
/EUROPEAN ACADEMY
Innovation in Public and Private Sectors

# *Tutor*

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# WHAT IS INNOVATION?

More than a new idea!

Development or adoption of new concepts or ideas, as well as the successful exploitation of new ideas.

Emphasizes **novelty** and **added value**.

Innovation is not the exclusive domain of the business sector.

How new does an idea need to be to qualify as innovation?

- New to the world
- New to the country
- New to the organization

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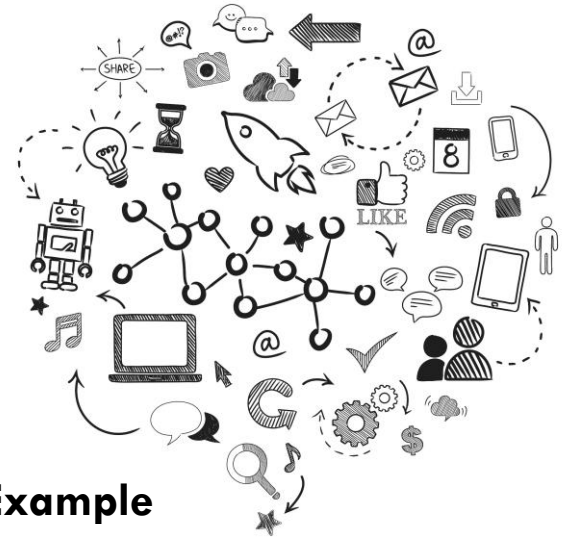
# TYPE OF INNOVATION

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| Type of Innovation | What It Changes | Example |
|---|---|---|
| **Product/Service Innovation** | Characteristics of products/services | Electric vehicles with improved battery life |
| **Process Innovation** | How products/services are produced or delivered | Robotics in manufacturing |
| **Marketing Innovation** | How products/services are marketed | Subscription pricing models |
| **Organizational Innovation** | Business practices, structures, external relationships | Cross-functional innovation teams |

# PRODUCT INNOVATION


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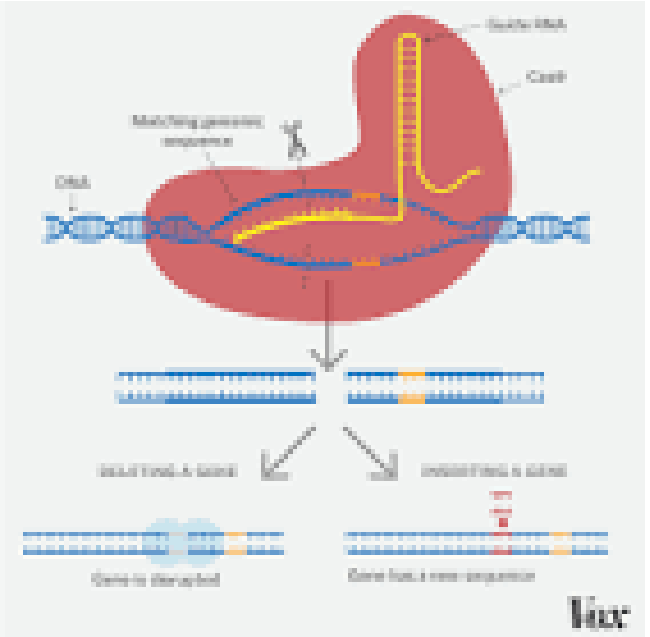
*iPhone*


*LifeStraw*




CRISPR-Cas9

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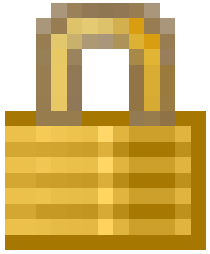
# SERVICE INNOVATION



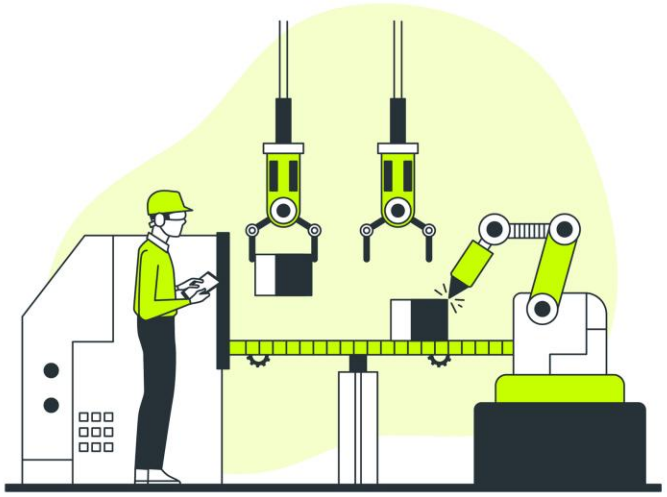

# PROCESS INNOVATION

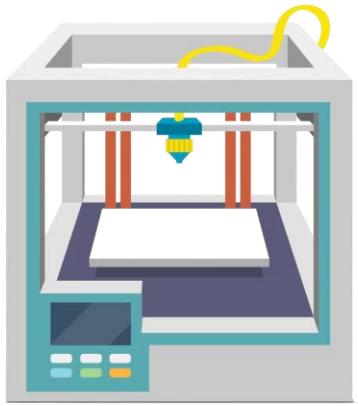
Henry Ford's Assembly Line

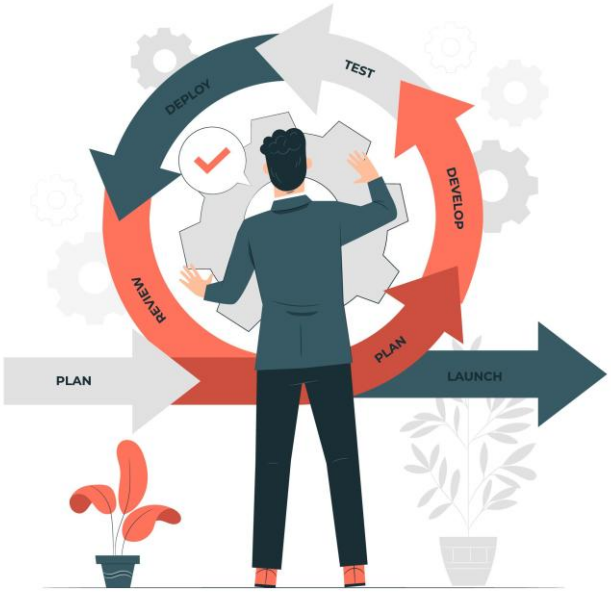
Agile (Lean Manufacturing, JIT)

