Ústav
experimentální
medicíny AV ČR, v.v.i.
EU Centre of Excellence

STRATEGIE PRO ROZVOJ MEZINÁRODNÍ SPOLUPRÁCE VE VÝZKUMU A VÝVOJI A INTERNACIONALIZACE VÝZKUMNÉ ORGANIZACE ÚEM AV ČR

HR AWARD

Aktivita č. 5 – strategické nastavení a rozvoj mezinárodní spolupráce ve výzkumu a vývoji a internacionalizace výzkumné organizace

EVROPSKÁ UNIE
Evropské strukturální a investiční fondy
Operační program Výzkum, vývoj a vzdělávání

MINISTERSTVO ŠKOLSTVÍ, MLÁDEŽE A TĚLOVÝCHOVY

Ústav experimentální medicíny AV ČR, v.v.i.
EU Centre of Excellence

Obsah

Zpracoval: Dr. Georgios Sakellaris, Ph.D.

General Overview

Structure

The Institute is organized in 11 departments containing:

- 19 Department leaders and senior staff
- 69 Junior staff and post docs
- 56 PhD students
- 31 Technicians

Also, the Institute involves Accounting and economic department and Department of project support and technology transfer that is responsible for International cooperation and technology transfer.

Proportionally the staff of the Institute is categorized into:

- 18% Scientific staff
- 24% PhD students
- 15% post Docs
- 19% Scientists
- 24% Administrative % Technical Staff

Among the personal of IEM 26% are foreign employees

Projects

42 projects (national and International) are running in the Institute: Out of them, 6 are EU grants.

- http://www.iem.cas.cz/en/research/research-projects/

Finances

IEM has a turnover of more than 200 m CzK per year (7.8 m Euros) however the main sources of its budget are Czech Institutions (Czech Academy of SCiences 38%, Czech Science Foundation 22%, Ministries 31%) while the incomes from EU Framework programs or other foreiugn sources are only 3%

Outcomes

Scientific Papers

An average of approximately 94 scientific papers per year (since 2015) in peer reviewed journals is the scientific outcome of the institute:

Specifically, they were published: 75 papers in 2015
92 papers in 2016
92 papers in 2017
78 papers in 2018
117 papers in 2019
111 papers in 2020

Details can be found in the respective IEM's web address:
http://www.iem.cas.cz/en/research/prestigious-publications/

Commercialization of the outcomes:

A total of 14 research outcomes have been proceeded to commercialization via TACR

- http://komercializace-vystupu-vav.uem.avcr.cz/vysledky-projektu

The Institute has obtained 41 patents based on research outcomes. More specifically, since 2015 were obtained: 10 patents, 16 utility models, and 12 licenses

- http://www.iem.cas.cz/en/research/patents-and-utility-models/

Why the International Cooperation is mandatory?

By 2019, 76% of scientific articles were the fruit of international scientific collaboration (compared to 72% in 2009 and 59% in 1999).

These numbers indicate a substantial rational behind, proving that International Cooperation in Research is a mandatory way without alternative and a very practical way to ensure funding for research. Additionally, there is a considerable increase of the scientific output (more publications, speakers at international conferences), and an increase of visibility in general. Finally, IC facilitates the bringing research to companies or other end-users and enhances the prestige internationally as well as internally.

Besides these obvious reasons, the rationale behind the International Cooperation can be reflected into:

- Achieving an optimal balance between the imperatives of research (bottom-up initiatives, peer review, etc.) with top-down strategic development priorities
- Developing human capabilities, national science and technology capacity, and expertise in science policy
- Promoting co-ownership of the outcomes; applying and transferring results of joint research to local communities or industries in both ICs and DCs and to society in general

- Evaluating the outcomes using appropriate methodologies and indicators
- Coordinating and harmonizing programs and projects among various partners on International scale.

