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## **INTERNATIONAL RND COOPERATION VERSUS NATIONAL RND COOPERATION**

### Abstract

The global perspective on world-class research performance with the challenge of rapid adaption to technological & environmental changes leads to a higher demand for cross-border and inter-institutional research-cooperation. This means that opportunities & challenges within our dynamic world have never been greater then now. Therefore R&D (Research & Development) cooperation projects require an integrative system approach embracing several spheres, like market considerations, production processes, usage of raw materials & technologies, quality and risk analysis, implications on environment/health issues; etc.

Beside that cross-European R&D cooperation projects and associated multidisciplinary and inter-institutional working teams are necessary in order to deal with the inherent complexity of research topics, technologies and corresponding environments considering the underlying objective to boost organizational performance and efficiency.

Major success factors of such R&D cooperation projects (for example Integrated Projects within FP7) are that the best researchers and the most qualified institutions/companies cooperate in relation to a specific research topic on a cross-national level. In this connection, cross-cultural knowledge sharing activities and a mutual learning process are taking place. Other success factors of fruitful international R&D cooperation projects are:

- A project consortium consisting of experts from different research areas as well as adequate involvement of commercial and end-user partners to ensure the proper exploitation of the project results;
- The whole cooperation is based on mutual trust;
- All partners within the R&D project have a real benefit and incentive to contribute to the project work; and
- A balanced IPR approach.

The above-mentioned R&D cooperation requirements will continue into the future, and those organizations which can best cope with it, will benefit the most.

**Keywords:** Cross-border & inter-institutional research projects; interdisciplinary project teams; R&D cooperation Projects; Scientific mobility.

## INTRODUCTION

The global perspective on world-class research performance with the challenge of rapid adaption to technological & environmental changes leads to a higher demand for cross-border and inter-institutional research-cooperation. This means that opportunities & challenges within our dynamic world have never been greater then now. Therefore R&D (Research & Development) cooperation projects require an integrative system approach embracing several spheres, like market considerations, production processes, usage of raw materials & technologies, quality and risk analysis, implications on environment/health issues; etc.

Beside that cross-European R&D cooperation projects and associated multidisciplinary and inter-institutional working teams are necessary in order to deal with the inherent complexity of research topics, technologies and corresponding environments considering the underlying objective to boost organizational performance and efficiency.

However, especially cross-border & inter-institutional research projects involve a dynamic complexity which result from a number of facts like different cultural backgrounds & philosophies (on an organizational and on a national level), different motivations (Scientific publications versus achieving a market advantage through non-disclosure-policy), etc. Unfortunately, this kind of R&D projects cannot be seen as a self-organizing success story<sup>1</sup> but require an efficient, clear and well-structured project management approach which considers a variety of different aspects like scientific, technological, organizational, legal and commercial project goals.

This paper is based on practical examples/case studies and proven principles, which will act as instruction:

- a) To fulfill some general research cooperation requirements, and
- b) To plan balanced human interaction processes

In order to facilitate innovative breakthroughs and best practices in a cross-country and inter-institutional environment.

With regard to international R&D cooperation projects this paper concentrates on EC funded projects performed in the area of “Information and Communication Technology” under the European Research Framework programme.

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<sup>1</sup> W. Herbert: “Can You “Drive” Cross-Cultural, Cross Functional Innovation Workshops Successfully?” in *Cross-Cultural Innovation – New Thoughts, Empirical Research, Practical Reports*”, Edited by Jostingmeier, Bernd and Boeddrich, Heinz-Jurgen; 2007, Oldenburg Wissenschaftsverlag GmbH, Page 367.

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## SOME BASIC ASSUMPTIONS FOR THE COMPARISON OF INTERNATIONAL R&D COOPERATION PROJECTS WITH NATIONAL ONES

Even we have already stated that in most cases international R&D cooperation projects are more complex than national ones and need more rigorous project management structures and procedures – we assume in the following sections that the working atmosphere in the international R&D cooperation project is fruitful and the cooperation between the different project partners is functioning well.

This means that successful R&D cooperation projects, independently if they are operating on a national or international level, require excellent teamwork. So for example within a project one or more inter-institutional team(s) has (have) to be set-up in order to pool knowledge and experience. In this connection each team has to learn to cooperate within itself and has to initiate positive learning and knowledge-sharing experiences<sup>2</sup>.

Beside that an excellent and professional management of the R&D project plays a fundamental role for the success of the project and helps to set-up a trustful relationship within the project consortium. In this relation a clear distribution of responsibilities as well as an efficient communication policy is of special importance. Additionally a comprehensive project assessment system as well as an appropriate risk management system complete that approach and guarantee the achievement of project goals within the timeframe of the project.

