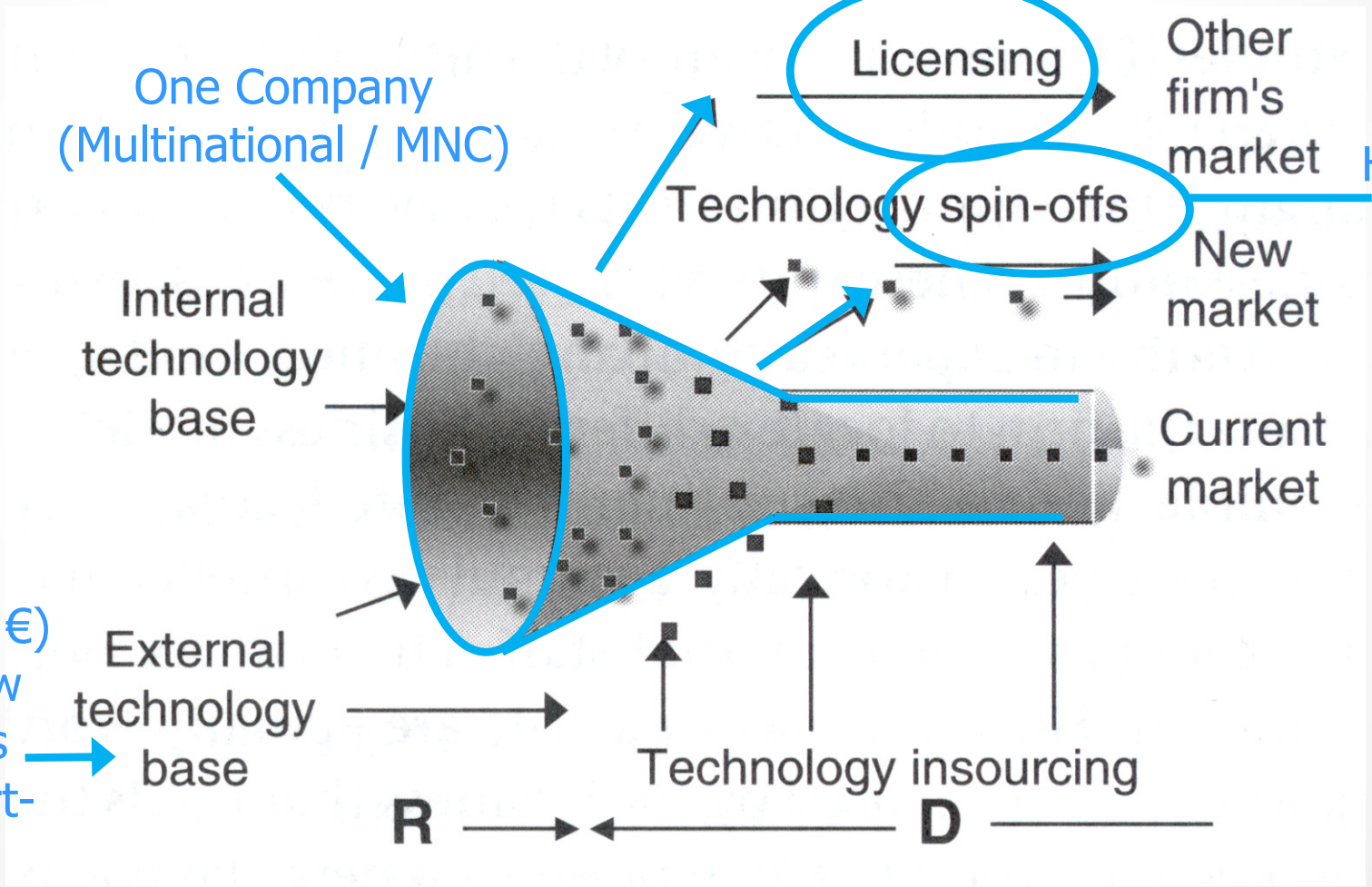
Source: Chesbrough (2003)

Open Innovation by Chesbrough



Source: Chesbrough (2003)

