UNIVERSITÀ DEGLI STUDI
DI TRENTO

Industry-Academia Collaboration and Knowledge Transfer

Claudio Nidasio – Technology Transfer
University of Trento

Povo, 22 aprile 2015 – Crash Course

Collaboration Industry – Academia as a component of knowledge transfer

The key instruments of a knowledge transfer strategy include:

1. The **protection and exploitation of intellectual property** coming from academic research results

2. The creation and support to **academic entrepreneurship** (e.g. University of Trento academic spin off and start up companies)

3. The support to applied research results to the market (e.g. industry) in the form of **industry-academia collaboration**

The environment and rationale for Industry-Academia Collaboration

- With the emergence of a knowledge-based economy, innovation and competitiveness are increasingly affected by the **output of public research and by the ability of university and business to work together**, so that technology transfer activities can be truly effective;

- The importance of establishing a **strong scientific knowledge** base has become a fundamental asset for competitiveness and, more recently, the emphasis has been placed on intangibles assets (e.g. intellectual property), rather than physical ones.

The Republic of Science and the Kingdom of Industry (Gomes et. Al, 2005) – some references

- Industrial and academic worlds represent two **distinct knowledge production regimes**, designed to perform different types of research (Gomes et al. 2005; Sauermann and Stephan, 2011)

- While universities are primarily driven to create new knowledge and to educate, private firms are focused on capturing valuable knowledge that can be leveraged for competitive advantage (Bruneel, D'Este and Salter, 2010)

- The business world is much more oriented to discourage research disclosure in order to rely upon secrecy and patenting of new knowledge (Gans, Murray and Stern, 2011; Sauermann and Stephan, 2011)

The situation in Italy

•In Italy, the need for sharing knowledge between public institutions and private organizations has become only recently increasingly evident, leading to a significant **change in the roles of academia and industry;**

•In 2001, the law 383/2001, so-called "Tremonti bis", represented an important turning point for Italian research landscape. It allowed **academic scientists to own patents arising from their research**, overturning the legislation, but still recognizing the universities' right to participate in any revenue for commercial exploitation of patents.

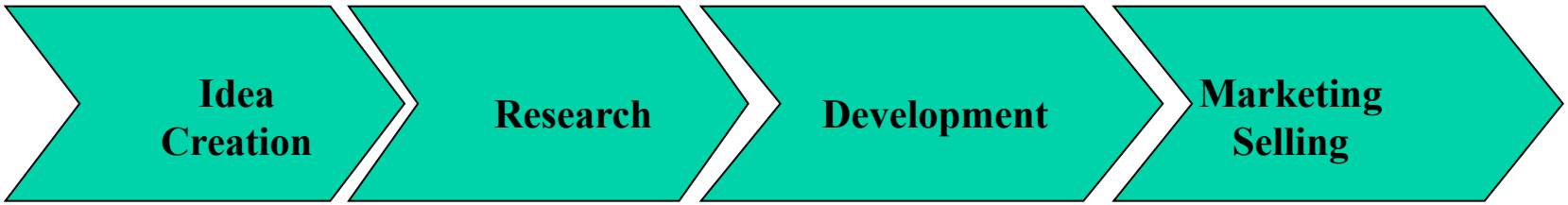
New needs:

In a turbolent environment (Emery &Trist, 1965) companies have to:

