

International research and innovation cooperation

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Fostering Internationalization at Montenegrin HEIs through Efficient Strategic Planning – IESP / Project no. 609675-EPP-1-2019-1-ME-EPPKA2-CBHE-SP



Overview

- **Introduction**
- **Benefits of international research & innovation cooperation**
- **Examples of international research & innovation funding**



Glossary

- **Applied research**

Research which envisages a certain product; close-to-market research; market and demand driven research, as opposed to “basic” or “fundamental” research

- **Basic / fundamental research**

Also known as generic research, basic research is that research carried out to enhance scientific knowledge and not primarily driven by commercial motives. Includes all scientific efforts on a professional level that do not necessarily operate close to market and which are not necessarily product-driven.

- **Horizontal structure**

Research cooperation on equal terms (cooperation models, cooperative research, alliances, joint ventures), as opposed to “vertical structure”. Partners cooperate on equal terms without hierarchical differences.

- **Vertical Structure**

Knowledge is created or transferred when within an hierarchical structure between contract partners, e.g., commissioned or contract research, licensing (compare Horizontal Structure).

- **Background**

Short for “background knowledge”: **IP and know-how created before the project’s** lifetime; as opposed to “foreground” (see below)

- **Intellectual Property (IP)**

Exclusive **rights in the intangible results** of intellectual and entrepreneurial endeavour, including patents, copyright, trade marks and design.

- **Know-how**

“A package of **non-patented practical information**, resulting from experience and testing, which is secret, substantial and identified.

In this context:

- "secret" means that the know-how is not generally known or easily accessible;
 - "substantial" means that the know-how includes information which is indispensable for the manufacture of the contract products or the application of the contract processes;
 - "identified" means that the know-how is described in a sufficiently comprehensive manner so as to make it possible to verify that it fulfils the criteria of secrecy and substantiality"
- Know how is not protected by a specific IP right and its protection varies significantly from country to country, even within the EU



- **Traditional Knowledge (TK)**

- **Knowledge based on traditions and experiences** of indigenous people or local communities, often passed from generation to generation by way of rites and/or oral teaching.
- TK encompasses a variety of subject matter, including expressions of culture, biodiversity-related and environmental knowledge, agricultural and medicinal knowledge, e.g., the medicinal or therapeutic benefits of certain plants.

- **Technical know-how**

- Most European countries have developed legislation to protect **technological "trade secrets"** or **"know-how"** which are **not protected** by formal IP mechanisms such as patents or copyright.
- The legal situation varies significantly from one Member State to the other.



- **Knowledge transfer (KT)**

- KT refers to the **transfer of knowledge** as a fundamental activity and prerequisite of basic and applied research. KT is the process by which the research interact with business to enable knowledge and expertise to be utilized.
- **Intellectual property** is a key part of the knowledge transfer environment.
- KT can take various forms, e.g., licensing, assignment, communication through collaborative research, scientific publications, obtainment and further processing of traditional knowledge.
- KT activities include technology transfer, commercialization, consultancy, etc.



What is “International Research”?

Historically:

Activities and informal collaborations
of our faculty abroad

- Consultations
- Site visits
- Conferences
- Exchange of research materials
- Co-authorship
- Conducting small-footprint research in another country, usually without local partnership

Recent expansion includes:

International Research Collaborations /
cross-national teams

Jointly initiating and conducting larger and
more complex research projects

Two people from different countries
collaborating on a project



Major ventures of international teams
involving substantial investment from
participating countries
(e.g. Large Hadron Collider)



International research

Driven by:

- Desire to work with specific experts
- Object of scientific study
- Specialized infrastructure
- Research funding



+

Perception of weaker regulatory requirements, and/or lower costs of collecting research data outside the U.S.



Driven by:

+

Potential to increase the impact and recognition of their scientific work
E.g. Horizon 2020 (The Marie Skłodowska-Curie actions (MSCA) Fellowships)



Why international research?

- There is a pervasive assumption of a positive link between the **internationalization of research** and development (R&D) and **innovation**, meaning the ability to innovate in an international trade environment will be beneficial for all countries.
- A. Filippetti (2019) “Is the innovation performance of countries related to their internationalization?” → A higher internationalization of research could lead a to higher innovation rates.
- The alternative relationship is also possible: Greater innovation facilitates research internationalization, as lead innovators have the advantage of globally competitive product portfolios.

