

**SIXTH FRAMEWORK PROGRAMME
PRIORITY 7
Citizens and Governance in a knowledge based society**



Contract for:

**SPECIFIC TARGETED RESEARCH OR INNOVATION
PROJECT**

Annex I - “Description of Work”

Project acronym: PROKNOW

Project full title: Production of Knowledge Revisited: The Impact of Academic Spin-Offs on public research performance in Europe

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1. Project summary

This project aims at analysing the interactions between public research institutions and academic spin-offs focusing on the impact of entrepreneurial and scientific activities on the academic research system. Based upon approaches in organisational sociology, science policy studies and science studies and analyzing the gains and losses of spin-off activities for public research institutions, PROKNOW examines the relevance of public and private forms of knowledge in innovative processes of knowledge production. Academic spin-offs often epitomize innovative forms of knowledge production and are thus an exemplary topic to study innovation processes in the interaction of science, economy and society. PROKNOW proposes a European-wide comparison of research institutions in seven countries, including the three biggest research systems, Germany, France and the UK, the highly innovative systems of the Netherlands, Switzerland and Finland, and the associated candidate country Bulgaria. Institutionally PROKNOW analyses different forms of public sector research institutions, for example university and extra-university institutions. In terms of economic sectors, the project focuses on life sciences, information sciences and nanotechnology. Thus, PROKNOW allows for developing the institutional and organisational conditions for a profitable interaction between public research institutions and academic spin-offs.

2. Project objective(s)

2.1 General objectives

The production of scientific knowledge counts as a key economic resource of the modern knowledge-based European society. However, given the significance of this strategic resource we still know comparably little about the functionalities and work practices of highly differentiated research systems. There are still relatively little empirical findings about the supposed interactions and interdependencies between different, public and private, actors in the innovation process. Also, the consequences of more interactive forms of innovation for public research systems and science policy regimes have not been adequately reflected.

The project PROKNOW therefore aims at analysing the interactions between public research institutions and academic spin-offs in order to assess the impact of entrepreneurial activities on the academic research system. Analysing the gains and losses of spin-off activities for public research institutions, PROKNOW examines the relevance of public and private forms of knowledge in innovative processes of knowledge production. Recent research has pointed out that entrepreneurial or spin-off activities of public research institutions epitomize innovative forms of knowledge production and are thus an exemplary topic to study innovation processes in the interaction of science, economy and society. PROKNOW draws on these studies but takes a different approach. It is not only focussed on the university or higher education sector, but examines the complete public research system, including the extra-university research sector (such as big science institutions or academies). Moreover, different from research concerned with the founding and prospering conditions for spin-offs, this project shifts the focus back on public research institutions and studies the multiple impacts and consequences of entrepreneurial activities on public sector institutions. Finally, on a theoretical level the project refers to approaches at the crossroads of science policy studies, science studies and organizational studies, different from the economic approaches prevalent in the literature.

Science policy still struggles with the problem how to improve the transfer processes at the interface of science-industry relations. How can the production of socially and economically relevant knowledge in academic research institutions be accelerated, and the quality of the knowledge production improved, without restricting the relatively autonomous governance structures of the public research system? Commercial spin-off-activities by university and extra-university research institutions are highly interesting phenomena because in these cases, public research institutions leave their own reference system in order to submit the results of their endeavours to the commercial logic of profitability. Current research on academic spin-offs has usually focused on their relevance for the labour market and on their founding conditions. In the years of the new economy boom entrepreneurial activities have reached a pinnacle, thus raising expectations that were often disappointed after 2001, both in terms of the number of entrepreneurial foundations and of workplaces generated. Analogous to conventional start-ups, the number of newly founded spin-offs is declining all over Europe since 2001. Thus, the economic potential of spin-offs has recently been reassessed and deemed more moderate.

PROKNOW is principally focusing on the effects and repercussions of academic spin-offs on public research institutions (higher education and extra-university institutions acting as parent

organizations). The actual effects of spin-offs on the orientation, positioning, and capacities of public research institutions are hardly known. Some scattered evidence is offered in the growing system of research assessments, as in evaluations, rankings or ratings that include spin-offs as part of their indicators. However, this information remains incoherent and far away from a systematic assessment of the role of spin-offs for the processes of quality assurance and control.

The topic of PROKNOW is also relevant on a general science policy level. Academic spin-offs offer an empirical phenomenon to study the interfaces and crossovers between public and private research sectors. In this boundary context, scientific and economic orientations and reference systems are tied together in an experimental form and for a limited time horizon. The interactions between public and private organizations offer concrete insights into the otherwise mostly anonymous processes of diffusion and validation of scientific knowledge. By founding spin-offs, the parenting research institutions voluntarily launch a self-organized, non-scientific process of validation. Thus, the examination of spin-offs and their interactions with public research institutions from a sociological and science studies perspective opens a new “window” to examine the changing research and validation practices of modern academe.