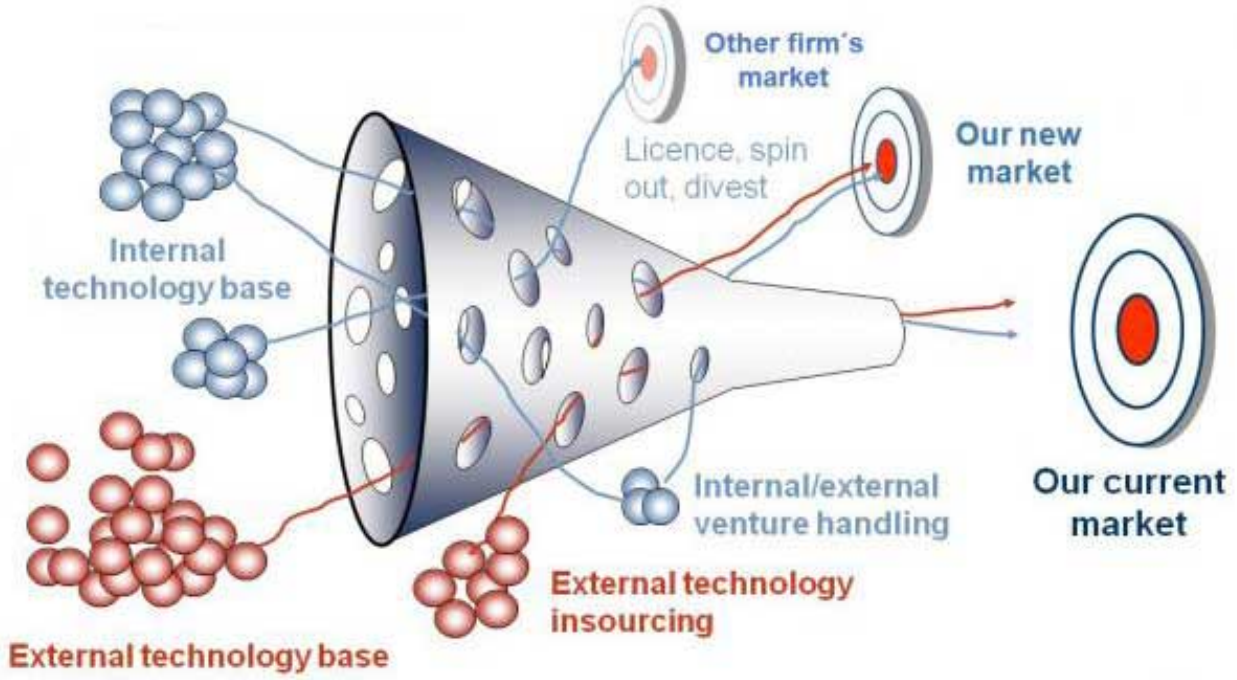
-Copy best practices
-Create relations with others: coopetition
-Innovate before others and Invest in R&D

R&D cannot be carried on only internally

-New competences are needed (Skill shortage)
-Huge amount of resources (Venture capitalist, Crowdfunding, etc.)
-Relations ….



The open innovation paradigm at all levels



Stolen with pride from Prof Henry Chesbrough UC Berkeley, Open Innovation: Renewing Growth from Industrial R&D, 10th Annual Innovation Convergence, Minneapolis Sept 27, 2004

*the use of purposive **inflows and outflows of knowledge** to accelerate internal innovation, and expand the markets for external use of innovation, respectively"* (Chesbrough, 2006)

UNIVERSITÀ DEGLI STUDI DI TRENTO

The interest of Industry in Industry – Academia collaboration

The industrial field is driven by a profit-making interest, which is in a sense maximized when an organization can exploit the competitive advantage derived from the development and capitalization of basic research.

Why business is interested in collaborating with Universities:

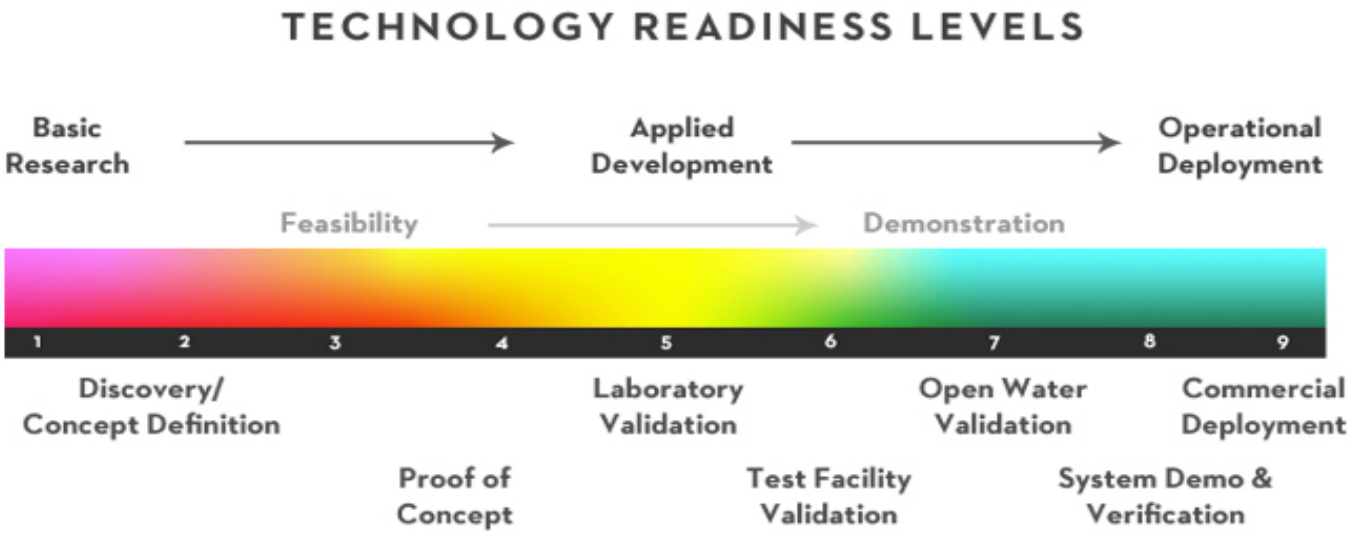
- New knowledge and competencies for **new product development**
- Increase likelihood of **public financing for research** and development
- Get privileged access to research laboratories and infrastructures
- Get access to frontier applied research results and intellectual property (e.g. patents)
- Get visibility and hire new resources for R&D activities (Master of Science and Phd students)

The interest of Industry in Industry – Academia collaboration

•The business world is much more oriented to dis- courage research disclosure in order to rely upon secrecy and patenting of new knowledge

UNIVERSITÀ DEGLI STUDI DI TRENTO

A criteria to evaluate the development stage of technology collaboration



A criteria to evaluate the development stage of technology collaboration - examples

TRL 1 Basic principles observed and reported: Transition from scientific research to applied research. Essential characteristics and behaviors of systems and architectures. Descriptive tools are mathematical formulations or algorithms.

TRL 5 System/subsystem/component validation in relevant environment: Thorough testing of prototyping in representative environment. Basic technology elements integrated with reasonably realistic supporting elements. Prototyping implementations conform to target environment and interfaces.

TRL 9 Actual system "proven" through successful operations : Fully integrated with operational hardware/software systems. Actual system has been thoroughly demonstrated and tested in its operational environment. All documentation completed. Successful operational experience. Sustaining engineering support in place.

Various methods of collaboration:

-Stage and internships
-Student fellowships
-Ph.D. fellowship
-Collaborative projects
-EU projects
-Consultancy activities
-Continuous learning and knowledge management
-etc.

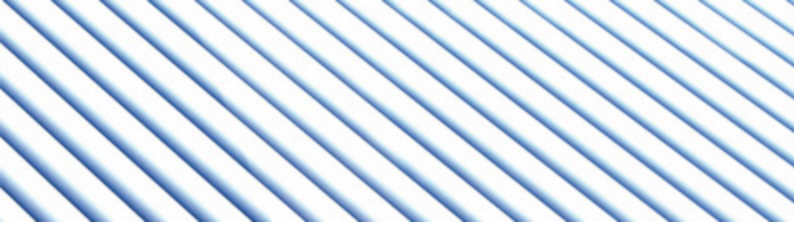
UNIVERSITÀ DEGLI STUDI
DI TRENTO

An example of collaboration from University of Trento

INDUSTRIAL PROBLEM SOLVING WITH PHYSICS

20-25 luglio, 2015
Trento (Italia)

- 3 companies – 30 students
- Applied research problem solving using physics methodology
- 1 week intensive collaboration between company R&D staff and University of Trento graduates and Phd students in Physics



UNIVERSITÀ DEGLI STUDI
DI TRENTO

Thank you!

Claudio Nidasio

claudio.nidasio@unitn.it