→ It seems that there a possible conundrum in that **innovation is both required for and enhanced by increased research internationalization**. In other words, industries from innovative countries show a propensity and proficiency for internationalized commercialization and trade. At the same time, that internationalization enhances circumstances for additional innovation in that it provides the opportunity to gather further knowledge and resources regarding country-specific manufacturing styles, management cultures and so on. Such knowledge enhances competitiveness and innovative output through the ability to adapt and apply locally-relevant knowledge. This transfer of knowledge to the human resources of the firm is particularly relevant in building research capacity and adaptability in an international trading context





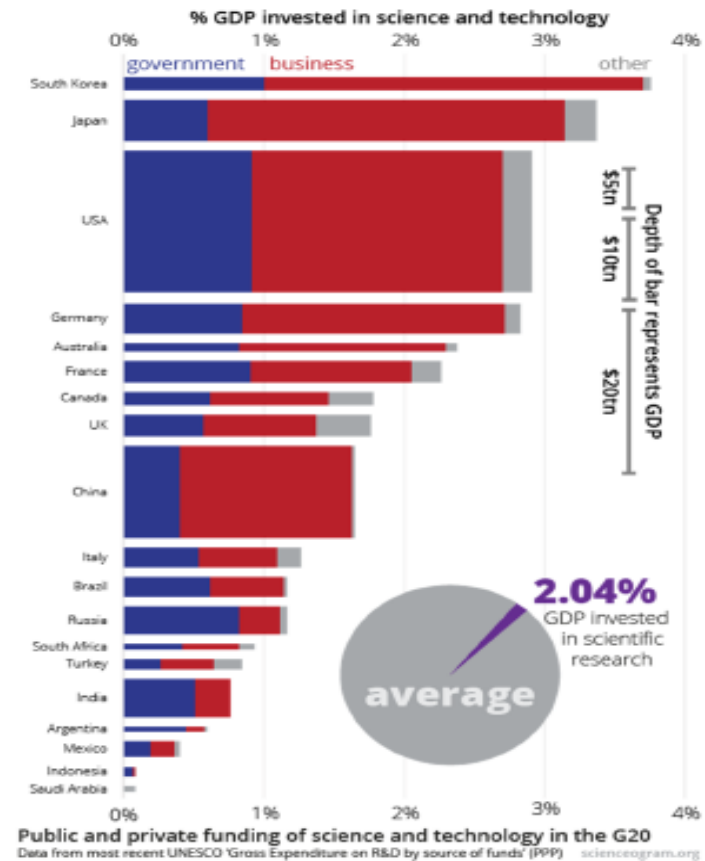
Advantages of international cooperation

- **Opportunities to tackle global challenges together** – challenges that affect us all, such as infectious diseases, energy, security or climate change, can only be solved at international level. For instance, Horizon 2020 provides the opportunity for economies of scale and expanded research scope shared across many nations.
- **World-class research infrastructures** – For instance, Horizon 2020 facilitates the continued development of global research infrastructures in Europe and the cooperation of European infrastructures with their non-European counterparts, ensuring global interoperability and access.
- **Access to new networks and alliances** – raising the profile of your research in an international project, sharing expertise and access to equipment, data and facilities in partner countries.
- One of GPS' goals is to identify and track potential external funding sources for international collaboration, research, and education



External research & Innovation funding overview

- Sources of external funding are changing
 - Earlier, more funding out of organizations like AID, etc.
 - Currently, more funding from foreign nations designed to enhance their own research capacity



Some funding programs

National Science Foundation

(NSF): An independent US federal agency created by Congress in 1950 "to promote the progress of science; to advance the national health, prosperity, and welfare; to secure the national defense..."

- Annual budget of \$7.2 billion supporting approximately 24% of all federally funded basic research in colleges and universities
- Funds approximately 25% of all proposals submitted
- Funding available to most fields of science and engineering

Partnerships for International Research and Education (PIRE): A program within NSF that promotes international collaboration. CFP due October 21, 2014, full proposal deadline is May 15, 2015

- Open to all areas of science and engineering research which are supported by NSF

For additional information : http://www.nsf.gov/funding/pgm_summ.jsp?pims_id=12819

Catalyzing New International Collaborations (CNIC): currently not accepting CFP



Fulbright Scholarship Program

An International Educational Exchange Program sponsored by the U.S. Department of State's Bureau of Educational and Cultural Affairs, the Fulbright Program awards approximately 8000 grants annually, operating in over 155 countries.