Additive Manufacturing

Self-Checkout Systems in Retail





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# MARKETING INNOVATION

Package design


Product layout

IKEA®

Influencer Marketing

# ORGANISATIONAL INNOVATION

Remote work


Open Innovation


Employee-Driven Innovation

# WHAT DRIVES INNOVATION?

# INNOVATION DRIVERS


- Conflict resolution
- Medical expectations
- Competition and freedom to respond
- Loss of established industries
- Critical Mass
- Trends

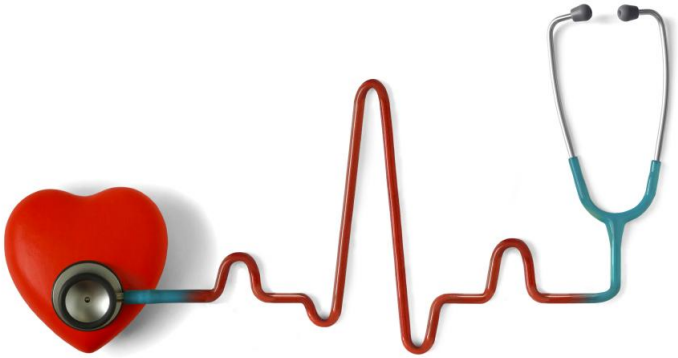
# CONFLICT

More new inventions as measured by patent applications were during World War II than any other period in human history.

June 28, 1941- the establishment of the **Office of Scientific Research and Development (OSRD),** which mobilized USA scientific resources by extending grants to outside researchers to develop technology for the war effort. It was, by all accounts, a resounding success, resulting in breakthroughs such as **radar**, the proximity fuse and, most famously, the **atomic bomb**.

The modern jet engine, Nylon, polyethylene, penicillin, anti-malarial drugs, and aerosol sprays are other examples of innovations which **existed before 1939**, but benefited from wartime development and the vast increase in demand.

# MEDICAL EXPECTATIONS



- **Higher patient expectations** (particularly due to ageing population)
- **Generic drug** manufacturers (existing Pharma companies looking to maintain a competitive advantage)
- **Charities – fund** medical research in to areas such as cancer and vaccine development in response to social need
- **Economic/National interest** –Penicillin developed into a "product" in response to need to maintain fitness of military troops during the war– Reduce illness/sick days for working population
- Threat of **epidemics** such as Flu

# COMPETITION

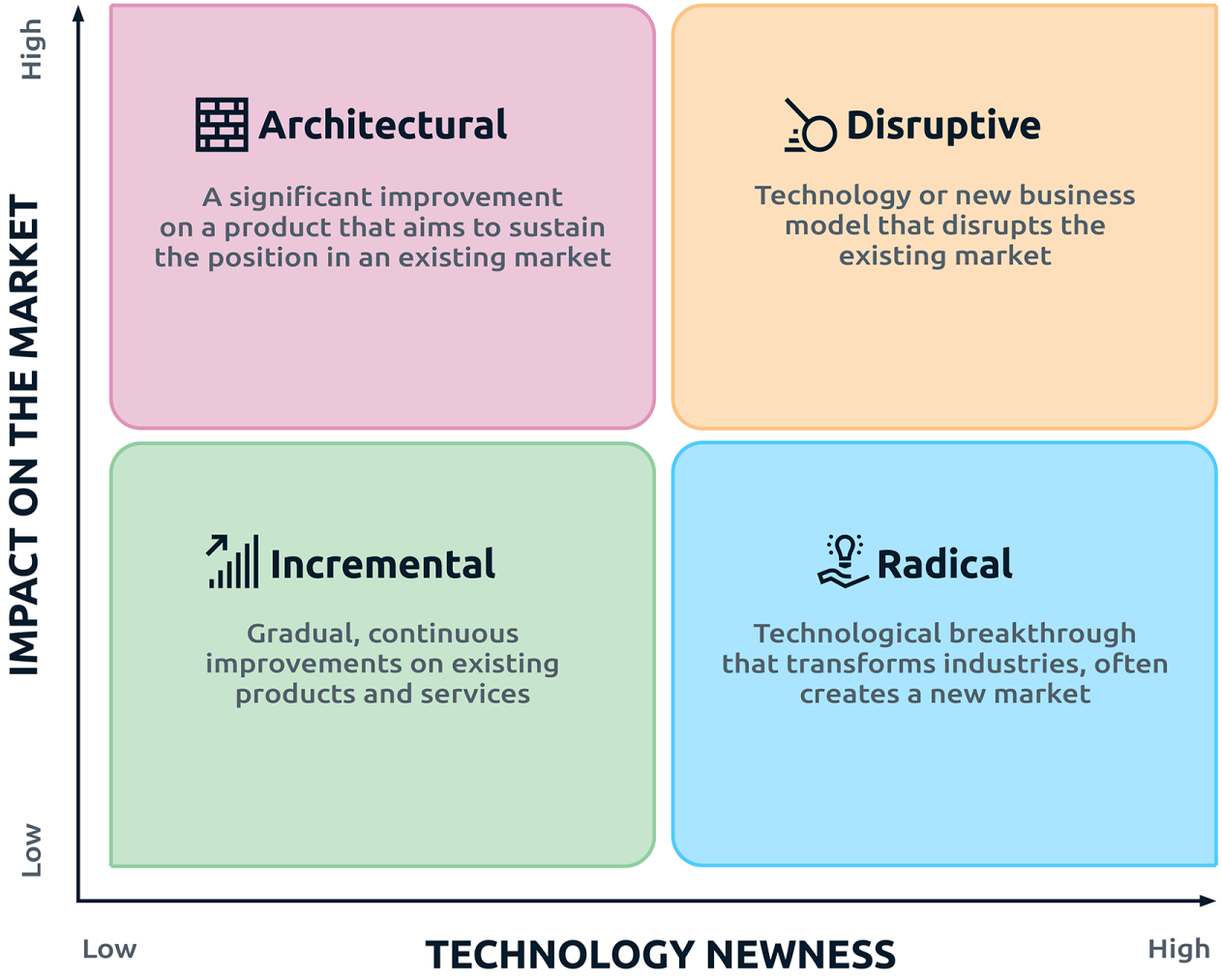



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*Image source :digitalleadership.com/*