Open Innovation by Chesbrough



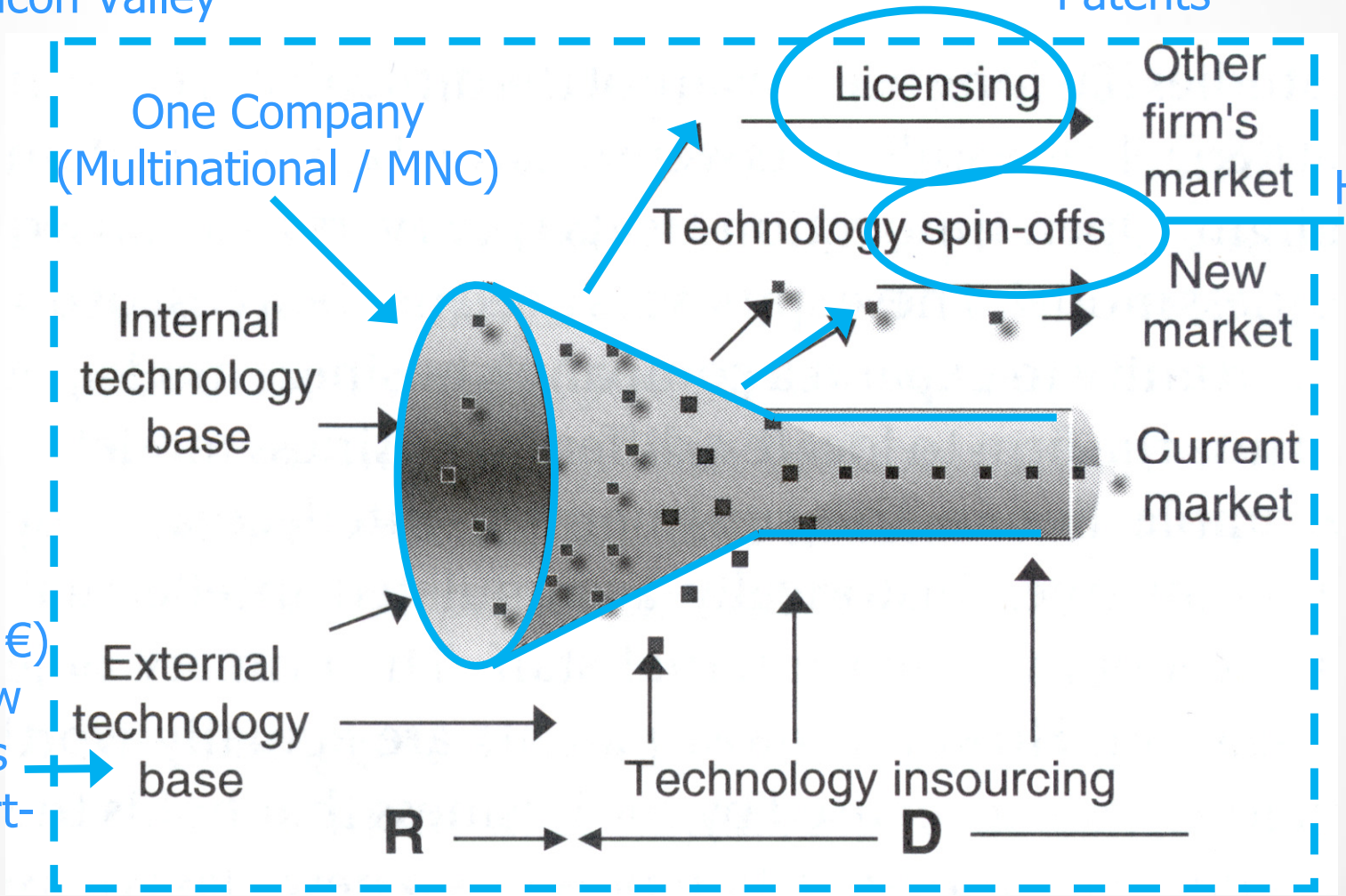
Source: Chesbrough (2003)

Open Innovation by Chesbrough

One geographical region
Extended city: e.g. Munich / Bayern, Silicon Valley

Sell or license for cash (€ € €)

Patents



High Tech Starters

Use cash (€ € €) to obtain new technologies (patents, start-ups)

Source: Chesbrough (2003)