2.2 Research questions and hypotheses

The foremost goal of the project is to examine the positive and negative effects of entrepreneurial activities on the side of the parenting institutions (Work packages 1, 2, 3, 4):

a) Research questions and hypotheses on positive effects: On the side of positive effects, the project analyses to what extent spin-offs contribute to enlarging the capacities and sharpening the profile of public institutions, thus increasing their competitiveness on the academic market? We hypothesise that the extension of the “value chain of knowledge” towards concrete opportunities of application can enable valuable feedback processes for the academic system of knowledge production. To reflect the product quality of research results can enlarge the scope of a scientific project. The pure existence of spin-offs as new distribution channels might feed back on the conception of research questions and project designs. Thus, the self-referential discursive loops and the conventionality codes of scientific research practices can be amplified, if not broken through, by the interaction with entrepreneurial organizations, without the need for external intervention and restriction of the autonomy of academic institution.

b) Research questions and hypotheses on negative effects: On the side of negative effects, the main question is to what extent spin-offs harm public institutions by privatising research and thus extracting competences and capacities from universities and extra-university research institutions? We hypothesise that intense interaction with private partners can lead to risks for academic institutions. Changing the reference system can negatively affect everyday research practices. A quick entrepreneurial success of spin-offs for example bears the danger of a “pull effect” and of a loss of scientific competences from the public to the private side if there is no strong “knowledge retention”. Researchers can be attracted by entrepreneurial opportunities – not least the earning opportunities – with the effect that they subordinate their activities to a short-sighted economic commercialisation logic. Also in a gender perspective, spin-off-activities can raise problems. As entrepreneurial activities are often based upon informal male networks, an institutional focus on spin-off-activities can reinforce existing gender hierarchies and obstruct the career perspectives of women in research institutions.

2.3 Choice of the national case studies

The national examples are primarily selected according to their quantitative and qualitative relevance. In the quantitative sense the selected cases offer a critical mass of spin-off activities; in the qualitative sense, they consist of cases with developed and wide ranging policy instruments for supporting academic spin-offs. The selected countries include Germany, Britain and France (for their big research system and comparably numerous outputs of academic spin-offs), the Netherlands, Finland and Switzerland (for their differentiated and innovative policy instruments) and the associated candidate country Bulgaria, which has both a comparably broad tradition of spin-off-foundations and a set of recently institutionalized policy measures.

These countries offer a valid basis for analysing cross-country variations and commonalities on an institutional and organisational level. Thus, the comparative analysis will cut across the national cases and bring together similar institutions from different national backgrounds. The analytical structure of PROKNOW is not primarily concerned with national types of spin-off policies, but with the institutional and organisational conditions for a profitable interaction between public research institutions and their spin-offs. These conditions include institutional aspects, such as the distinction between university or extra-university sectors, cognitive and market aspects, such as the distinction between life science, information sciences or nanotechnology, or organisational aspects, such as the tradition of industry-relations or of an entrepreneurial culture within a public research institute.

2.4 Operational goals

This analysis of positive and negative effects allows for reassessing spin-off activities in science policy discourse between the two radical interpretations: a profit or a threat for the academic system. In particular, the analysis will be carried out in the following steps:

First step: The partners will identify successful fields of academic spin-offs (according to national-specific circumstances) and the corresponding public research institutions (founding and interacting with successful spin-offs) (WP 1).

Second step: The interactions between spin-offs and public research institutions (as chosen in the first step) will be identified and assessed (WP 1).

Third step: At this stage the general performance quality of the public research institutions (as identified in the first step) are to be analyzed (WP 2).

Fourth step: Finally the spin-off-interactions of public research institutions will be compared with their general performance, and analysing and appraising the relevance of spin-off-activities and -interactions for the performance of public research institutions (repercussions as profit or loss for performance of institution) is carried out (WP 3 and WP 4).

Development of a typology (WP 5): This four-step analysis aims at the central question of PROKNOW: What impact the continuing relation between parenting organisations and spin-offs has for the research quality in the public sector institution? The results of this analysis should be

integrated into a typology of more or less successful parent organisations. The typology will be based on the patterns of interaction and the particular benefits and losses for parenting organisations gained by these interactions. The typology of parenting organisations is not per se a national typology. It is based upon characteristics of the interaction between the two actors that are not necessarily national-specifically biased. However, the analysis should test to what extent national-specific circumstances still indirectly determine the quality of the interaction. This test is carried out in two steps. First, a national comparison will reveal to what extent national-specific science policy arrangements have an impact on shaping the relations between spin-offs and parent organisations (WP 5). Second, a comparison of factors across national contexts (or factors overlapping several national cases), such as organisational cultures or scientific disciplines, will be used as an alternate hypothesis, to test the limits of the assumption the national-specific institutions would bear on the interactions between research institutions and spin-offs (WP 5). The development of this typology will be at the focus of an international workshop (WP 5).