# CRITICAL MASS


- **Silicon Valley**

-Same geographical location

-University driven innovation

-Access to investors (who understand that failure is a necessary part of risk taking)

-Entrepreneurial culture (importantly, successful entrepreneurs put their money and expertise back in the system)

- Small, tight clusters of people, loosely connected through more distant ties, can dramatically increase information flow and enhance innovation.

# CRITICAL MASS

In the 1980's, with firms like **DEC** and **Apollo Computer**, as well as world class research universities like **MIT** and **Harvard**, the **Route 128** corridor outside of Boston seemed poised to dominate the technology industry. Yet by the 1990's, it was clear that leadership in technology had passed to Silicon Valley.

While Route 128 firms like DEC and Apollo were vertically integrated firms that bound employees through non-compete contracts, their Silicon Valley competitors such as **Hewlett Packard** and **Sun Microsystems** embraced open technologies, built alliances and allowed their people to job hop.

# INNOVATION MODELS

**Linear Innovation Model**

**Coupling Model**

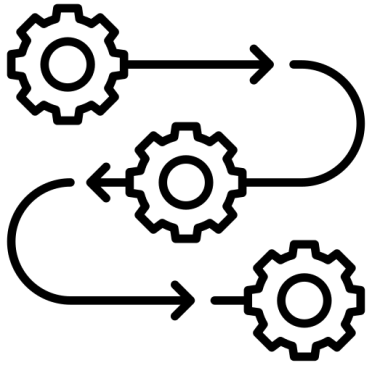
**Chain-Linked Model**

**Triple Helix Model**

**Quadruple Helix Model**

**Quintuple Helix Model**

# LINEAR INNOVATION MODEL



Basic Research → Applied Research → Development → Production → Market

## TECHNOLOGY PUSH

Science drives innovation
Ignores feedback from the market

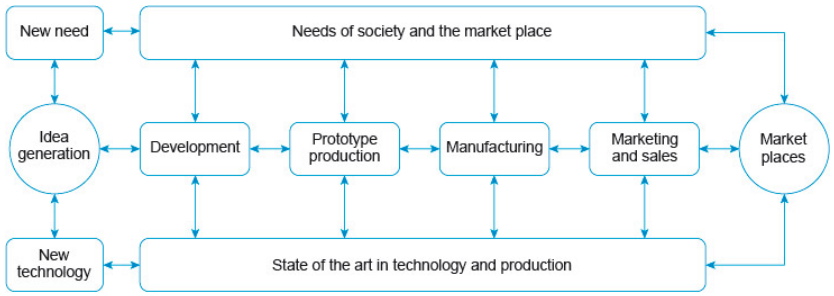
## MARKET PULL

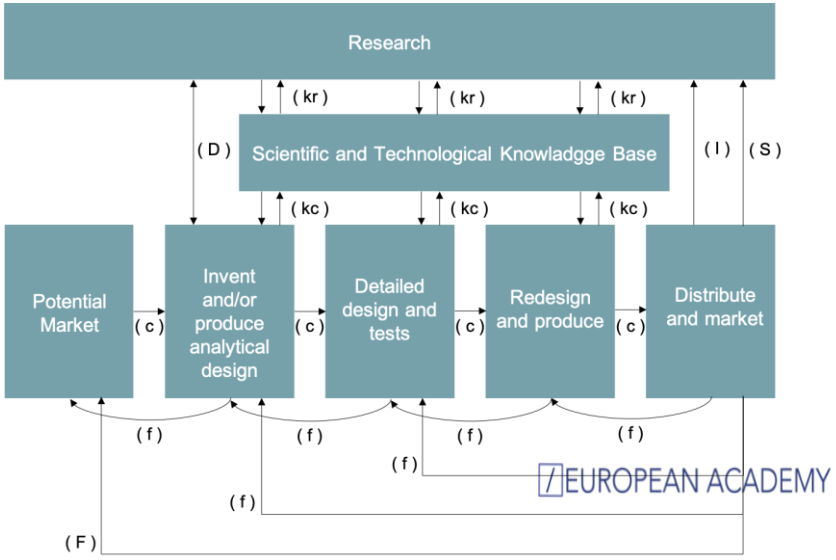
Innovation begins with
**identified market needs**

Uber

NETFLIX

| Coupling Model | Chain-Linked Model |
| --- | --- |
| Combines technology-push and market-pull. | **Complex feedback loops** among: R&D, Market research, Design, Production. |
| Interaction between R&D and market needs. | Emphasizes iterative problem-solving. |
| Smartphone Development ; Automotive Industry: Safety features | Electric Vehicles (Tesla) |



| Triple Helix Model | Quadruple Helix Model | Quintuple Helix Model |
|---|---|---|
| Interaction between Universities (Knowledge Production), Industry (Application & Commercialization) and Government (Policy & Funding) | **Civil Society (Users, Media, Culture)** as the fourth helix. | Adds the **Environment (Natural Context)** as the fifth helix to align innovation with sustainability goals. |
| Highlights the importance of collaboration across sectors. | Emphasizes user-driven and socially responsible innovation. | Promotes eco-innovation and sustainable transitions |
| Supports knowledge spillovers and co-creation. | Accounts for societal challenges and public engagement. | Integrates environmental considerations into the innovation process. |
| Silicon Valley (Example) | Smart Kalasatama District – Helsinki, Finland | EIT Climate-KIC projects |