Henry William Chesbrough

- Used to work at Quantum
  - Product development
  - Marketing
- Now Professor at Berkeley

- Coined the term "Open innovation"
- *"Universities cannot participate in open innovation, for as they are too slow"* (Chesbrough, 2003)

- Open innovation
  - Focus on patents & start-up companies
  - Inside one region (extended city, Silicon Valley)
  - USA
  - ICT sector

Your assignment

Open Innovation (Chesbrough)

- Universities are too slow to participate
- No university-industry transfer
- No interregional collaboration
- Focus on patents & start-up companies

- IT sector in the USA

Note: Further research on the above topics recommended (Chesbrough, 2006)

Your assignment

- You are an academic network, …
- … that has to work with industry
- Integrate European research
- From your experience, patents and start-ups are not that important
  - Europe focusses on research collaborations (Verspagen, 2005)
- Chemicals sector in Europe

The position of universities in Open Innovation

European advances in Open Innovation
The example of the European chemicals sector

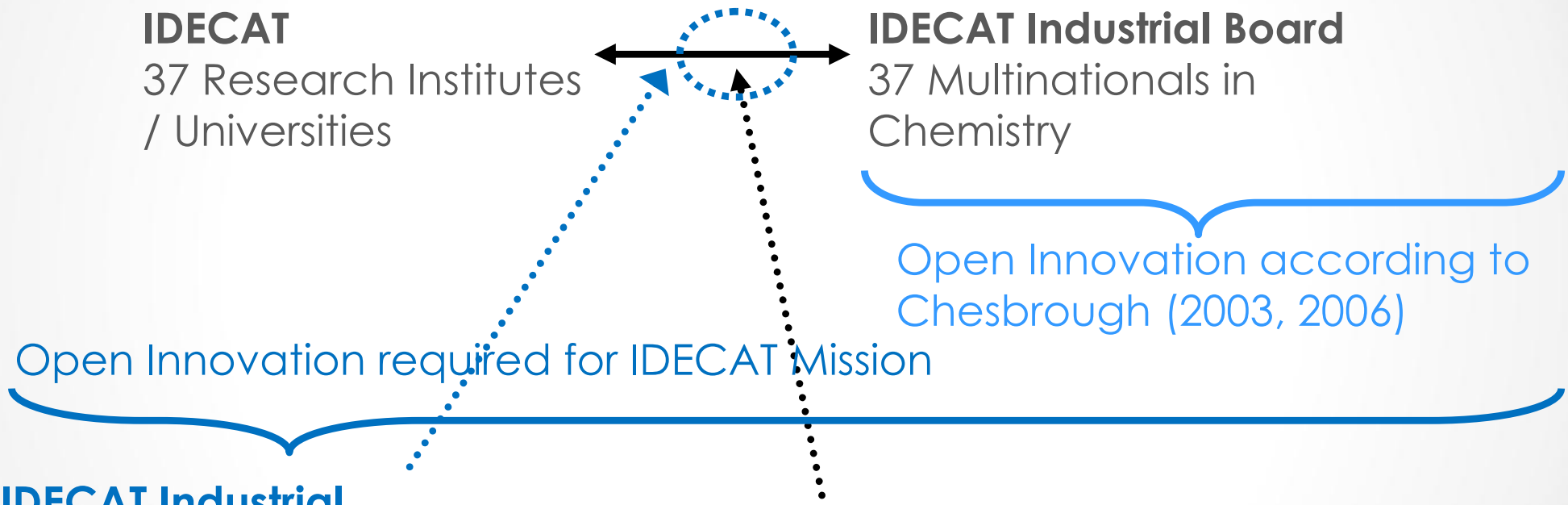
More information about IDECAT NoE (Case 2)

Extended partners:	IDECAT Industrial Board (IB) ✓35 Chief Technology Officers of multinationals in the European Chemicals industry ✓Shell, BASF, TOTAL, Repsol, ENI, Sasol, …
Very positive evaluation:	✓ The European Commission mentioned they felt IDECAT was the best performing out of nearly 200 similar networks ✓ They based this decision on our efforts for both technology transfer to the industry and outreach ✓ Both the academic IDECAT partners and the IDECAT IB appreciated the knowledge infrastructure
Notes	Became European Research Institute for Catalysis A.I.S.B.L. (ERIC) http://www.eric-aisbl.eu/

