

Key factors to successful exploitation of research results and technology transfer

*HBP Innovation & Technology Transfer Node
Universidad Politécnica de Madrid*

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Contents

1. Why do we deliver this session?
2. Factors that affect the exploitation of research results
 1. Understanding what is exploitation of research results
 2. Understanding when and why to protect results
 3. Understanding how to transfer research results
3. Final remarks

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Why do we deliver this session: objectives

1. Conceptualize critical **factors/aspects** that influence the **exploitation** of HBP research results
2. Understand the importance of **technology transferring**
3. Explore the different options HBP researchers have in relation to the **protection of research results (IP)**
4. Learn how to recognize and analyze **opportunities for exploitation**
5. Understand the rationale behind the **valorization of research results**
6. Explore ways for an effective **approach** to users and for **negotiation**

Contents

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Factors that affect the exploitation of research results

Understanding WHAT is innovation

A definition of innovation and exploitation to be applied in HBP technologies should be:

- **globally recognised**, e.g. proposed by well known academics, practitioners or international institutions
- **inclusive**, to cover different types of HBP results
- **accepted** by the research and innovation community as for statistics and benchmarking purposes
- simultaneously business oriented (**exploitation**) and social oriented (**responsible**)

Definitions (1)

INNOVATION (EXPLOITATION ORIENTED APPROACH)

An **INNOVATION** is the **implementation** of a **new** or significantly improved **product** (good or service), or **process**, a new **marketing** method, or a new **organisational** method in business practices, workplace organisation or external relations.

*The minimum requirement for an innovation is that the product, process, marketing method or organisational method must be **new (or significantly improved)** to the firm. This includes products, processes and methods that firms are the first to develop and those that have been adopted from other firms or organisations.*

*A common feature of an innovation is that it must have been **implemented**. A new or improved product is implemented when it is introduced on the market. New processes, marketing methods or organisational methods are implemented when they are brought into actual use in the firm's operations.*

Oslo Manual

A joint publication of OECD and Eurostat

The Measurement of Scientific and Technological Activities

GUIDELINES FOR COLLECTING AND INTERPRETING INNOVATION DATA.

Third edition (2005)

Definitions (2)

RESPONSIBLE INNOVATION (A SOCIAL ORIENTED APPROACH)

Responsible Research and Innovation is a “transparent, interactive process by which societal actors and innovators become mutually responsive to each other with a view on the (ethical) acceptability, sustainability and societal desirability of the innovation process and its marketable products (in order to allow a proper embedding of scientific and technological advances in our society)”

von Schomberg (2011) The quest for the "right" impacts of science and technology. An outlook towards a framework for responsible research and innovation. in: (eds M.Dusseldorp, R. Beecroft) "Technikfolgen abschätzen lehren. Bildungspotenziale transdisziplinärer Methoden". Springer Verlag p.p.394

A definition of HBP exploitation (based on 1 and 2)

*In the context of the Human Brain Project, exploitation is the implementation of a **new or significantly improved technology (hardware, software), service, process, model or database** in neurosciences, computing, or medical-related business practices, academic institutions, and research organizations, and being such an implementation the result of a process by which society and innovators become mutually responsive to each other with a view on the **ethical acceptability** of the process itself and its exploitable products"*

A customized proposal for HBP exploitation, based on the standard definition of the Oslo Manual and the von Schomberg's definition of responsible innovation