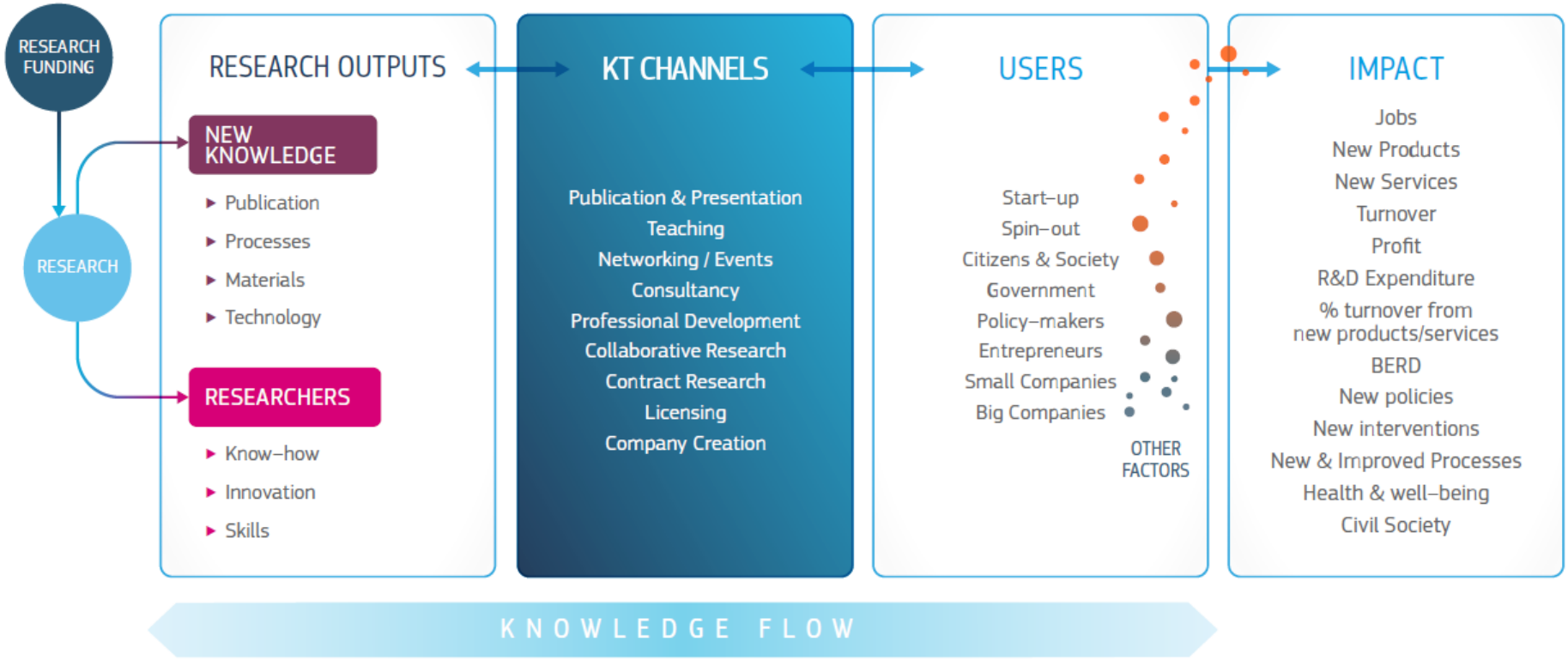
# KEY PLAYERS

| | Role in Innovation Ecosystem |
|---|---|
| **Universities & PROs** | Knowledge creation, research, talent |
| **Industry & Businesses** | Commercialization, scale, applied R&D |
| **Government & Policy Makers** | Funding, regulation, ecosystem governance |
| **Startups & Entrepreneurs** | Agile innovation, market disruption |
| **Investors & Financial Institutions** | Capital provision, risk-sharing, strategic guidance |
| **Civil Society & Users** | Co-creation, testing, feedback |
| **Innovation Intermediaries** | Connection, incubation, knowledge transfer |
| **International Organizations** | Standards, cross-border collaboration, global alignment |

# INNOVATION VS. INNOVATIVENESS

| | | |
|---|---|---|
| **Definition** | Implementation of new or significantly improved product, process, marketing method, or organizational method that creates value for customers, organizations, or society. | Capacity, tendency, or willingness of an individual, organization, or system to generate, adopt, and implement new ideas, processes, or products. |
| **Nature** | Action, result-oriented | Attribute, potential-oriented |
| **Measurement** | By outcomes and impact | By culture, attitudes, readiness |

# INNOVATION IN PUBLIC RESEARCH ORGANIZATIONS



# ORGANIZATIONAL ENABLERS FOR INNOVATION

- Leadership support
- IP & knowledge valorization infrastructure
- Industry engagement
- Researcher incentives
- Spin-off support and training
- Access to early-stage funding