Approach to implementing "Open Innovation 2.0"

1. Develop the organisational structure (IDECAT Industrial Board (IDECAT IB))
2. Research road mapping + collaborative proposals
3. Implement infrastructure to pool knowledge resources

Developing the organisational structure of IDECAT



IDECAT Industrial Liaison Office
Support interaction to facilitate exchange of knowledge

me & colleague in Valencia

European Commission
Socio-Economic Environment:
- Funding (FP7)
- Legal issues

Channels to Transfer Knowledge (Bongers et al., 2003)

Bongers et al. (2003) did an inventory of all possible channels to transfer knowledge

1. *Sharing of facilities*
2. *Cooperation in education*
3. *Contract research*
4. *Publications*
5. *Conferences*
6. *Mobility of people*
7. *Informal contacts*
8. *Cooperation in R&D*
9. *Patents*
10. *Spin-offs and entrepreneurship*

Open Innovation according to Chesbrough (2003, 2006)

Open Innovation required for IDECAT Mission
"Open Innovation 2.0"

Start with Informal contacts

- Knowledge transfer almost always starts with this channel

- IDECAT Industrial Board formed…
- … from Chief Technology Officers known by IDECAT researchers
  - ✓ 35 Chief Technology Officers of multinationals in the European Chemicals industry
  - ✓ Shell, BASF, TOTAL, Repsol, ENI, Sasol, …

- Academia-Industry Research Roadmap developed and implemented

Collaborative Research is next

- *Cooperation in R&D* — Acedemia-Industry
  - *Universities supply ideas, companies market*
  - *Precompetitive research: Capacity building in EU*
- *Publications* — Acedemia-Academia
  - *Papers with multinational authors well perceived*
- *Sharing of facilities*
  - *Booklet: Information on experimental equipment "from Software to Synchrotron"*

Acedemia-Academia-Industry

+

- *Academia-industry collaboration*
- *Collaboration in-between European regions*
- *Participants believe in the collaborative system*

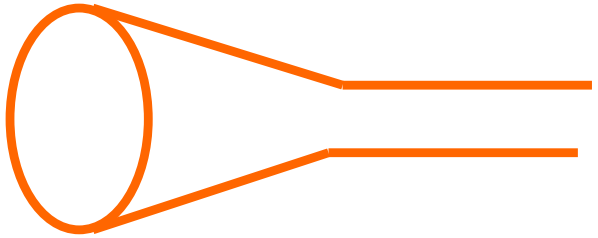
Last, all other channels for knowledge transfer are developed

These channels **support collaborative research that was set up just before (which is why these channels for knowledge transfer come last)**

- Education: Set up European PhD & MSc
- European world-leading conference on catalysis
- Mobility of researchers
  - Visits to other universities
  - IDECAT Recruitment Service
- Contract research: Industrial Board buys research from academia and start-up companies
- Event to broker Patents and High-tech starters to the Industrial Board