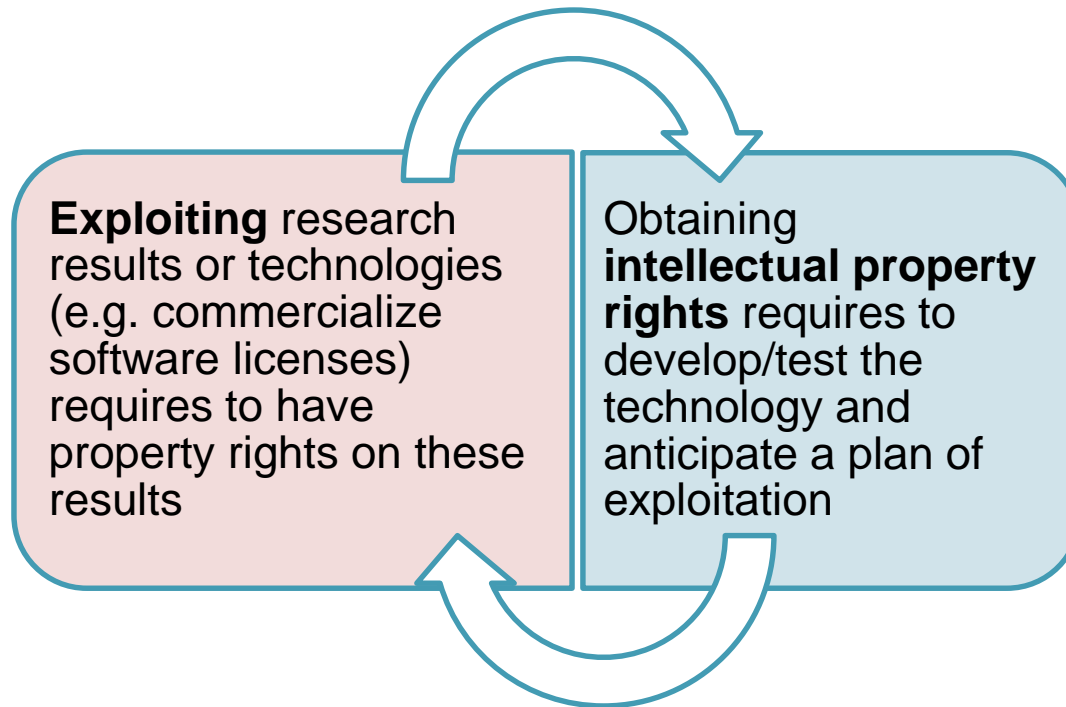
Contents

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Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

Exploitation and protection (IP) are highly-connected concepts



Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

Exploitation and protection (IP) are highly-connected concepts

EXPLOITATION implies the direct or indirect use of Results in

- i) **further research** activities other than those covered by the Action, or
- ii) in **developing, creating and marketing a product, service or process**, or
- iii) in **standardization activities**, or
- iv) additional exploitation obligations potentially specified in **Article 43.1 of the FPA**.

INTELLECTUAL PROPERTY RIGHTS or IPR(s) means **patents**, patent applications and other statutory rights in inventions; **copyrights** (including without limitation copyrights in Software); **registered** design rights, applications for registered design rights, **unregistered design rights** and other statutory rights in designs; and **other similar or equivalent forms of statutory protection**, wherever in the world arising or available.

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

- **IP**: unique, value-adding creations of the human intellect that results from human ingenuity, creativity and inventiveness (WIPO)
- **IP right**: legal right based on the relevant national law (WIPO)

Can technologies / research results be protected?

Yes, if they can be implemented through...

- a technical invention (**patent**)
- a relevant aesthetic aspect (**industrial design**)
- a recognizable sign or design (**trademark**)
- computer programs or databases (**copyright, author's rights**)

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

- **Key conditions** for obtaining a patent:
 - **NOVELTY**: not in “prior art” at global level (i.e. develop a coherent plan for publications, conferences, that does not limit patenting opportunities etc.)
 - **INDUSTRIAL APPLICATION**: for business purposes
 - **‘NON-OBVIOUS’**: not for a person with standard skills in the field
- **Territorial** right granted by national/regional patent office
 - NOT a ‘world patent’
 - BUT a regional office like EPO (Europe)
- **Exclusive** right granted for invention
- **Limited period**, in general, 20 years from filing date of application

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

- **NATIONAL** phases / applications (country by country)
 - **Priority date:** filing date of the very first patent application for a specific invention. 12 months for claiming this “priority right”
- **EUROPEAN** application (European Patent Office)
 - Applications for European patents CENTRALLY (not higher costs due to parallel applications and higher quality of granted patents)
 - After granting, patents to be maintained INDIVIDUALLY in each country
- **“INTERNATIONAL”** application (PCT)
 - Seeking patent protection simultaneously in a large number of countries (more than 150) by filing a single “international” patent application instead of filing several separate ones
 - NOT a granting procedure: granting remains under national/regional offices
 - EFFECT: written opinion on invention’s potential patentability for starting to pursue the grant of your patents directly before “national phase”.