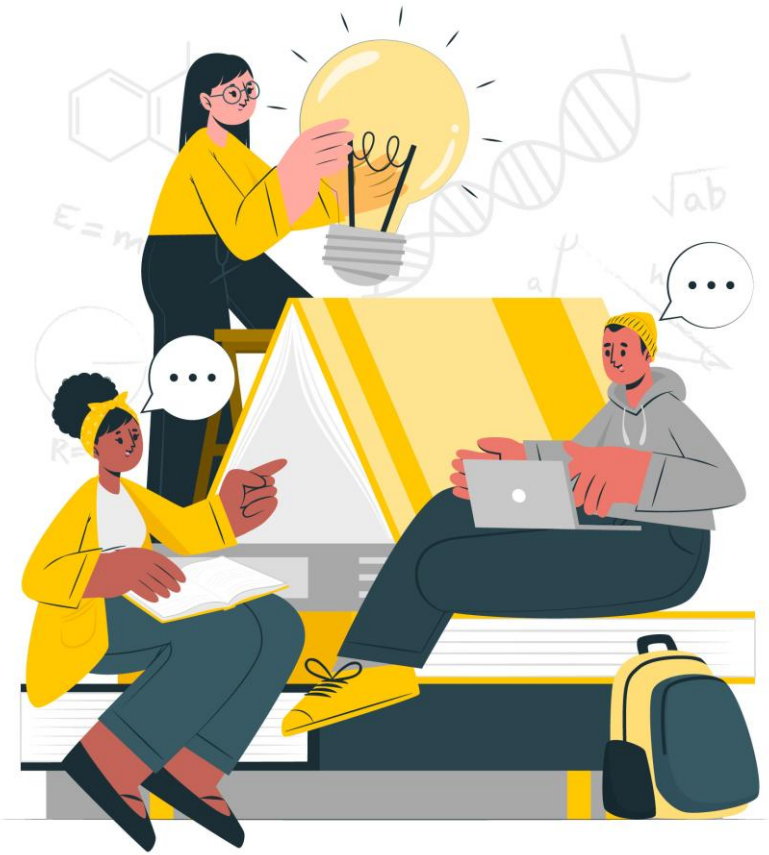


*Image source:www.freepik.com/*

# ENGAGING WITH INDUSTRY & SOCIETY

## Positioning a PRO as a Solution Provider

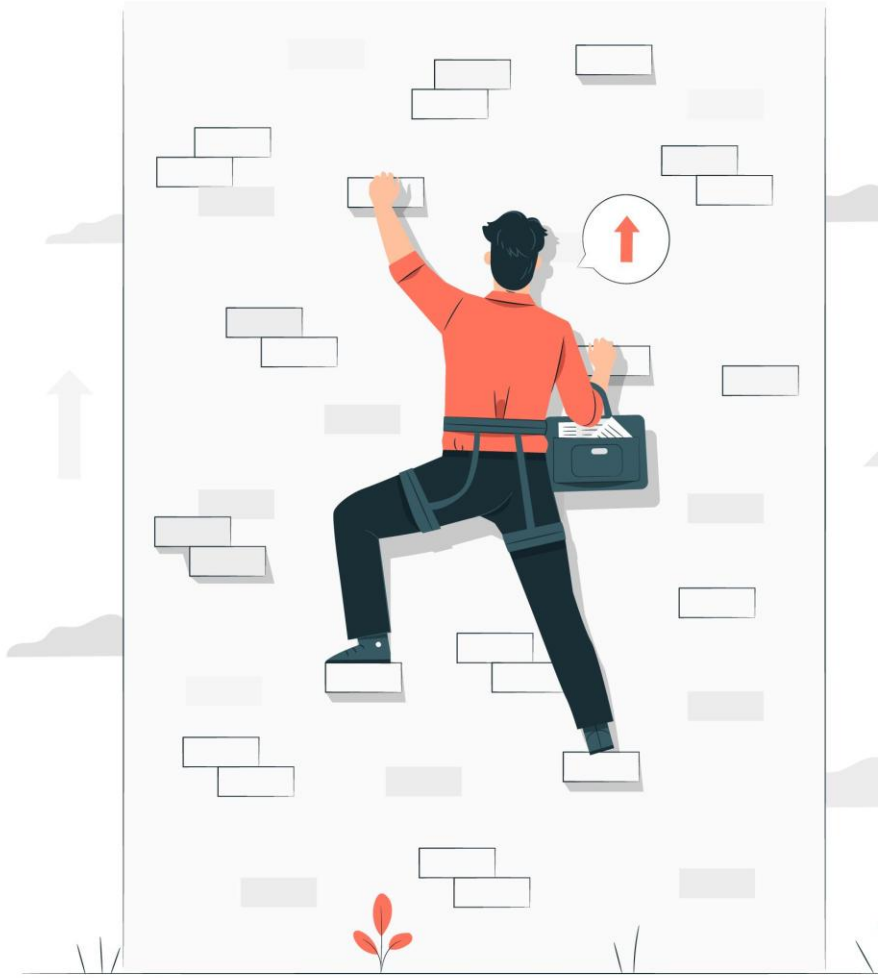
- **Communicating applied outcomes and societal impact**
- **Mapping expertise**
- **Offering services like testing and validation labs, consultancy, specialised equipment, etc.**

## Strategies for Co-Creation with SMEs, Large Companies, Public Institutions

*Image source: www.freepik.com/*

# OVERCOMING COMMON BARRIERS

- Bureaucracy and legal bottlenecks
- Cultural disconnect between academia and business
- Lack of entrepreneurial skills or risk mindset
- Policy fragmentation and funding inconsistency



# READ MORE ABOUT THE TOPIC

https://autm.net/about-tech-transfer/better-world-project/bwp-stories

https://education.ec.europa.eu/news/report-evaluates-european-university-business-cooperation-since-2008

https://www.eit.europa.eu/

https://www.gov.uk/guidance/university-and-business-collaboration-agreements-lambert-toolkit

Code of practice on industry-academia co-creation for knowledge valorisation

Code of practice on the management of intellectual assets for knowledge valorisation

# INNOVATION IN PUBLIC SECTOR

- **Implementation of new or significantly improved processes, services, or models** that enhance the **effectiveness, efficiency, and equity** of public outcomes.
- **Public sector innovation is mission-oriented**, aiming to solve complex societal problems and deliver **public value**.
- Forms:
  - **Policy innovation** (new regulatory models, incentives)
  - **Service innovation** (digital platforms for citizen services)
  - **Organizational innovation** (cross-departmental teams, agile units)
  - **Technology adoption** (AI for tax compliance or predictive health services)