The Drivers for the establishment of an International Cooperation

The Narrow Paradigm

- Contribution to the quality of science (through cross-fertilization, competition, combining complementary knowledge, access to world class researchers, facilities and groups)
- Solving specific scientific problems that need the input from various international teams
- Increase of the scope of research (combining complementary knowledge, pooling funding and human resources, sharing risks, increasing computational power)
- Better access to scarce human resources for research
- Increase of (international) productivity and visibility of research
- Contribution to building institutional capacity in research organizations

The Broad Paradigm

- Competitiveness and innovation as drivers for STI collaboration
  - If strong clusters or certain technology domains build up international STI relationships they will get access to the best science and technology and build up business relationships with interesting companies in similar clusters/ domains abroad. This type of objective often leads to a thematic approach to international STI relationships.
  - Providing national businesses with relevant information and contacts in interesting countries would improve their market access (often the rationale behind science and technology attachés, foreign investment offices located in interesting countries). The boundary between international STI collaboration and Trade and Export support is very thin. Nevertheless, only a few countries have a coordinated policy approach in these domains.
  - Improving collaboration with strong STI countries could enhance R&D related foreign direct investment
  - Most of the envisaged impact is indirect: improving the attractiveness of the national science and technology system will support the performance of national industries and attract foreign direct investment in R&D. In fact, the review found very few programs and measures that are directly related to building STI collaborations for the purpose of innovation or direct commercial gain. Interviews suggest that European programs such as Eureka and the Framework Programs are better geared to research more directly related to competitiveness, rather than existing collaboration programs
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- Global Issues
  - Global issues are too large to tackle by one country alone, thus increasing scope and scale by working together and by creating large research infrastructures enhances the potential impact of this research
  - As the issues are global, involving less developed countries with few financial means to engage in research and technology is essential for its success (and for tackling the impacts on those particular countries)
- Research Collaboration for Development Policy
- Other Types of Policy Domains such as Diplomacy, Security and Defense etc.

Basic Requirement

There is not a universal methodology in order to achieve the aims above. However, a generic approach could be based on the strengthening of the current national system, as a pre-condition in order to be competitive enough in the International Cooperation arena:

Examples of methods for strengthening national science system

- Provide training and assistance to strengthen the science administrations
  - To develop a national research and innovation strategy and national priority setting
  - To manage funds and design funding programs
  - To combine top-down national priorities with bottom-up peer review
  - To work with industrial partners and international donors
- Increase access to scientific information (i.e., to journals and publications)
  - By providing open/online sources or e-learning systems
  - By encouraging locally relevant publications within the regions
- Strengthen key components of the research enterprise
  - By bolstering merit-based science academies that can influence policy making
  - By establishing centres of excellence (COE), which contribute to solving global/local problems, as well as increasing scientific capacity
  - By strengthening intellectual property legislation, regulations and enforcement
  - By introducing programs to promote entrepreneurship and innovation (i.e. training, provision of risk capital)
- Improve remuneration of researchers
  - To provide a stable environment for scientists to concentrate on their research
  - To mitigate the brain-drain phenomenon, that is, talented researchers leaving their home country at the end of a project

Capacity Building

"Capacity building" is a widely recognized priority in the development field, and research cooperation can provide significant opportunities for realizing its benefits. Considering that countries like the Czech Republic are relatively behind other countries in Europe, in research capacity and cooperation, it is important for them to be equipped with the capacity to respond. Building sustainable research capacity is also important for ensuring long-term, reliable and sustainable research partnerships.

Networking is another major dimension of capacity building. Researchers and institutions can be encouraged to establish working relationships in different ways, depending on the program's priorities, for example:

1. Networks linking multiple scientific domains (i.e. connecting social and natural sciences, conducting inter- and trans-disciplinary studies)
2. Institutional networks beyond the academic sphere (i.e. those in non-profit, private/commercial and public policy sectors)
3. Linkages across geographic boundaries

A program emphasizing individual capacity building may include:

- Development of individual, as well as institutional, capacities for designing and implementing research programs, including peer review processes, solicitation and communication with researchers
- Development of non-scientific skills that are relevant to research. In some cases, these are particularly important for young scholars
  - Language proficiency, especially English
  - Paper writing (from applications for research grants to publications in scientific journals
  - Communication with policy makers (e.g., policy briefs)
  - Communication with the general public and the media
  - Personal career development
  - Research management (organizational, financial, personnel, etc.)
- Scholarships (for higher education, including for studying abroad) for students of both ICs and DCs.