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

REASONS TO PATENT YOUR TECHNOLOGIES

1. Avoid copies or **imitations**
2. Get exclusive **rights** for the exploitation of your innovation: commercialise the rights and licenses during 20 years
3. Avoid or limit the commercial using, selling, redistributing of your solutions by **third parties** (in the countries where the patent is granted)
4. Increase the **intellectual capital value** of the company or organization
5. Facilitate **internationalisation**
6. Enable **technology transferring** and opportunities for **exploitation**
7. Promote a culture of **innovation** in the organization
8. Provide **competitive advantages** to the organization
9. Better position to apply for **financing**
10. Access to **new technologies** and **markets** through **cross-licensing**
11. Provide **legal mechanisms** to defend your innovation against claims and potential intruders
12. Improve the **corporate image** of the organization

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

ALTERNATIVE OPTIONS TO PATENTS

- **Publish the information**

- It is cheap
- Prevent others to patent the same technology

- It does not provide exclusivity
- Information is revealed to competitors

- **Trade (industrial) secret**

- It is cheap (cost of maintaining confidentiality).
- The invention is not revealed

- Reverse engineering or imitation
- It is difficult to maintain/renovate the agreement
- Secrets often are revealed

- **Do nothing**

- Very cheap and easy !

- No exclusivity
- Competitors will manage to discover the technology details

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

IP strategy

- Factors to be considered:
 - Disclosure of information
 - Exclusive rights
 - Registration costs
 - Immediate effects
 - Time limitations
 - Protection granted to different countries
 - IP strategies according to sectors

**DEFINE YOUR OWN IP
STRATEGY DEPENDING
ON YOUR PROJECT AND
SECTOR !!**

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

Software protection modalities

- Public domain
- Protected
 - Proprietary Software
 - Free Software (FS)
 - Free and Open Source Software (FOSS)
 - Open Source Software (OSS)
 - Permissive
 - Copyleft (viral software)
- Hybrids

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

Public domain Software

- The authorship of a software is automatically recognized as a copyright (Berne Convention).
- To be placed in the public domain, the author have to disclaim the copyright and other rights on it
- Software in the public domain thus can be modified, distributed, or sold, even without any attribution by anyone

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

Proprietary software

- Licensed by the holder only under very specific conditions
- Modifications and redistribution of software are not allowed
- Only the use of software is permitted
- The source code is not provided
- May be free (freeware) or require a fee
- Shareware is used for trial and evaluation, and requires upgrading to use some advanced features

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

Free software and Open source

- **Free software (FS)** is a software that users can safely run, adapt, and redistribute without legal restraint.
- **Open source software (OSS)** is a software with source code that is publically available under a license that gives users the right to study, change, and distribute that software.
- **Free and Open source (FOSS)** allows to use, copy, study, modify the software, and the source code to be openly shared so that people are encouraged to voluntarily improve the design of the software