Other success factors of fruitful international R&D cooperation projects are:

- A project consortium of high quality, consisting of experts from different research areas as well as adequate involvement of commercial and end-user partners to ensure the proper exploitation of the project results;
- Encouraging enthusiasm in relation to the overall and joint project goal;
- All partners within the R&D project have a real benefit and incentive to contribute to the project work; and
- A balanced IPR (Intellectual Property Rights) approach.

## PREREQUISITES AND ADVANTAGES OF INTERNATIONAL R&D COOPERATION PROJECTS

EC funded research cooperation projects are in fact cross-cultural knowledge sharing activities and in this connection also a kind of cross-institutional negotiation

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<sup>2</sup> W. Herbert: “Winning Team Results! – A Team Based Approach to Project Management in Cross-Cultural Environments”, Edited by Jostingmeier, Bernd and Boeddrich, Heinz-Jurgen; 2007, Oldenburg Wissenschaftsverlag GmbH, Pages 397-428.

process in which the project consortium aims to agree on the following issues:

- Who is going to share resources with whom of the other consortium partners;
- The degree of access to the before mentioned resources, and
- The degree of a possible compensation in order to obtain that access.

Such regulations are normally part of the work plan (Description of Work) as well as of a contract called “Consortium Agreement” which is concluded within the project consortium. In most cases a signed Consortium Agreement is obligatory before the EC Contract can be signed. However, it is quite obvious in regard with these regulations that all partners get a particular incentive to give their best in order to achieve the planned projects goals and that the rights and obligations out of this contractual regulations are balanced between the different consortium members.

In comparison with industrial R&D departments Universities are more likely to deliver interesting and provocative out-of-the-box concepts/solutions, which might be of great interest for the development teams in companies in order to plan their next product releases (including testing of the market acceptance of new products). So for example, whereas company employees have a stronger focus on development issues with the underlying goal to bring forward their own product development (as this process is closely linked to the product life-cycle), the researchers of Universities or other public research entities are concentrating on targets like exploring new concepts and developing completely new approaches<sup>3</sup>.

Prerequisites of the projects operating on an international level are that project members of trans-cultural and interdisciplinary project teams have to appreciate to cooperate with people who are different. At the same time the project goals of such international R&D cooperation projects have to be very attractive so that the most talented people world-wide would like to participate within such projects.

## TWO CASE STUDIES

In the following two different successful EC-funded projects including their particular project structure and their corresponding results are described. Both projects were running under the European Research Framework Programme/ Information and Communication Technologies. However, these two projects are characterized by completely different research contents, project partners, management structures and processes.

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<sup>3</sup> B. Michael: “Hi-Tech Industry and Universities: A Perspective on Dating for Joint Innovation”, in “University Research for Innovation” Edited by Weber, Luc E. and by Duderstadt, James J.; 2010, Published by Economica Ltd, London; Pages 251-270.

Both projects consisted of multidisciplinary project teams who worked in an integrated way towards achieving a joint projects goal across several partner organizations, countries and cultures.

#### Case study 1.

*Project title: Environmental Pollution in Kosovo, potential genotoxic effects and related human health risks (03.07.2012 - 02.07.2014)*

Environmental pollution in Kosovo<sup>4</sup> is one of the major issues in the current phase of the development. On the other hand, beside the observed acute effects on human health and the environment, there is a need for the assessment of the potential long term effects in order to take the necessary measures for minimizing or preventing the impact on human health. Low levels of awareness among the general public regarding the environmental pollution in Kosovo, indirectly contributes to the current situation. This should be improved by scientific research and reliable assessment of the current situation and potential long term risks. The action is expected to have an impact on raising the awareness on environmental pollution related issues having as the main objective the improvement of environmental and public health conditions in Kosovo.

The action is addressing the most acute problems identified in two priority areas “Environment, Energy and Natural Resources” and “Medical Research and Public Health” by: adoption and implementation of the research methods for environmental pollution risk assessment; further development of technical skills and capacities for the determination of risk factors and preventive measures; assessment of the long term (genotoxic) effects of environmental pollution on Public Health.

The project further addresses the following particular expected results: a) increase of the quality and quantity of research carried out at the University of Prishtina, b) consolidation and promotion of collaboration with European research facilities, c) promotion of collaboration and exchange with researchers, stakeholders and the public within the Kosovo, d) improvement of the research environment (facilities, equipment), e) improvement of the capacity of young Kosovo researchers and f) improvement of project management capacity in the research field to be able to participate in the future in EU framework programmes on research and technological development.

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<sup>4</sup> More information relating to the project “Environmental Pollution in Kosovo, potential genotoxic effects and related human health risks”. [www.uni-pr.edu](http://www.uni-pr.edu)

## Case study 2

*Project title: ESSIE - Enhancing Social Scientific Research in Kosovo and its Integration into the European Research Area*<sup>5</sup>.