A program emphasizing institutional capacity building may include:

- Construction/enhancement of physical research infrastructures (such as buildings, advanced instruments, computers, high-bandwidth connectivity, software licenses) with special emphasis on sustainability, i.e., providing resources for installation, operations, maintenance, supplies, upgrades

- Promoting interdisciplinarity via enhanced collaboration between researchers from relevant academic fields, in particular interdisciplinary cooperation between natural and social sciences within a single institution or between institutions
- Requiring or encouraging recipient institutions (or governmental agencies) to seek out and establish links with entities or programs that are already engaged in similar research activities. Potential mechanisms include the exchange of scholarships, fellowships and personnel
- Providing training (and even salaries) to enhance the skills of research administrators in such areas as contract and financial management, technology transfer, IPR, research ethics, etc.
- Enabling outreach activities aimed at the general public.

Establishing an International Cooperation Strategy

Principles

- Interacts with:
  - Other Research and Innovation Centers
  - Higher Education
  - End Users (Industry, SMEs, Society)
- Aims to:
  - Recruit the best researchers
  - Perform the best science
  - Educate the best scientists & entrepreneurs
  - Create value & transfer knowledge
- Targets to: Common Projects (Mainly EC)
  - National budgets for research decrease / remain constant while European budget for research increases with 50%
  - Prestige (high up in the ranking of a huge competition)
  - It's implementing the internationalization strategy
  - It's increasing visibility in Europe
  - It funds very large as well as strategically crucial projects
  - Focus on H-Europe (instead of also on other international funding) decreases administrative overhead

Favorable Internal Conditions

- Create an International Environment within the Institute
- Integration of the Czech and non-Czech personnel in a common Institutional unit without significant communication barriers
- Adoption of English language as an official language of the Institute (For research and Innovation matters). In order to achieve that:
  - Organize specialized courses of English (either basic English, or professional English)
  - Organize seminars for the improvement of specific skills in English (Introduction to scientific text, Conclusion of scientific text, Writing grant applications, Making presentations, Writing for the Reader, Basics of Academic Texts, Developing Scientific Arguments, Communicating Science, Key Principles of Effective Writing: (Cohesion, Coherence & Concision)
  - Encourage the mobility from and to other countries, especially using specific mobility Instruments (MSCA, Erasmus+ etc.)
  - Organize journal clubs (once a week per Research team in English, also giving the opportunity to young scientists to improve their presentation skills.
  - Adopt the English language in workshops and internal meetings of the Institute
  - Enhance the participation in Webinars and Teleconferences especially among the young scientists and PhD students
  - Adopt English language as a communication tool for current issues, announcements, emails, instructions, indications etc. (Also, translation of the existing material)

Set-Up Priorities for International Cooperation

- **Countries and/or Regions of Priority**
  - Justification. Activities within existing regions and networks (e.g. V4 countries), Activities in accordance with priorities set by the ASCR or other priorities. Activities imposed by current situations
- **Thematic Areas of Priority**
  - Explore the scientific and technological background of the Institute as well as its infrastructure in hardware and databases
- **Consideration of the existing cooperation and Common Projects**

- Existing international activities in individual fields, further experience in technology-transfer, education, public events, licensing, sale of intellectual property, establishing spin-off, description of current cooperation with partners from different sectors, types of cooperation – e.g. (clinic, private companies of various orientations)
- Involvement of 3rd parts (associations, hospitals and clinics, private sector)
- Consideration of constitutional rules, regulatory frames and related legislation in national and European scales

- **Consideration of the current funding policy in National and EC levels.**

Executing the Strategy via Specific Programs & Projects

Based on the above it is very important the designing and execution of specific programs and projects dedicated for International Cooperation

Objectives

- The creation of an environment within the Institute, supporting international cooperation and technology transfer
- Strengthening effectively the protection of intellectual property rights (IPR - registration and administration)
- Make IEM an important partner for international actors in multiple sectors of applicability: (research services, contract research services, collaborative research, advisory services, active dissemination of knowledge (lectures, conferences)

Designing the Programs

- Review established priorities and processes that could provide a stronger rationale (and build support) for the contemplated program
  - Take advantage of existing joint activities between science and development agencies
  - Maintain consistency with national policies and strategies
  - Does the contemplated program comply with national or regional STI policy? Does it take advantage of the country's strengths and resources or, conversely, could it strengthen the country in a domain where it has weaknesses?
  - Does the program contribute to sustainable economic growth, social, environmental improvement and/or other societal/communal challenges (e.g., improved health, food production, poverty reduction, clean energy, education and training, stronger IPR regimes)?