# DIFFERENCES BETWEEN PUBLIC AND PRIVATE SECTOR INNOVATION

| Aspect | Public Sector | Private Sector |
|---|---|---|
| **Primary Goal** | Public value, equity, impact | Profit, market share, shareholder value |
| **Key Stakeholders** | Citizens, government, civil society | Customers, investors, shareholders |
| **Drivers of Innovation** | Societal need, public policy, legislation | Competitive pressure, customer demand, technology disruption |
| **Risk Tolerance** | Generally risk-averse, focused on compliance | More tolerant, experimentation encouraged |
| **Success Metrics** | Service quality, accessibility, trust, social return on investment | Revenue growth, ROI, cost reduction, customer retention |
| **Time Horizon** | Medium to long-term (often shaped by election cycles or mandates) | Short to medium-term, influenced by market cycles |
| **Procurement & Scaling** | Regulated procurement, fragmented scaling across jurisdictions | Agile procurement, scaling via investment or acquisitions |

# MODELS OF PUBLIC INNOVATION

Image source: www.freepik.com/

- **Mission-Oriented Innovation**
  - EU Horizon Europe Missions
  - U.S. DARPA (Defense Advanced Research Projects Agency)
  - UK ARIA (Advanced Research and Invention Agency)
- Living Labs
  - Helsinki Urban Lab
  - Amsterdam Smart City
  - GovLab Austria
- Innovation Labs
  - UK Policy Lab
  - MiLabX Portugal
  - OPSI's global innovation case database
- Regulatory Sandboxes
  - UK Financial Conduct Authority (FCA) Sandbox
  - Lithuanian GovTech Sandbox
  - Singapore Smart Nation regulatory testbed
- Open Innovation/Prizes
  - EU Horizon Prizes
  - US Challenge.gov platform
  - UNDP Innovation Challenges
- Behavioral Insights
  - UK Behavioural Insights Team (BIT)
  - U.S. Social and Behavioral Sciences Team
  - Australia's BETA Unit

# READ MORE ABOUT THE TOPIC

https://ec.europa.eu/info/publications/mission-oriented-research-and-innovation-eu_en

https://www.oecd.org/gov/regulatory-policy/behavioural-insights.htm

https://www.nesta.org.uk/toolkit/challenge-prizes/

https://openknowledge.worldbank.org/handle/10986/34381

https://oecd-opsi.org/

https://enoll.org/

# MAPPING INSTITUTION'S INNOVATION POTENTIAL"

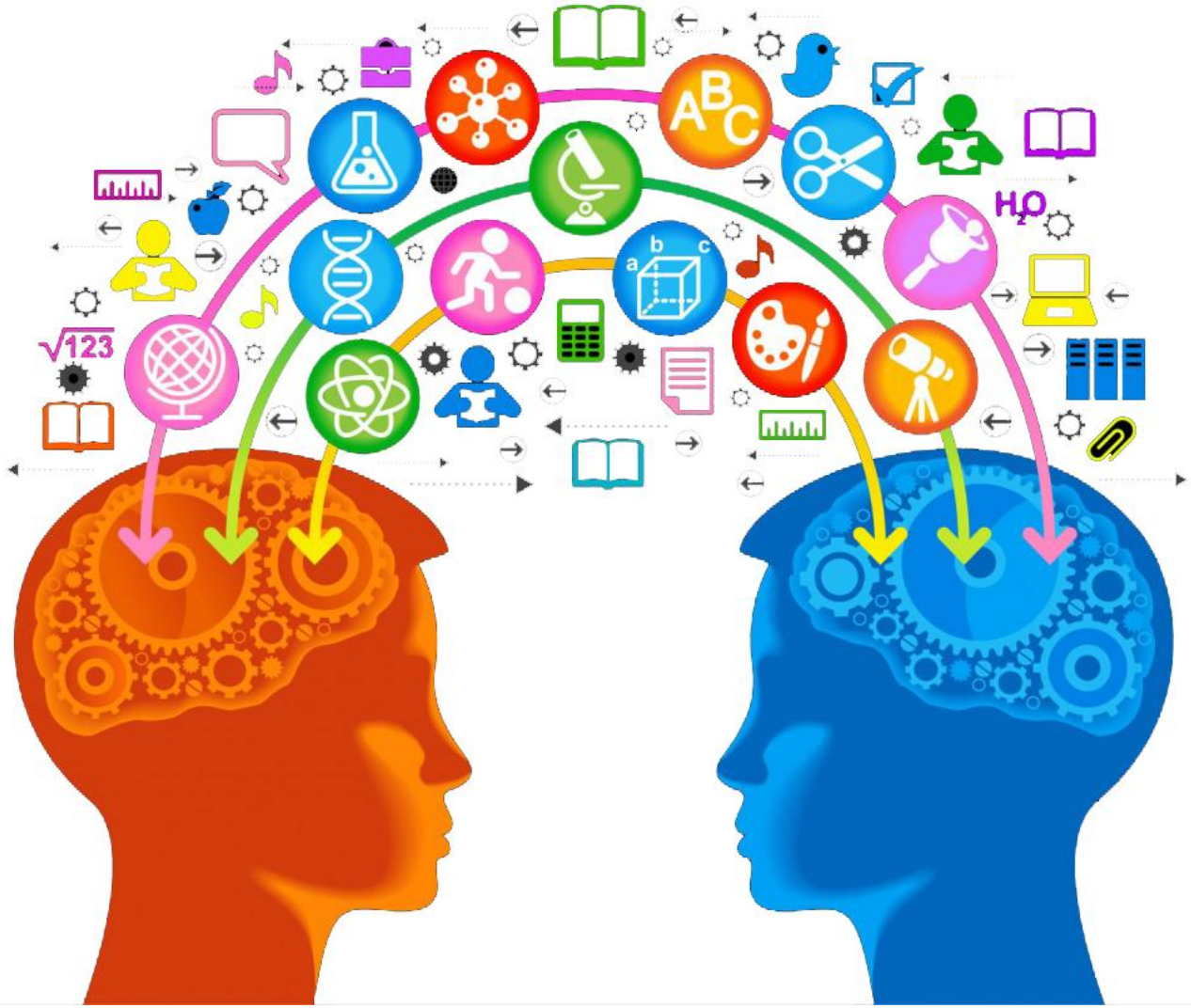
| Dimension | Guiding Questions |
| --- | --- |
| **Leadership Support** | Does leadership actively champion innovation? Are risks tolerated and supported? |
| **Resources & Incentives** | Are there dedicated budgets, time, and incentives for innovation work? |
| **Culture & Mindset** | Is experimentation encouraged? Is failure accepted and learned from? |
| **Processes & Bureaucracy** | Do current procedures support or block innovation? Are approvals and pilots easy? |
| **Collaboration & Openness** | Does the institution work with startups, citizens, or other sectors? |
| **Data & Digital Readiness** | Are data systems interoperable, and is digital transformation embraced? |