The resulting structure for "Open Innovation 2.0" at IDECAT

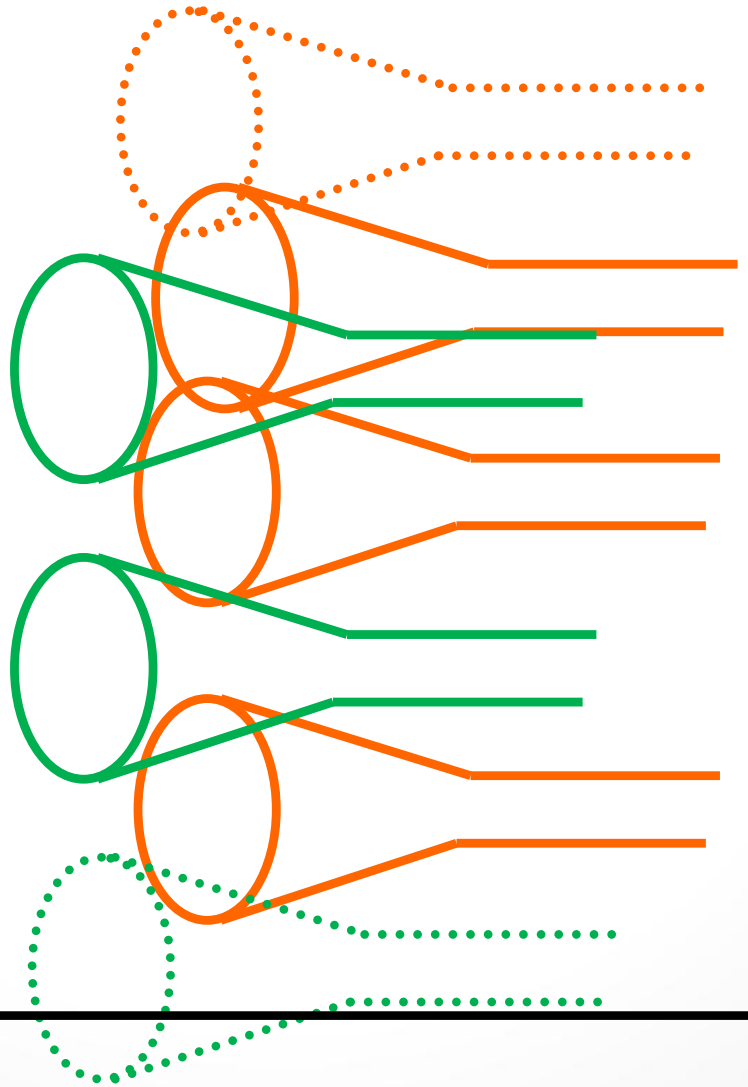
Chesbroug:
One Company
(Multinational / MNC)



IDEA → **MARKET**

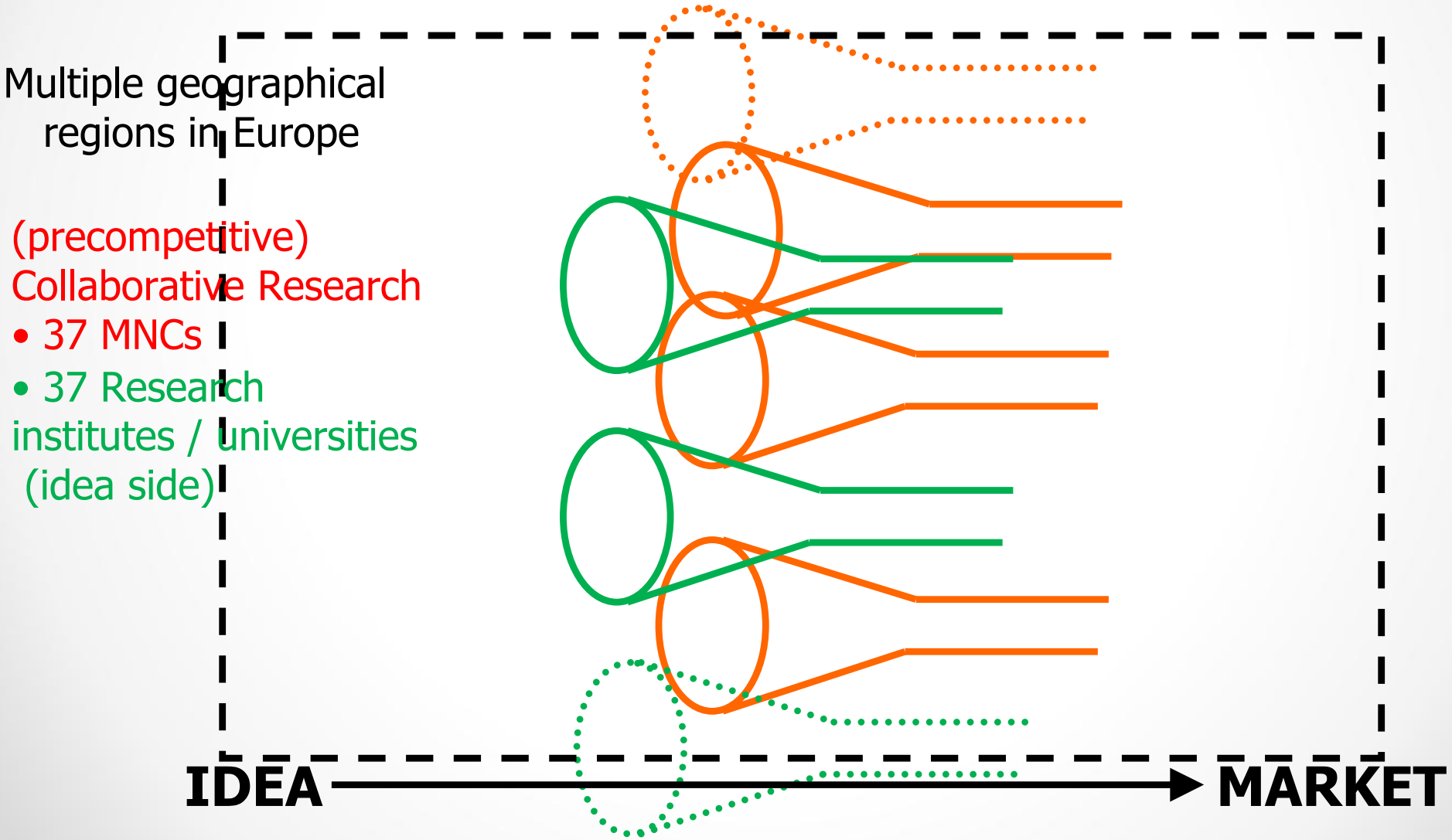
The resulting structure for "Open Innovation 2.0" at IDECAT