Factors that affect the exploitation of research results

Understanding WHEN & WHY results need to be registered/patented

Software license

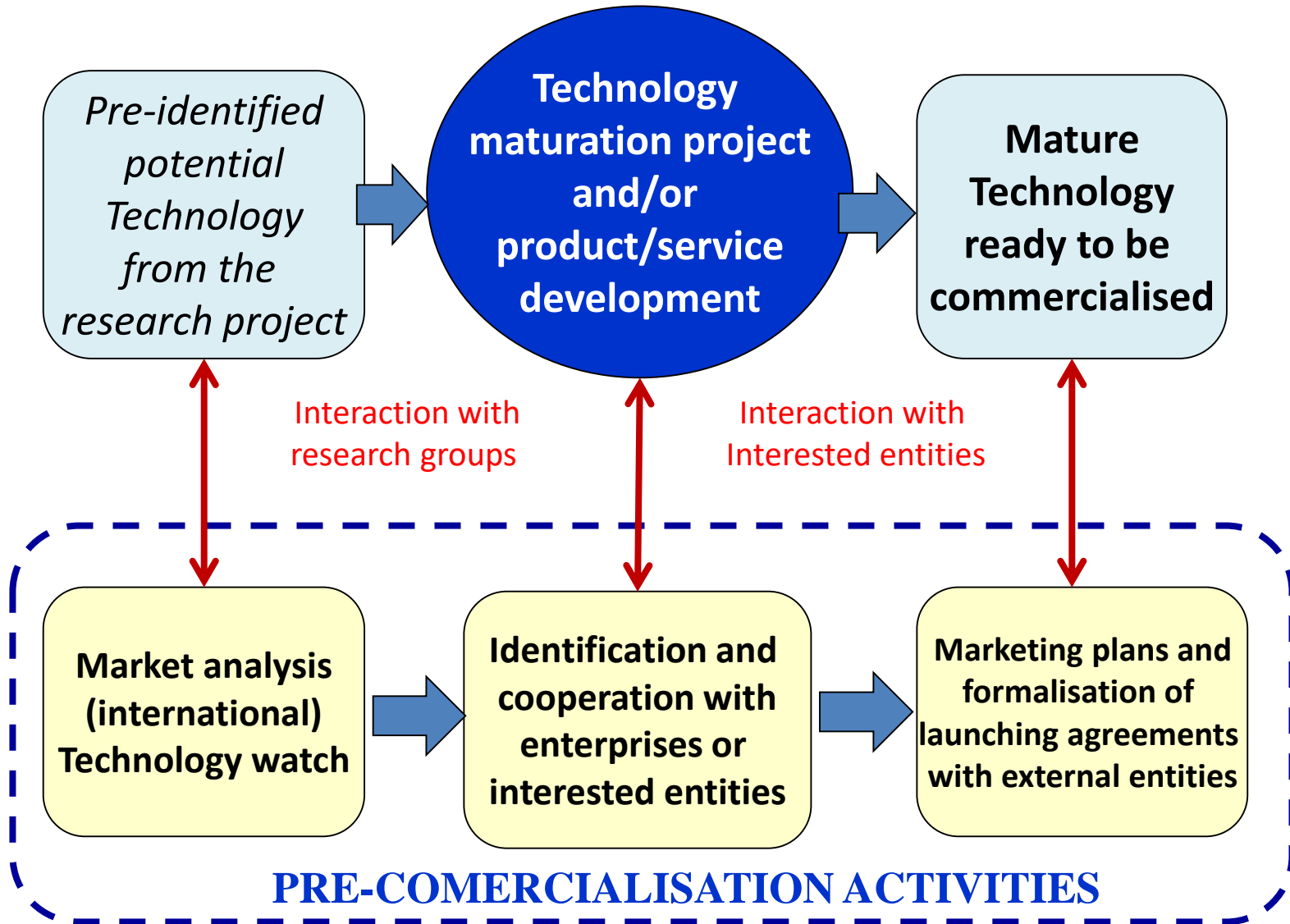
- License is generally just a permission to use a software
- Does not result in change in ownership (developer or publisher)
- Implemented through a legal contract, i.e., subject to terms and conditions
- Terms of a software license have to be accepted before the software can be used
- Terms & conditions – how the software is to be used or restricting certain actions
- Obligations – no copying unless permitted by the terms and conditions
- Terms of warranty and indemnification against any damage caused to data owing to use of software
- Liability of each party
- User's rights in cases of specific situations or circumstances
- Geographic restrictions