Wide range of programs for:

- U.S. Scholars
- Visiting Scholars
- Institutional Programs

While not limited to, some projects funded by Fulbright include:

- Environmental Issues
- Public Health
- Food Security
- Education and other challenges

CFP deadlines and other requirements are dependent on the program the researcher is applying for.

For program information: <http://www.cies.org/>



Confucius Institute

Funding provided by the Confucius Institute Headquarters to enhance the understanding of China and Chinese culture. Programs are available for research, graduate students, and undergraduates. Funding is available for 2 week visits up to 2 years for research projects.

The programs consist of six subprograms in the areas of humanities and social sciences.

- Joint Research Ph.D. Fellowship
- Ph.D. in China Fellowship
- “Understanding China” Fellowship
 1. “Understanding China” visiting scholar to China
 2. “Understanding China” short term visits
 3. “Understanding China” Chinese visiting scholar
- Young Leaders Fellowship
- International Conference Grant
- Publication Grant

For more information: <http://confucius.tamu.edu/Main-Menu/Funding-Opportunities>



German Academic Exchange Service

(DAAD): A publicly-funded independent organization of higher education institutions in Germany that provides programs and funding for researchers, undergraduates, graduate students and other in higher education, providing financial support to over 67,000 individuals per year .

Multiple fields of study including:

- Visual and Performing Arts
- Architecture
- Science and Engineering
- Law
- Language

For deadlines and application information: <https://www.daad.org/>



Qatar National Research Fund QNRF

Founded by the Qatar Foundation, QNRF

QNRF will provide opportunities for researchers at all levels, from students to professionals, whether in the academic, public or private sectors. Programs and projects funded by QNRF have the potential to generate multiple benefits for Qatar:

- Research results will help to improve education and health, spur technological innovation and adoption, conserve vital natural assets, and create intellectual property.
- Research-based education will place students in a discovery-oriented environment, expose them to the cutting edge of knowledge, and give them intellectual and problem-solving skills that will prepare them for leadership roles in business, government, the arts, and other sectors of life in Qatar.
- A better-educated and well-trained work force of men and women will provide a strong foundation for a broader economic base and the growth of new enterprise in Qatar.

Scope of funding:

- Energy and Environment
- Computer Sciences and ICT
- Health and life Sciences
- Social Sciences, Arts and Humanities

<http://www.qnrf.org/en-us/>



HORIZON 2020

**The European Union's
programme for Research
and Innovation**

Open to the world!



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HORIZON 2020: Open to the world

GENERAL OPENNESS



Horizon 2020 is open to participation of researchers from anywhere in the **world**, to:

- ✓ Extend the frontiers of scientific knowledge
- ✓ Tackle challenges that affect us all
- ✓ Make industries more competitive



The European Union

500 million people - 28 countries - a single market*



- 7% of the World's population
- 24% of world expenditure on research
- 32% of high-impact publications
- 32% of patent applications