(precompetitive)
Collaborative Research
- 37 MNCs
- 37 Research institutes / universities (idea side)

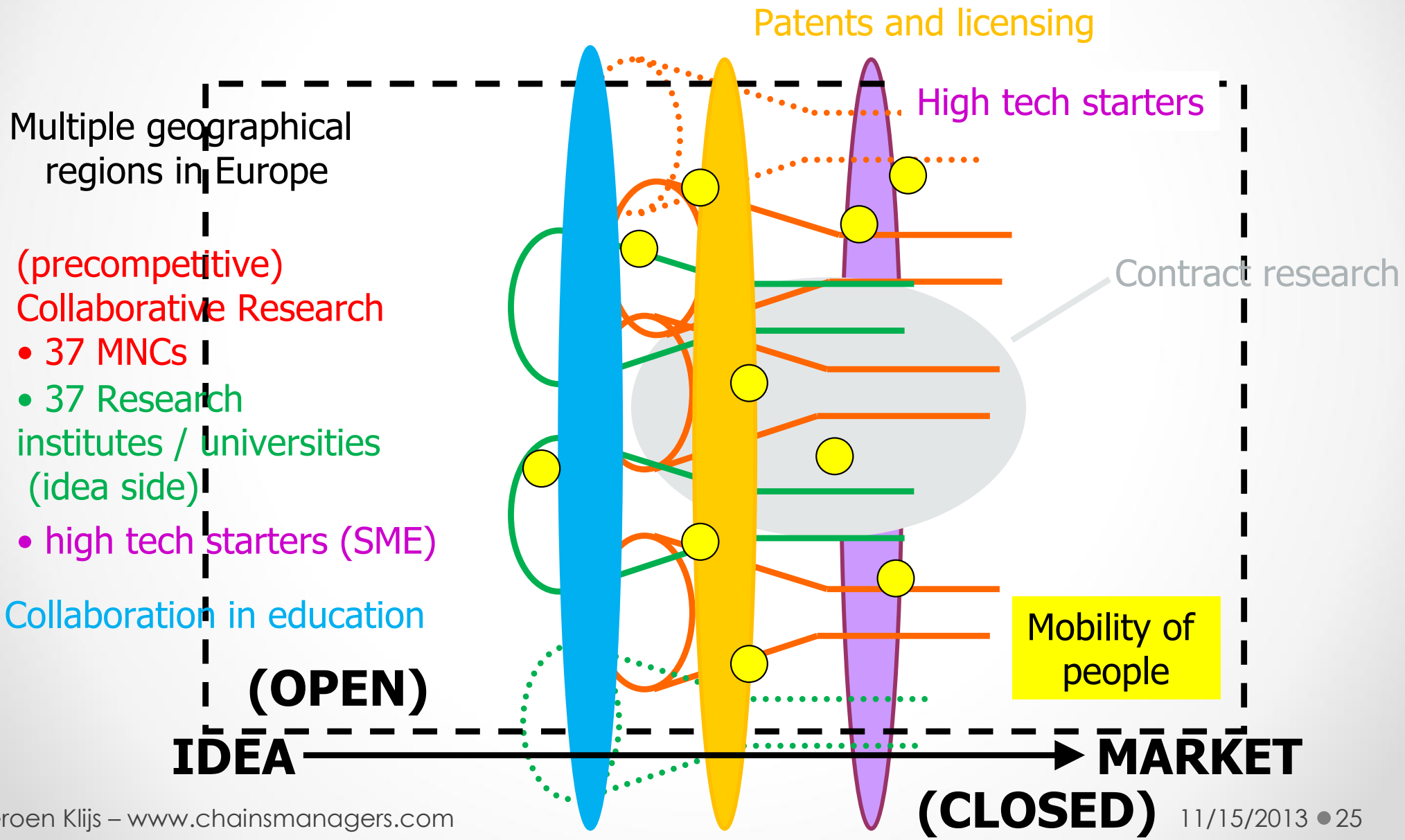


IDEA → **MARKET**

The resulting structure for "Open Innovation 2.0" at IDECAT



The resulting structure for "Open Innovation 2.0" at IDECAT



Conclusion

Key research findings

- Answers to research recommended by Chesbrough (2006):
  - Open Innovation outside USA: EU
  - inter-regional collaboration *works*
  - transfer of knowledge beyond patents and start-ups (Bongers, 2003)
  - University-Industry links *can* work

Benefits to IDECAT partners

- Both industrial and academic partners in IDECAT have access to a set of tools that allow them to access knowledge throughout Europe
  - Supportive when writing research grants
    - Curie ITN: Recruitment service
    - Dissemination section
    - Partner search (small companies, analytics, modelling)
  - A company that wants to develop an innovative product
    - Has access to knowledge resources previously unavailable (lack of information)
    - Can reduce development cost
  - Promotional value
    - European Commission called IDECAT the best performing Network of Excellence out of nearly 200 similar networks

References

Bongers, F., Hertog, P. den, Vandeberg, R., & Segers, J. (2003, October). *Naar een meetlat voor wisselwerking: Verkenning van de mogelijkheden voor meting van kennisuitwisseling tussen publieke kennisinstellingen en bedrijven/maatschappelijke organisaties* [Towards the measurement of interaction: Exploration of the possibilities for measuring technology exchange between public research institutions and companies/social organisations] (Final report to AWT). Dialogic, Utrecht: The Advisory Council for Science and Technology Policy (AWT).