# HOW COMPANIES DRIVE INNOVATION?

- **Customer-Centric Design**
- **Investing in R&D**
- **Using Open Innovation**
- **Leveraging Technology**
- **Building an Innovation Culture**

- **Examples**
  - **Amazon** systematically uses customer reviews and data to improve products and services.
  - **Apple's** continuous investment in product design, hardware, and software integration to launch new products (AirPods, M1 chips).
  - **Procter & Gamble's "Connect + Develop"** program
  - **Netflix**'s recommendation algorithm
  - **3M**'s 15% Rule

# OPEN INNOVATION



# CONTEXT: WHY OPEN INNOVATION APPEARED?

- **More and better ideas**
- **Technical complexity of innovations**
- **R&D and innovation costs**
  - even big firms cannot fully internalise R&D any more
- **Patent filings**
  - more and more difficult to innovate without depending from prior patents (i.e. from external firms)
- **Generate revenues**
- **Growing need to cooperate with other firms for R&D and innovation.**

# DEFINITION: OPEN / CLOSED INNOVATION

## a) The Closed Innovation Model

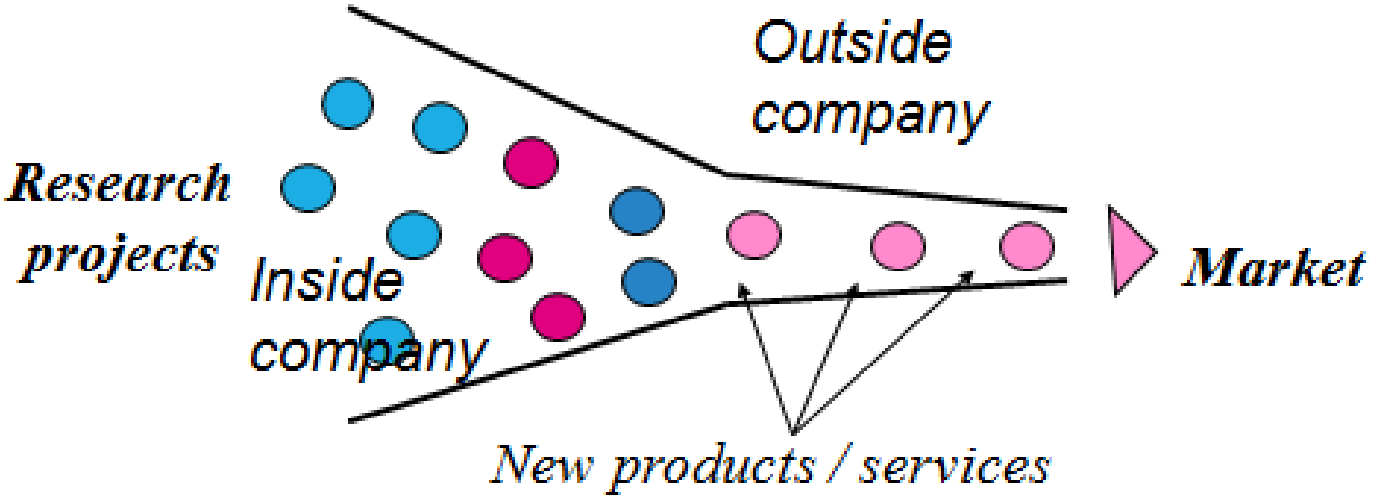
Closed innovation relies on a “do it yourself” strategy.

Since knowledge and innovation are the main sources of a competitive advantage, the closed innovation model assumes that they should be strongly protected in a defensive way.

Similarly, firms should not rely on innovation developed elsewhere (the « Not Invented Here » syndrome)