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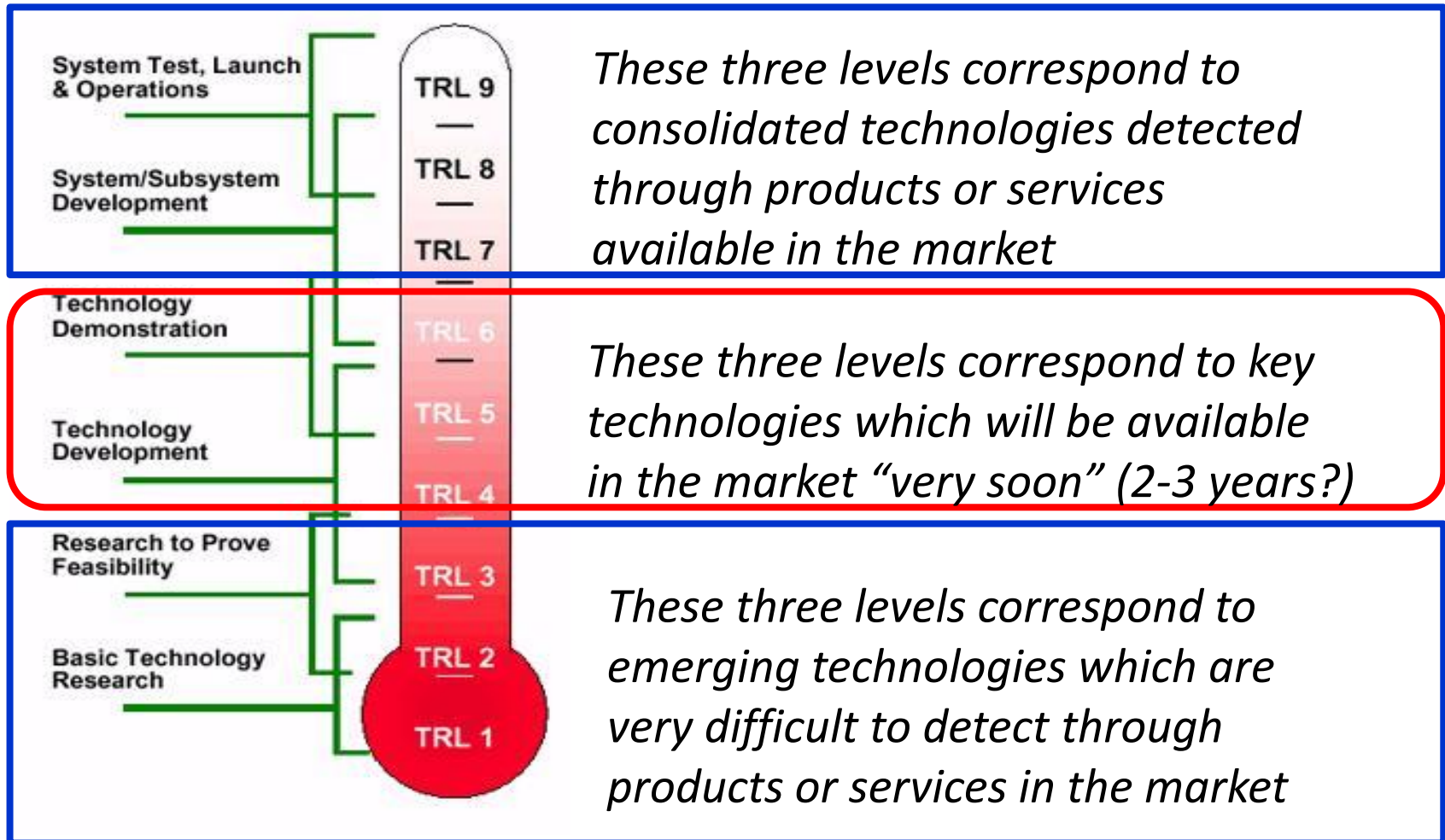
Factors that affect the exploitation of research results