- Take advantage of international, regional, continental platforms and initiatives. In these, actively pursue the involvement of related stakeholders

- Anticipate desirable research outcomes and plan how to monitor and evaluate them, even in the program strategy phase
- Set up consultative and outreach activities, such as brainstorming meetings, stakeholder workshops, workshops co-hosted by multiple funding organizations.
- Soliciting Project Proposals
  - Consider enabling spontaneous "bottom-up" partnerships of interested researchers, for example, via web-based "brokering" sites
  - Utilize existing sources of contact information to maximize outreach to potential researchers.
  - Explore prospects for enlarging the set of participating organizational entities which could potentially contribute complementary resources or expertise. Among the entities could be
    - Government agencies (i.e. different departments / ministries / local agencies with authority over the relevant research institutions or topics)
    - Funding organizations (i.e. public organizations, science councils, science academies)
    - Research institutions (i.e. universities, public/private research organizations)
    - Private businesses
    - International organizations
    - Non-governmental entities (international/local NGOs, private foundations, and civil society-based organizations)
  - Establish and maintain an international board (e.g., advisory board) including experts in science, development and project management, to assist with the solicitation and/or other key phases of the program/project
  - Make available targeted funds to enable the critical exploratory phases of research projects, when ideas are being developed and partnerships are being formed, but when no funding is normally available, especially in the DCs. Travel by researchers and convening of thematic workshops are especially valuable during these phases, but they need to be funded, however modestly
  - Consider allocating special funding for short-term projects, feasibility and proof-of-concept studies, and for supplementing existing research projects to add international partners.
- Important Lateral Issues
  - Reviewing and selecting Programs/Proposals
    1. Researchers
    2. Outcomes

3. Management

- Ensuring a sound financial management
- Adopting effective tools and procedures during program execution

1. Monitoring the program throughout its lifetime
2. Bilateral/multilateral agreement with the relevant organizations
3. Support and encourage researchers and their partners to undertake public outreach activities, for example: Publications, Scientific events, Media

- Utilizing and Evaluating the Outcomes of Projects

1. Incorporate post-research and results-exploitation considerations into the initial project plan.
2. Anticipate promising outcomes
3. Construct a matrix of the capacities of the stakeholders, followed by a separate analysis of the project's impact

Measuring the Value and the Impact of the International Cooperation

Research Impact: is the demonstrable contribution that research makes to the economy, society, culture, national security, public policy or services, health, the environment, or quality of life, beyond contributions to academia

Defining the Value: in contrast to research impact, which implies a causal link between research activities and outcomes, value can be thought of as a cumulative benefit, where results are achieved across a system or network. While impact is focused on the question of 'what' happened and to 'whom', value is focused on the questions of 'why' and 'how' it happened. In these key respects, where impact is fixed at points in time, value is dynamic and driven by focusing in on systems and networks. Where impact seeks to reduce and measure complexity, value seeks to understand and harness complexity towards designing effective policy, programs and projects.

It is very important to set specific indicators in order to measure the Research Impact and the value from an International Cooperation in Science:

- Economic Value
  - Research and non-research job creation
  - Development of regional communities
  - Leveraging domestic funding to receive international funding
  - Encouraging trade and investment opportunities
- Research Excellence and global reputation

- Maximizing the ability to take advantage of international spillovers and knowledge transfer
- Enhancing the global reputation of foreign researchers and institutions
- Informing global research rankings
- Leveraging reputation to access international funding
- Attracting and retaining international research talent

- Delivering Policy Objectives
  - Having a seat at the table on issues of global importance
  - Exercising 'soft skills (communication, perception issues, dissemination)
  - Creating and bolstering bilateral and multilateral diplomatic relationships
  - Meeting international obligations such as delivering development aid

Evaluating Methodology

- Extending the existing frameworks
- Planning to measure International Cooperation impact
  - Asking partners to set out what the international research collaboration is intended to achieve at institutional, program, and project levels
  - Classifying collaborations on a spectrum from more to less intense, and substantively from purely research (pure and applied) to commercial, educational, or other policy objectives
  - Encouraging research partners to consider the nature and intensity of the partnership required to achieve their agreed objectives – on the principle of "fit for purpose"
  - Setting milestones
  - Offering learning opportunities (points of review and feedback loops) to improve research design and cooperation.