# DEFINITION: OPEN / CLOSED INNOVATION

## a) The Closed Innovation Model




**The borders of the firm are impermeable**
**Innovation is an individual, integrated process**

# DEFINITION: OPEN / CLOSED INNOVATION

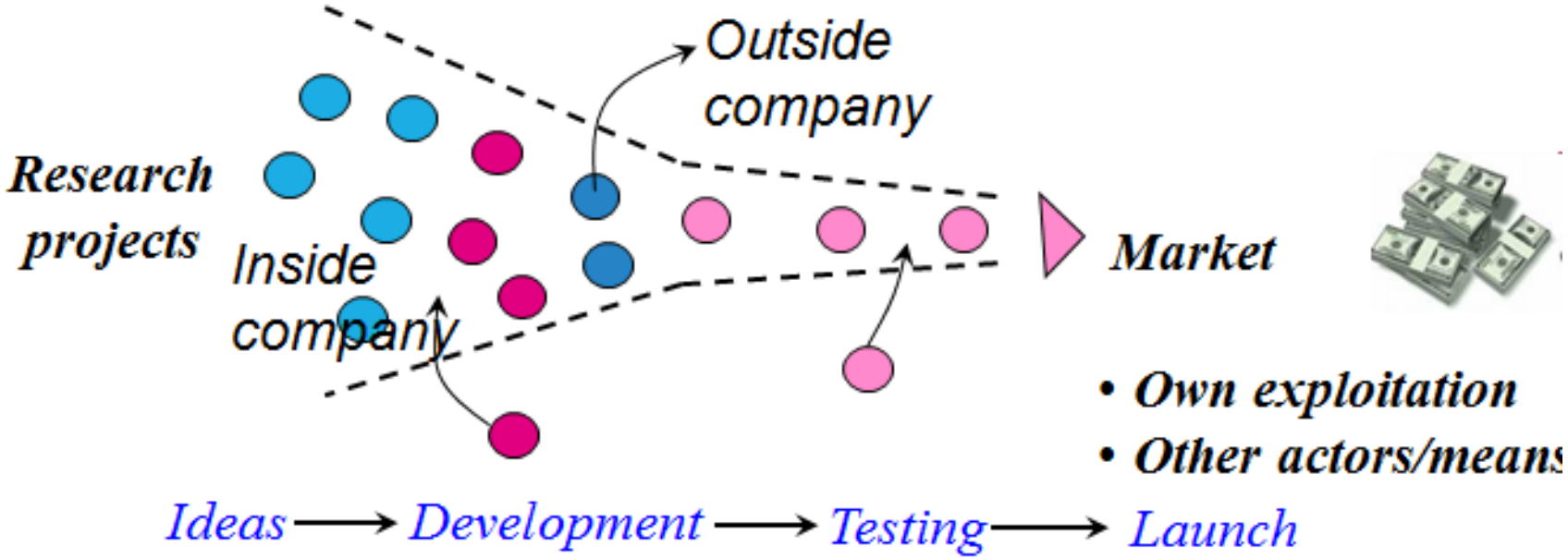
## b) The Open Innovation Model

*"Open Innovation is the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively.* ***Open Innovation is a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market****, as they look to advance their technology"*

*(Chesbrough et al., 2006)*

# DEFINITION: OPEN / CLOSED INNOVATION

b) The Open Innovation Model




**Innovation is is distributed over a wide range of actors who must collaborate, exchange technologies, etc.**

# DEFINITION: OPEN / CLOSED INNOVATION

| Closed Innovation | Open Innovation |
| --- | --- |
| ***Straight and sequential*** line from research to product development, manufacturing and sales | ***Networking, interacting, sharing*** *with others* ***and accessing*** outside information and technology |
| "projects can only enter in one way, at the beginning, and can only exit in one way, by going into the market" | "there are many ways for ideas to flow into the process, and many ways for it to flow into the market" |

# DEFINITION: OPEN / CLOSED INNOVATION

| Closed Innovation | Open Innovation |
| --- | --- |
| The smart people in the field work for us. | If we create the most and the best ideas in the industry, we will win. |
| 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. |
| If we discover it ourselves, we will get it to the market first. | We don't have to originate the research to profit from it. |

# DEFINITION: OPEN / CLOSED INNOVATION

| Closed Innovation | Open Innovation |
| --- | --- |
| The company that gets an innovation to the market first will win. | Building a better business model is better than getting to the 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 and external ideas, we will win. |
| If we create the most and the best ideas in the industry, we will win. | We should profit from others' use of our IP, and we should buy others' IP whenever it advances our business model. |

# OPEN INNOVATION : NEW PHENOMENON?

Distinction between two aspects:

- **Outside-in**
  - Pharmaceutical firms practiced open innovation for a long time
- **Inside-out**
  - Due to the increased need to **rationalize cost and maximize income**, multiple sources of income is sought after for projects. Thus external utilization of research results are now also considered.
  - There is as well a trend to **globalisation** and to financialization of the economy, with the development of capital-risk. As a consequence, there is an increased pressure for firms to stop projects which do not progress fast enough, and if possible to make profits out of it.
  - Last, the increase in the **staff mobility**, and especially in the highly qualified personnel, increase the movement of ideas.

# OPEN INNOVATION : NEW PHENOMENON?


Procter&Gamble

- *in 2000, there situation was fragile: their innovation success rate was too low, around 35% of new products, sales flattened, and as a result P&G shares decreased almost by half.*
- *The new CEO, A.G. Lafley, defined a new goal for the company: 50% of the innovations should come from outside the company. The idea is that for every researcher belonging to the company, there are 200 outside, and launching collaborations with external people can potentiate the innovation effort.*
- *They created a web portal, "**Connect & Develop**", where P&G department publishes their needs and everyone can submit its innovation.*
- *P&G claims that today more than 50% of their products involve collaboration with outside innovators.*

# OPEN INNOVATION VS. OPEN SOURCE

## Misconceptions:

- Open innovation = Open source
- Open innovation = public domain
- Open innovation = no IP

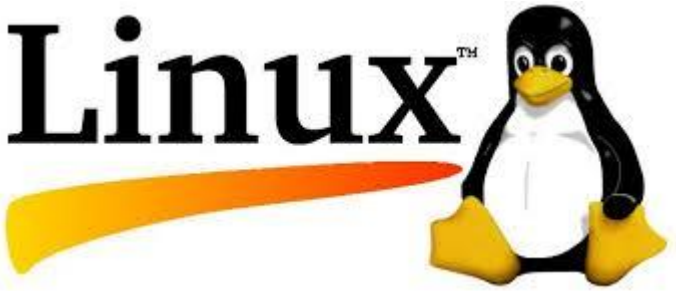
## Reality:

- Open source is one (extreme) mode of open innovation
- Open innovation results can be protected or released into the public domain
- Open innovation needs a functioning IP system and an effective market of IP rights

# OPEN INNOVATION VS. OPEN SOURCE

- ***Open source is much more open than Open innovation:*** *Open source projects = few access restriction to knowledge; Open innovation relies strongly on exclusive patents*

- ***Open source is much more interactive than Open innovation:*** *Open source = collective knowledge production; Open innovation = bilateral interactions*



# HOW DO YOU DO OPEN INNOVATION???

- Networking, in particular for researchers to find new ideas, as for example crowdsourcing
- Collaboration and R&D alliances, whether it is formalized as for a research joint venture or a R&D consortia, or in an informal manner
- Creating spin-off which are totally independent and are dedicated to the development of a new project; or at the reverse internalizing a small entity in order to get developing projects: it's often the case for Big Pharma companies, which buy start-ups just in order to get the promising molecule which is still under a testing phase.

# HOW DO YOU DO OPEN INNOVATION???

- Selling or buying licences and patents.
- Acquisition or divestment, which is the fact to buy or sell a part of a business.
- Being part of a patent pool, which is a consortium of at least two companies agreeing to cross-license all the patents they possess relating to a particular technology, they pool their patents.