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Chesbrough, H. W., Vanhaverbeke, W., & West, J. (2006). Open innovation: Researching a new paradigm. Oxford, UK: Oxford University Press.

Questions?

- Would such a system benefit Informatics Europe?

Chains Managers

Supporting academics and companies
to accelerate knowledge transfer

Challenges and solution to implement Open Innovation 2.0

Challenges

- Neutral ground is a benefit to avoid:
  - Discussion within a university on dealing with IP developed at the university
  - Discussion in-between universities on which system to use
- Data collection is a challenge
- Investment requirements
- There are additional benefits that come with size of the pool of knowledge

Chains Managers solutions

- We offer neutral ground, shaped in a professional solution
- We have proven experience in collecting the data required
- We enable sharing of cost for development and maintenance over multiple users
- We offer one central solution

Chains Managers – Our team

Jeroen Klijs

- Educated in chemical process engineering, in Technical Innovation Sciences, and in Technology Policy
- Knowledge transfer expert with several previous positions in that area
- Specialized in the development of infrastructure that supports the commercialization of knowledge

Maarten Swemmer

- Educated in Human Computer Interaction: user centered design
- Worked on best in class content management processes and corresponding business implementation
- IT generalist with experience in online marketing, online tool development and (integration in) complex IT landscapes

Chains Managers

Interested? For information, questions, or an introduction to our tool, do contact us.

Jeroen Klijs Msc
Jeroen.Klijs@ChainsManagers.com

www.chainsmanagers.com

Supporting both academics and companies to accelerate knowledge transfer