Measurable Indicators used to assess and evaluate scale and impact of international activities

- International collaboration of researchers, measured through collaborative publications and co-patenting analysis of firms and public researchers, differentiated by institutional backgrounds and thematic areas.
- International institutional cooperation, measured through numbers and development of inter-institutional agreements and interview and survey questions regarding number of inter-institutional agreements
- International mobility, measured through survey questions about the mobility activities of overseas and Czech researchers differentiated for host countries and countries of origin and by the share of overseas scientists at the IEM
- Participation in international programs, especially EU programs, in terms of volume, scope and quality

- Impact indicators – institutional level: a range of indicators that is aimed to measure how international activities of public science affected quality, speed, reputation gains, changes in cooperation patterns, ability to access complementary or specialized knowledge, changes in thematic scope, organizational changes in the organization, efficiency gains
- Impact indicators, individual level (impact of mobility): scientific career, cooperation with researchers, international teaching experience, and effects on publications, networking with overseas firms and career planning
- Assessment of framework conditions and policy: Furthermore, an attempt was made to understand the meaning and impact of framework conditions and specific programs. To do so, individual scientists and leaders of research organizations and universities will have been surveyed. They were given a set of assessments on the various supporting and hindering framework conditions and supporting programs and answered on a scale. Percentage of the employees considering that international co-administration is established
- Assessing the raising of the education and information initiatives (number per year
- Assessment of the reported results in terms of application in practice
- Intellectual property protection – number of results reported
- Number and volume of orders/contracts – contract research
- Number of projects in cooperation with the application sector (financed from public/private sources)
- Measurement of resources provided: (In cash, in kind, human resources)

STI Indicators

- Financial indicators, which show the level of co-investment across countries into R&D
- Bibliometric indicators, which identify co-authorship across borders
- Intellectual property indicators, which focus on activities such as co-patenting

KPI Indicators

- Through the goods and services produced and delivered under the program (deliverables)
- Effectiveness of the programs in achieving objectives in support of respective outcomes

Notes on KPI Indicators

- There is often no direct link between the objectives, deliverables and KPIs of an entity
- Many KPIs include only vague or ambiguous terms, or wording that is open to interpretation
- Many KPIs link to an objective but not to a deliverable

- Many KPIs appear to be an extension of a deliverable (some KPIs are more like deliverables), or the distinction between a KPI and a deliverable is not applied consistently across an entity
- Many KPIs do not list timeframes for achievement
- Many KPIs are not readily measurable, many do not provide quantifiable targets, and many include targets with questionable relevance

Measures / Instruments to reach the Objectives

- Development of appropriate communication strategies, management support, regular information of the employees, absolute transparency and regular training of employees in the respective fields when needed.
- Support of international cooperation at all levels (legal, administrative)
- Regular updating of the databases, including contacts, R&D results, assessment process
- Encourage and support mobility of researchers and young scientists
- Motivation of individual employees to actively /meaningfully protect the intellectual property of the Institute (to prevent the leakage of intellectual property)
- Creation of a pool of licenses and patents
- Substantial sharing results, outputs, and services: (web, soc site, personal contacts, database results/performances, patent, active participation at events, involved in association with international partners)

Proactive Actions before planning an International Cooperation Project

Several different criteria and operational modes may apply when undertaking negotiations of IP clauses in international R&I agreements. While these guidelines focus on the IP and knowledge transfer aspects of international cooperation, these issues are necessarily generic and may apply to other types of internal EU collaborative agreements. Before entering into an agreement, the risks and benefits as well as the strengths and contributions of the partners should be considered. It is good practice to evaluate the consequences of not participating. This is a strategic question for senior management at an early stage who will want to ensure that resources are best deployed and not wasted. In addition, the risks of negotiating an agreement which will not be implemented need to be considered.

- In general, participants need to ensure that discussions are protected by a confidentiality agreement. It is strongly advised that a formal confidentiality agreement has been signed before any IP or other sensitive information is disclosed in any communications with other parties.
- Conflicts of interest should be addressed at this stage, in conformity with stakeholder policies and procedures.