ESSIE focuses on the priority sector “social sciences” as stipulated in the National Research Programme of Kosovo 2010-2015 (NRP). It contributes to the upgrading of social scientific knowledge in support of the socio-economic development of Kosovo.

Social Sciences and Humanities (SSH) constitute the majority of scientific work in Kosovo, which strongly correlates to the educational demand in the tertiary sector which is dominated by strong SSH disciplines such as law, economics, political sciences etc. In pure research terms, however, social scientific research lacks far behind its given volume in terms of tertiary education.

The main activities and results foreseen are

1. establishing of an *empirical social sciences laboratory* at the ISSH resulting in 15 work stations equipped with statistical and text analysis programmes;
2. preparing and implementing a *‘Training Programme for International Social Scientific Research Qualifications’* resulting in 30 younger Kosovo researchers and 5 additionally users of social-scientific evidence trained in state-of-art scientific methodology and in scientific management;
3. establishing an international *mentorship programme* for 10 younger Kosovo social scientists, which results in 10 mentor-mentee agreements focusing on the production and supervision of in total more than 5 social-scientific articles by Kosovo researchers (eventually in co-publication with Austrian colleagues) published in international journals or other scientific publications;
4. organization of a large public *“Horizon 2020”* conference attended by 100 participants to get first hand international information about Europe’s largest RTDI programme commencing in 2014;
5. implementing an international scientific workshop on *“The social fabric of Kosovo- new research findings to evidence-base and enhance the political and socio-economic discourse about Kosovo”* resulting in an increased international perception of social-sciences in Kosovo and an exchange forum between producers of social-scientific evidence and its users.

Within three of the five core activities of ESSIE, namely the *‘Training Programme for International Social Scientific Research Qualifications’ (R&D4SSR)*, the *International Mentoring Programme* and the international workshop on *“The social fabric of Kosovo – new research findings to evidence-base and enhance the*

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<sup>5</sup> More information relating to the project “ESSIE”. [www.uni-pr.edu](http://www.uni-pr.edu)

*political and socio-economic discourse about Kosovo*” the following **key social scientific thematic areas** will be particularly considered and addressed:

- labour market research,
- social welfare research (incl. inclusion, migration and integration),
- science/technology/society studies including social innovation,
- gender research,
- political participation and governance.

## REASONS, WHY INTERNATIONAL R&D PROJECTS PERFORM BETTER THAN NATIONAL ONES

The R&D cooperation projects funded by the European Commission are seen as key strategic instrument in order to deal with R&D opportunities and challenges on a cross-national level. In the most cases this kind of projects embraces the best researchers, the most qualified institutions and companies in relation to a particular research topic. However, other important strategic goals of these R&D funding programmes are to reduce the imbalance of the scientific & technical capabilities of the different European countries and to improve the general competitiveness of the International Industry<sup>6</sup>.

Beside considering the special complexity of a project which is carried out on a European level, it has also to be mentioned that normally higher project budgets are available and different national situations have to be considered. In most cases these circumstances and regular extensive project reviews have a positive impact on the future commercial application of the project results.

## CONCLUSION

As already mentioned in the sections before:

- Increasing global competition in the world class research area as well as on the commercial consumer markets,
- Shortening of product life cycles caused by rapid technological developments, and
- Extreme knowledge growth,

<sup>6</sup>D. P. A. K. Luisce C: “the economics of scientific research coalitions: collaborative network formation in the presence of multiple funding agencies”, in :Science and Innovation” Edited by Geuna Aldo, Salte Ammon J., Steinmueller W. Edward, 2003, Published by Edward Elgar Publishing Limited; Page 261.



Leads to the increasing pressure that different actors (companies, research institutions, etc) collaborate in international R&D cooperation projects<sup>7</sup>.

According to Boutellier, Gassmann and von Zedtwitz the necessity that organizations & companies are concentrating on their own core competencies and get access to complementary resources & knowledge through collaboration with other (national and/or international) partners will become even more important within the future. The form of future cooperation might be a flexible learning and business network in which the different parties with their complementary resources cooperate just temporarily on the basis of common interests.

In this connection EC funded research cooperation projects can be seen as an ambiguous system that offer interesting opportunities for mutual learning and introducing unconventional solutions. They might reveal new and unconventional opportunities that were not visible before.

The above mentioned R&D cooperation requirements will continue into the future, and those organizations which can best cope with it, will benefit the most.

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<sup>7</sup> FP7 (7<sup>th</sup> Framework Programme – Cooperation/Collaborative Research) [http://cordis.europa.eu/fp7/cooperation/home\\_en.html](http://cordis.europa.eu/fp7/cooperation/home_en.html).

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