Member states of the European Union
Candidate and potential candidate countries

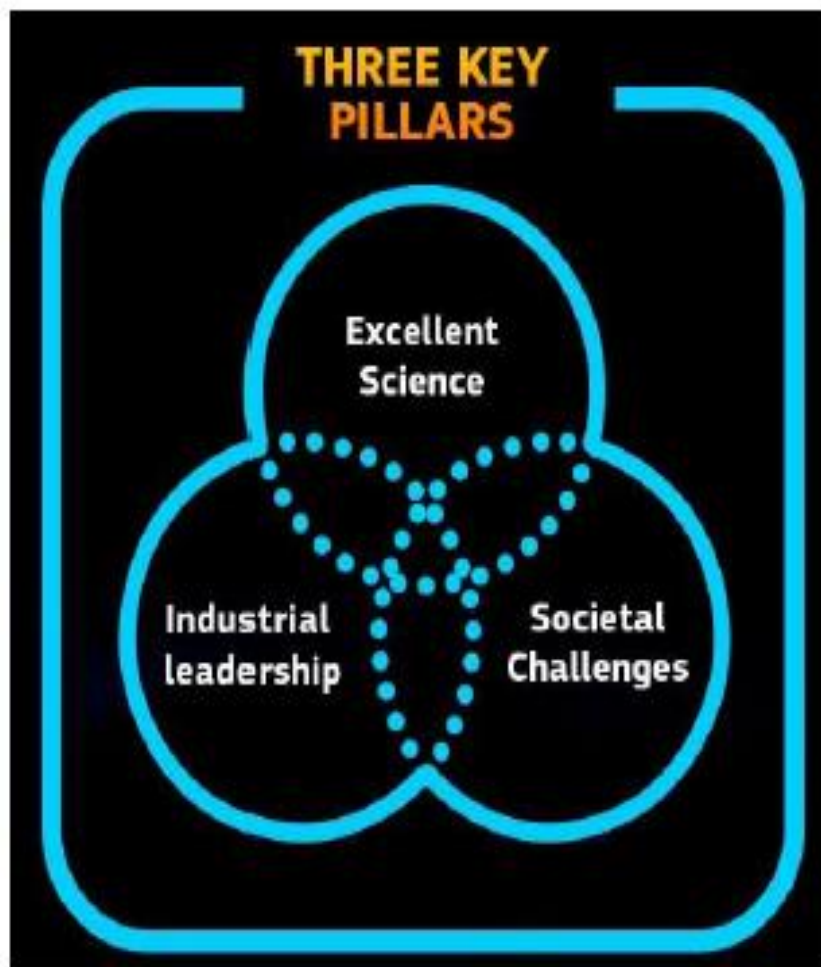
*Free movement of people, goods, services and capital

Horizon 2020

A single programme

- **Coupling research with innovation:** 'from lab to market'
- **Focus on societal challenges:** health, clean energy, transport, etc.
- **Open to participation:** companies, universities, institutes in EU and beyond







Excellent science

- *European Research Council*

Supporting top researchers from anywhere in the world to work in Europe

- *Future and Emerging Technologies*

Supporting visionary thinking through collaborations between science and engineering

- *Marie Skłodowska-Curie actions*

Providing opportunities for training and career development of individual researchers

- *Research infrastructures- including e-infrastructure*

Ensuring access to world-class facilities





Industrial leadership

- ***Leadership in enabling and industrial technologies***
Emphasising key technologies in areas such as advanced manufacturing, microelectronics, nanotechnology, biotechnology, ICT and space





Societal challenges

- Health, demographic change and wellbeing
- Food security, sustainable agriculture and forestry, marine and maritime and inland water research and the bioeconomy
- Secure, clean and efficient energy
- Smart, green and integrated transport
- Climate action, environment, resource efficiency and raw materials
- Inclusive, innovative and reflective societies
- Secure societies



HORIZON 2020: Open to the world

1. Projects can include international partners

2. Targeted opening

- In certain topics in calls for proposals, inclusion of international partners may be:

- a) encouraged
- or
- b) required

3. Coordinated calls

- Used for specific actions (e.g. identified through joint steering committees). Paired calls, linked evaluations, two contracts, e.g.:

- a) EU-Japan R&D Cooperation in Net Futures
- b) Partnering with Brazil on advanced biofuels



Rules of participation



- Applicants from non-EU countries are **eligible to take part** in Horizon 2020 programmes, even as coordinator
- All proposals must meet certain **minimum conditions** (in Rules for Participation)

Rules of participation



Minimum Conditions:

- For standard (cooperative) research projects:

- 3 participants from different Member States or associated countries

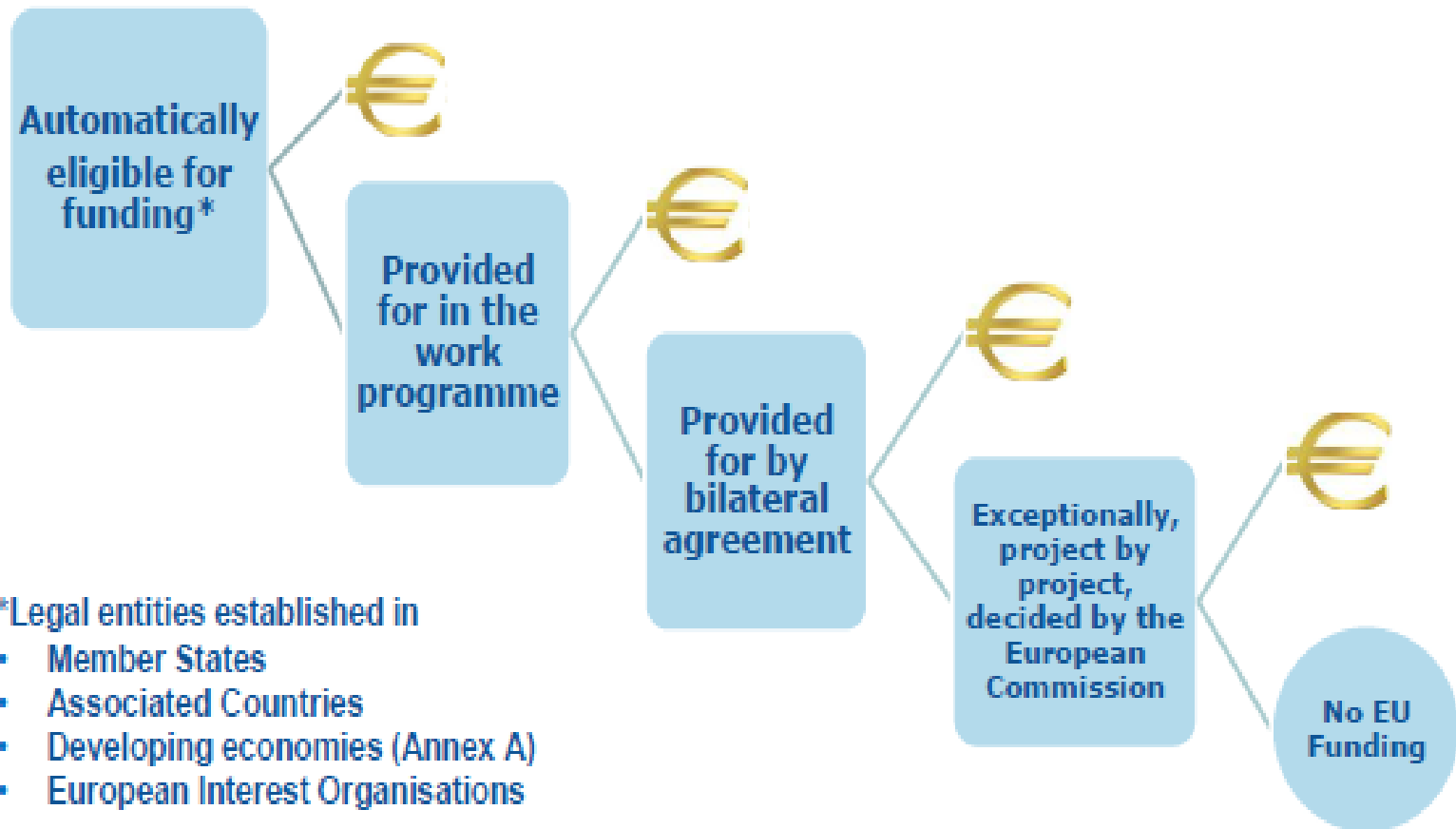
In addition, participants from any other country in the world can also be included

- For actions aimed at individuals, like European Research Council or Marie Skłodowska-Curie:

- 1 researcher
- 1 host institution
- 1 project



Eligibility for funding



*Legal entities established in

- Member States
- Associated Countries
- Developing economies (Annex A)
- European Interest Organisations



Automatically eligible non-EU applicants (ANNEX A):

Applicants based in any of the countries listed here are automatically eligible for funding under the Horizon 2020 budget:

Afghanistan, Albania, Algeria, American Samoa, Angola, Argentina, Armenia, Azerbaijan

Bangladesh, Belarus, Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Burkina Faso, Burundi

Cambodia, Cameroon, Cape Verde, Central African Republic, Chad, Chile, Colombia, Comoros, Congo (Democratic Republic), Congo (Republic), Costa Rica, Côte d'Ivoire, Cuba

Djibouti, Dominica, Dominican Republic

Ecuador, Egypt, El Salvador, Eritrea, Ethiopia

Fiji

Gabon, Gambia, Georgia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Guyana