Understanding HOW results can be exploited: Pre-commercialisation activities



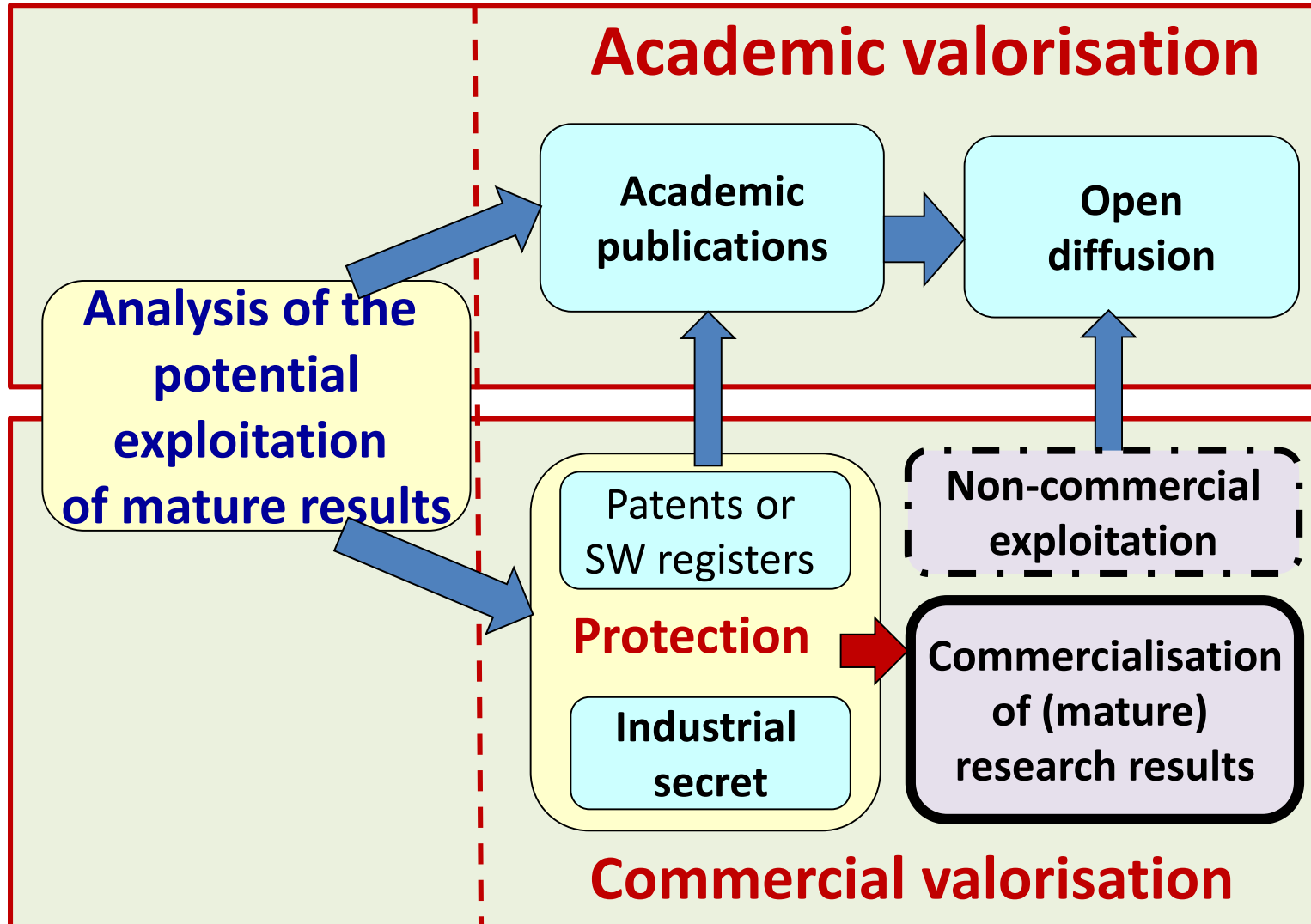
Factors that affect the exploitation of research results