- Where relevant, participants need to ensure that they comply with any public funding conditions set by national funders before entering into a collaboration, stating clearly what their obligations are and identifying potential conflicts between funding conditions and their agreement with the other party, their legal constraints or their strategies.
- Participants should enquire about the experiences of others who have previously collaborated with the selected country and/or partner.
- It is advisable to clarify which government bilateral R&I agreements or international agreements are in force between a participant's home country and their partner's home country, and what (if any) provisions exist in the agreements relating to IP and knowledge transfer and determine whether they apply to the agreement.
- It is important to be clear about the meaning of terminology

More Specifically:

Identification of the respective interests of the parties

It is recommended that participants:

- Analyze and clarify the respective interests of the parties;
- Clarify the subject, scope and outcomes of the proposed collaboration;
- Undertake a careful evaluation of scope, objectives and potential outcomes of the IP clauses of a proposed agreement and ensure that they are aligned with the strategic objectives and priorities of the participants and with the participants' IP and knowledge transfer policies and take account of any legal constraints
- Consider issues such as the ownership of results (foreground IP), the rights of the parties regarding their existing IP
- Evaluate the project proposal/project outline in the context of the parameters given above

Participant's knowledge transfer policy:

- A participant wishing to enter into international cooperation agreements should first clarify its own background IP as well as its knowledge transfer strategy and exploitation models
- In order to provide clarification of key issues it is advised that an IP policy is published as part of a long-term strategy.
- The policy should include provisions that cater for the disclosure of new ideas with potential commercial interest, the ownership of research results, record keeping, the management of conflicts of interest and engagement with third parties.
- The management of IP should in all cases be carried out according to the established principles in the context of the overarching objectives of a particular project

- It should take account of the legitimate interest of the industry party and the legitimate interest of the academic party
- A participant should ensure that a collaboration agreement conforms with its own knowledge transfer policy and other strategic policies.
- A participant should specifically determine the benefits and risks of exploiting or not exploiting both their background IP and foreground IP.
- In particular, a participant should consider the scope of their freedom to enter into arrangements with other parties and to control the use of their background IP and foreground IP.
- A participant will need to consider its liabilities and obligations. It will also need to establish what obligations other parties will have both after the agreement is finished
- In order to facilitate the circulation and use of ideas in a dynamic knowledge society as well as to better convert knowledge into socio-economic benefits, a participant should consider all types of possible exploitation mechanisms and ensure that a given technology will be exploited effectively
- Examples are licensing, the creation of spin-offs, co-operation with existing companies, investors or innovation support agencies.
- Furthermore, access to professional knowledge transfer services (e.g. technology transfer offices), whether it involves internal staff or external services is vital for effective knowledge transfer. These services should be able to give sound advice, for example on general legal and financial issues as well as about the protection, commercialization and enforcement of IP.
    - A participant should ensure that its internal practice and IP management is in line with European best practice. Guidance on this subject is provided by the IP Recommendation.

IP strategy and exploitation model of the partner

It is advisable to analyze the IP strategy and exploitation models of the other parties in order to understand what they intend to achieve through the collaboration. The analysis should include consideration of issues such as access rights, notification procedures, licensing rights, incentives offered, obligations to publish, activities to disseminate the results balanced against the need to protect the results and the provision of knowledge transfer services.

- Essentially, to enhance the success of a project the parties should analyze and discuss opportunities and their potential risks, particularly ensuring that the:
    - Rights and obligations of participants are clearly defined;
    - Implications of disclosing secrets, considering confidentiality agreements and requirements under national law, are carefully considered;
    - Termination provisions relating to IP (ownership, access, licensing etc.) are considered thoroughly in advance, in the event that the agreement has to be discontinued for whatever reason.