Haiti, Honduras

Indonesia, Iran, Iraq

Jamaica, Jordan

Kazakhstan, Kenya, Kiribati, Korea (Democratic Republic), Kosovo, Kyrgyz Republic

Lao, Lebanon, Lesotho, Liberia, Libya

Macedonia FYR, Madagascar, Malawi, Malaysia, Maldives, Mali, Marshall Islands, Mauritania, Mauritius, Micronesia, Moldova, Mongolia, Montenegro, Morocco, Mozambique, Myanmar/Burma

Namibia, Nepal, Nicaragua, Niger, Nigeria

Pakistan, Palau, Palestine, Panama, Papua New Guinea, Paraguay, Peru, Philippines

Rwanda

Samoa, Sao Tome and Principe, Senegal, Serbia, Seychelles, Sierra Leone, Solomon Islands, Somalia, South Africa, South Sudan, Sri Lanka, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Sudan, Suriname, Swaziland, Syrian Arab Republic

Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Tunisia, Turkey, Turkmenistan, Tuvalu

Uganda, Ukraine, Uruguay, Uzbekistan

Vanuatu, Venezuela, Vietnam

Yemen

Zambia, Zimbabwe

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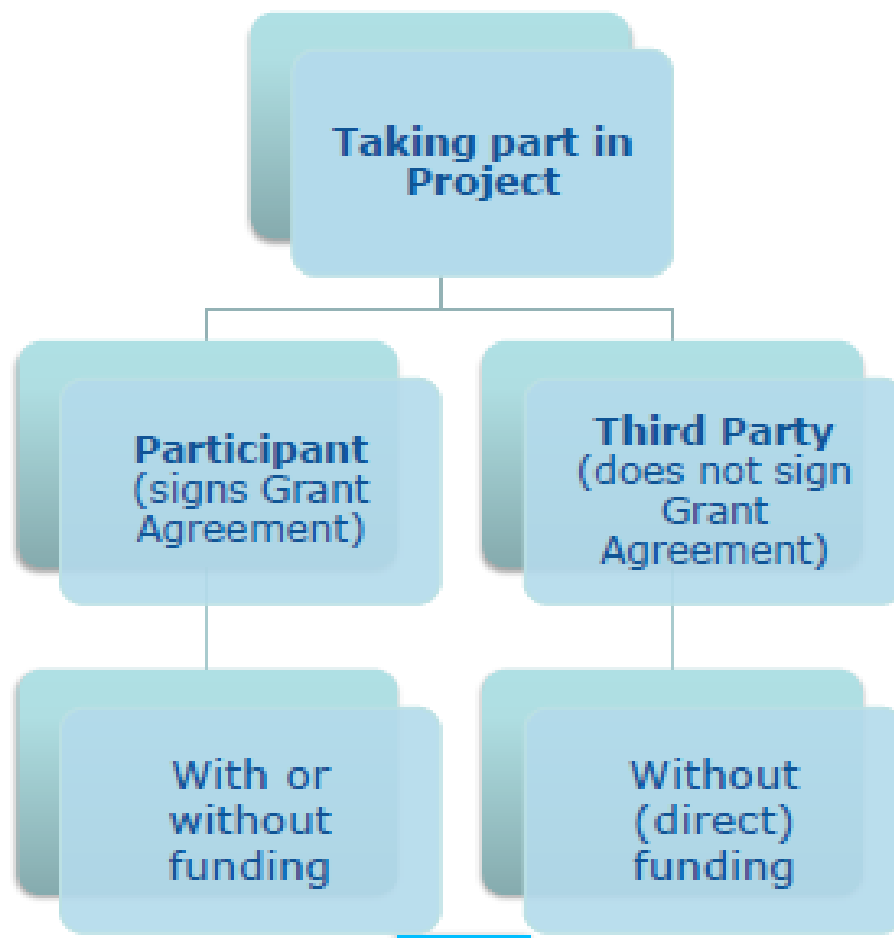


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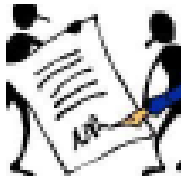


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Options for taking part



"Third Party" Option



Does not sign Grant Agreement but a private Agreement with one or more of the full participants (pre-existing relation)