Understanding HOW results can be exploited: Confirm the maturity of technology



Factors that affect the exploitation of research results

Understanding HOW results can be exploited: Valorization of results



Factors that affect the exploitation of research results

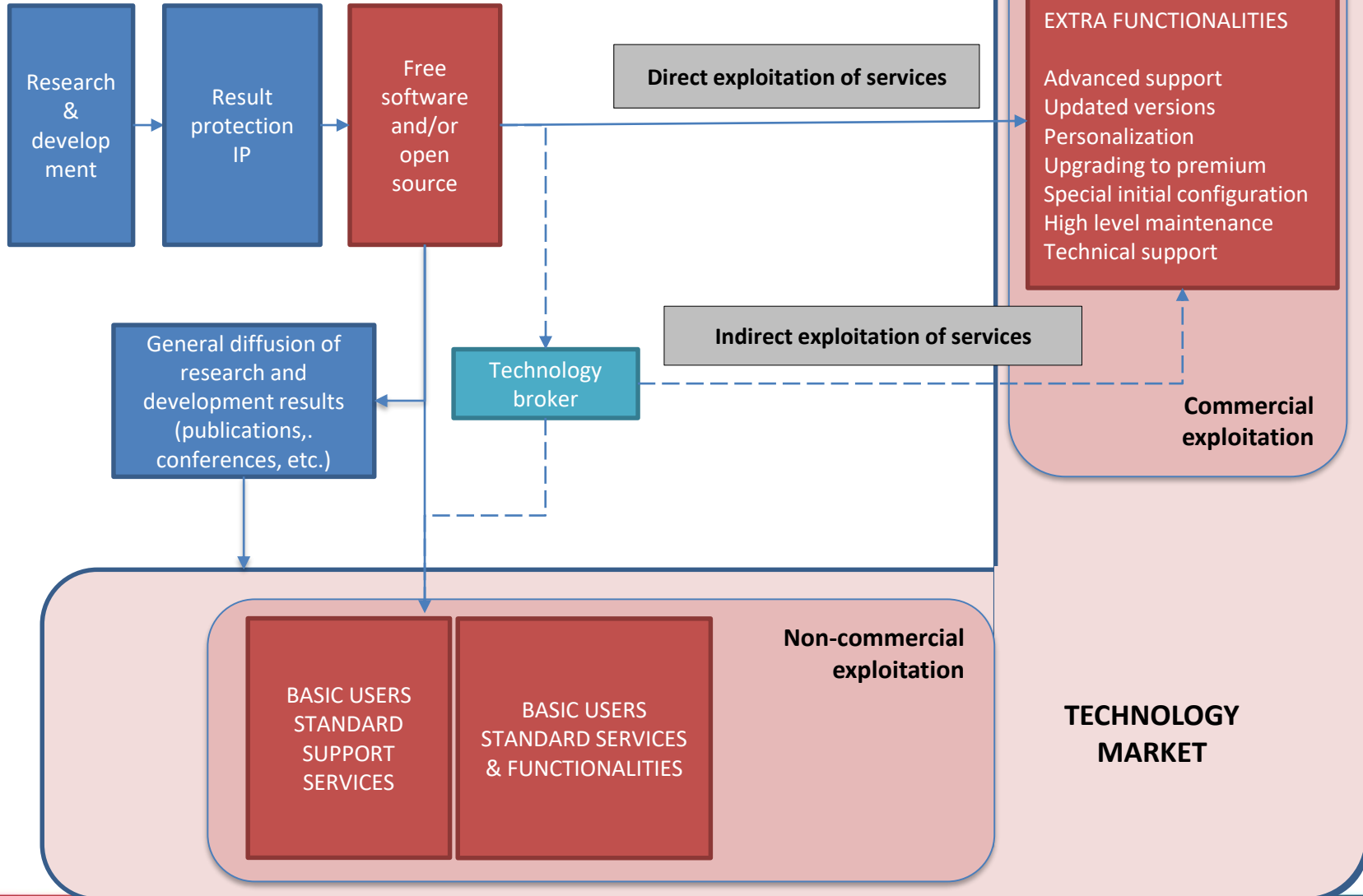
Understanding HOW results can be exploited: Transference channels

- *IPR licensing & cross-licensing*
- *Research collaborations*
- *Start-up/spin-offs*
- *Industry-R&I personnel mobility*
- *Joint ventures*
- *Shared facilities*
- *Tech acquisition*
- *Conferences*
- *Technical services*
- *Consultancy & advising*
- *Know-how contract*
- *Turn-key projects*

**Try to make a careful analysis
and selection of TT channels to
facilitate an effective
transference of research results
to targeted audiences and to the
industrial market**

Factors that affect the exploitation of research results

An example of how software services can be exploited



Factors that affect the exploitation of research results

Understanding HOW results can be exploited: Design an effective approach to users

Identifying users and their needs

- Users vs funders...Are both actors identified?
- Who makes the decisions about investing or buying?
- Is your solution a priority for both involved actors?

Reflecting on what the solution actually offers

- Why is your solution different and innovative?
- What is the market potential?
- Identify your competitive advantages
- Acknowledge barriers
- Try to anticipate emerging threats

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Final remarks

- The commercial (and non-commercial) **exploitation of research results** is a critical aspect also for scientific projects
- We need to foster a **proactive attitude** that helps to early detect opportunities for technology utilization. This implies to promote opportunities **recognition** and **anticipation** of opportunities
- For an effective commercialization of research results, both **researchers** and **institutions** should be aware, **trained** and **involved** in the exploitation process
- Exploitation processes have to balance technology **push** and **pull** strategies
- Identifying emerging brain technologies with market potential requires to set-up **technology watching procedures** and **structures** that ensure sustainable efforts over time
- **Industrial hubs** can foster the commercial exploitation of research results and the generation of partnerships with industry and emerging start-ups