- In particular, parties should consider:
  - The expected outcome and consider the context of the market;
  - That the state of the art has been checked (for example by patent searches) in order to avoid duplication of research efforts;
  - National mandatory laws that could affect the ownership and use of results of the partner
- Identification of background IP
- Identification of personnel
- Identification of forms of cooperation and collaboration
- Identification of the partners
- Due diligence evaluation of new partners
- Freedom-to-operate (FTO)
- Analysis of the legal system, particularly the IP framework, of a partner's country
- It is advisable to draw up a check-list for IP regulations which consider:
  - An adequate, effective and affordable system of IP protection
  - An efficient law enforcement system under national law including dispute settlement, provisional measures, legal action, prosecution and possibilities of sanctions as well as penalties for infringement that are rigid enough to deter further violations
  - An efficient technology transfer system.
- An international law firm situated in the partner's country is usually of great value to provide technical advice but it is important that decisions are taken by participant decision makers in light of their business objectives.
- Import and export regulations for foreign PROs and companies play an important role
- There may be mandatory registering provisions when bringing a particular technology or materials into or out of a country.
- Cultural issues relating to contract negotiation and execution of contracts

Ownership of research results: The allocation of ownership of IP and research results generated in the collaboration should be clarified as early as possible. Ownership of foreground IP usually rests with the party generating that foreground IP, but different allocations of ownership may be agreed.

Reversion of rights: Provisions should be made for the potential reversion of rights in situations where commercialization has not been pursued in order to avoid the non-use of the foreground IP and to enable further technological development.

Joint ownership: Joint ownership of results relates to results collectively generated by two or more parties. Joint ownership requires specific consideration in relation to the administration of IP, provisions for the transfer of ownership of the IP, the use of it by joint owners and access rights to it by third parties.

Protection of IP: Before entering into a cooperation agreement and during the course of the project the parties should act in good faith. They should sign a confidentiality agreement or non-disclosure agreement (NDA) as soon as they start to discuss their know-how (trade secrets) in collaborations with another party

Access rights to IP: It should be determined which background IP is needed for:

a. The execution of a project;
b. Stage after completion of a project;
c. Use of a party's own foreground IP.

Licensing IP to third parties:

Publications:

Confidentiality:

Choice of governing law/jurisdiction / Dispute Resolution:

Set-Up 6 Success Factors

National funding base

- Governmental Policy and Structure
- HR implementation in CR: Skills and Study orientation
- International Cooperation in STI
- Strategy for Research Careers
- Investment in Research Infrastructures

Climate of competition (for excellence)

- Quality Assessment
- High degree of Autonomy (Note: In relation with # 5 & 6)
- International Reference level
- Mixed projects (Industry / Society)
- Added Value

Knowledge transfer (favoring intersectoral collaboration)

- Aiming for excellence at all levels

- Bottom-up, no thematic 'institutional' policy
- Balance comprehensive quality/excellence
- Research policy assessment at the level of the Science Groups

- Improved support for young talents
- Simplified funding programs
- Further internationalization of research
- Scientific integrity
- Improved visibility of research output

Size does matter (international and Intersectoral networks)

- Establishing own Incubator (RIC, University, Hospital, Clinical Support, Patients)
- Networking
  - Horizontal, Vertical and Thematic Networks
  - Smart Specialization Actions (bottom up)
  - Clusters of Excellence and Invocation Actions (bottom up)
- Process Development
  - Fundamental Research ++
  - Basic Research (oriented) +++
  - Development +++
  - Clinical Trials ++
  - TT Management +++
  - Commercialization +

Lateral Actions

- Enabling Invention Disclosures
- Creation of Spin Offs
- Creation of Networks
- Agreements on dedicated collaborative research with Private Sector
- Impact of the activities to the regional development
- Considering incomes from licensing

Support structures (advice & representation)

- People
- Access to information
- Legal
  - Updated Information of Related Regulation and Legislation
  - Protection and Exploitation of Intellectual Property

- Owned by the UEM
- Consider Motivation and Incentives for the Inventors
  - Inventors are not only the Researchers

- Communication
  - Lobbying
    - On Policy level
    - On work program level
- Develop a concrete communication strategy *(to be analyzed on a case by case basis. Set up indications here)*
  - Website
  - Newsletter
  - Organization of webinars
  - Training courses
  - Organization of workshops, Seminars, Conferences
  - Incentives for non-scientists

A very challenging task mainly because:

10 years ago, in Czech Republic:

- Almost the entire Public funding of research had a top-down direction
- No centrally located thematic focus
- No competition for funding
- No independent review for budget allocation
- No international benchmarking
- No consideration of the socioeconomic impact into the research funding policy
- And still in our days:
- Limited participation in International research projects and networks
- Lack of motivation of researchers (e.g. No bench-fees)
- Limited administrative support
- Limited patent use and exploration
- No specific strategy for cooperation with the Industry