The participant for which the third party carries out work must ensure that it is possible to exercise its IPR rights (e.g. Access)



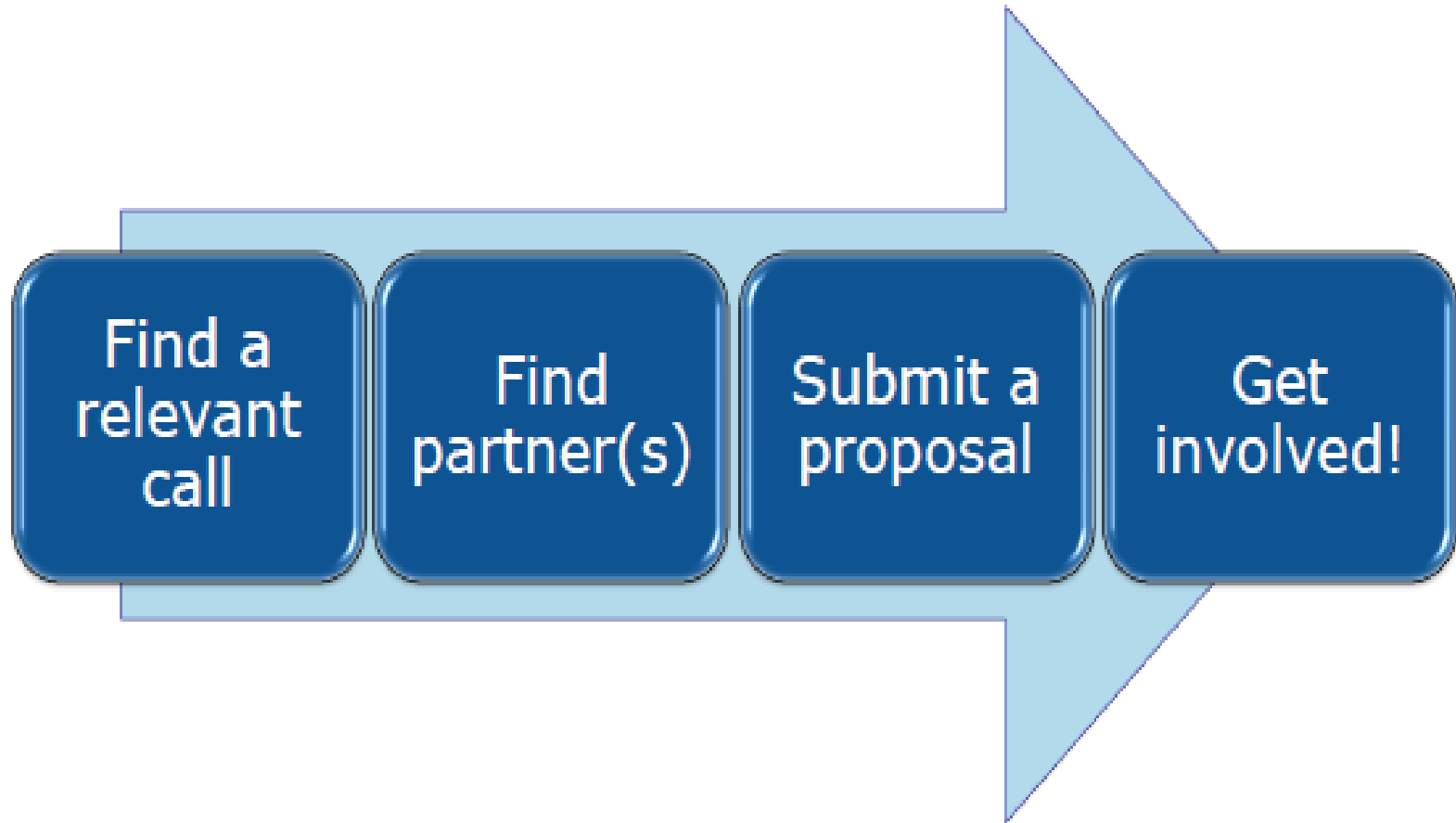
The work to be carried out by the third party shall be identified in the grant agreement

Eligibility for funding? Similar conditions as if signing the Grant Agreement*

* See Slide 14



How does it work?



Thank you!

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