Based on the systematic analyses of the gains and losses for public research institutions, the project also aims at developing a system of indicators to assess and measure the influence of spin-off-cooperation on public research institutions (WP 2).

Finally, the project's results are summarized and integrated into a final report (WP 6). This summary also includes a consideration of consequences of the project's results for science policy actors; these considerations will be summed up in a report on science policy recommendations on the national as well as the EU level (WP 6).

3. Participant list

Partic. Role*	Partic. no.	Participant name	Participant short name	Country	Date enter project	Date exit project
CO	1	Social Science Research Center Berlin (Wissenschaftszentrum Berlin für Sozialforschung)	WZB	Germany	1	36
CR	2	Fondation nationale des sciences politiques/ Observatoire Français des Conjonctures Économiques	FNSP/ OFCE/ DRIC	France	1	36
CR	3	Science and Technology Policy Research, University of Sussex	UoS	United Kingdom	1	36
CR	4	Technical Research Centre of Finland	VTT	Finland	1	36
CR	5	Universiteit Twente/ Center for Higher Education Policy Studies	UT/ CHEPS	Netherlands	1	36
CR	6	Institute of Sociology, Bulgarian Academy of Sciences	IS-BAS	Bulgaria	1	36
CR	7	Swiss Federal Institute for Environmental Science and Technology	EAWAG	Switzerland	1	36

4. Relevance to the objectives of the specific programme and/or thematic priority

The central question of PROKNOW focuses on the repercussions of academic spin-offs on the capacities of public research institutions. With this focus we aim to enhance the understanding of the cooperation between public and private institutions related to knowledge production and knowledge commercialisation.

Spin-offs can be seen as an example for the increasing relevance of scientific knowledge for the current development of European societies. The expectation is that spin-offs increase the utilisation of publicly produced knowledge and thus improve the innovation capacities of the European economy. Spin-offs serve as an important joint for the interaction between institutions of public law and commercial organisations in the process of knowledge production and knowledge transfer. At the same time, they are seen as a model organization in which new forms of knowledge production (as indicated in the concept of a mode-2 knowledge production or the triple helix innovation model) are being practiced. Analysing the interactions between spin-offs and their parent institutions, including their repercussions on the performance of public research institutions, thus implies an important contribution to a differentiated understanding of a knowledge-based society. From the perspective of sociology of knowledge, spin-offs indicate an amplification within the reference frame of science. The capacities of research institutions are not only evaluated by self-regulated mechanisms within the scientific system, but – mediated through the economic success of entrepreneurial ventures – also by the usability and commercial potential of research results within the economic system.

In several respects, PROKNOW reflects the questions raised by the Priority 7 work programme, namely by the paragraph 1.2.2. “Understanding knowledge”. It addresses for example, the question of how public and private knowledge production forms interact with each other. In particular, the rarely posed question will be raised in a way so that an increased commercial orientation of public research institutions feeds back on the development of its research capacities. What consequences do extensive spin-off activities have on the performance of the parent institutions? What do these activities mean for the self-conception of scientists in public research institutions? What is the reference system, with which they interpret their own work? Are entrepreneurial research institutions better in overcoming the linear model of knowledge production and generating new forms of integrating basic and applied research? Or do spin-off-activities rather confirm the linear way of knowledge productions, distributing the basic research tasks to the public research institutions and the applied tasks to the spin-offs? In other words: Do extensive spin-off-activities bear the risk of an increased division of labour between public institutions and private organisations? Does the enlarged reference frame of public research institutions lead to a snail-house-effect by implying a restricted understanding of research in public institutions?

The focus of our analysis lies on the meaning of the respective formal and informal arrangements with which the interactions between spin-offs and parent institutions is structured. These arrangements consist of formal and informal communication practices as well as cultural aspects (like organisational *Leitbilder*, norms and values as openness and trust). With this approach, our project concentrates upon one of three of the core concerns of the Priority 7 work programme. The first point of the work programme to be addressed is the question of how institutional and organisational conditions for the production of knowledge relate to each other and of the charac-

teristics of the knowledge itself. We assume that different institutional arrangements are producing different forms of knowledge and that this can lead to respective differences in the capacities of research organizations. The analysis aims at assessing the forms of interaction between spin-offs and their parent institutions, in particular with respect to the positive and negative effects for the parent institutions. The results of this analysis will lead to practical recommendations for the management from scientific organisations. Thus, the project offers research institutions better opportunities to increase their potential for reflexive self-perception.

Secondly, PROKNOW contributes to an extended understanding of the chances and risks of collaborations between publicly and privately organised research activities. Spin-offs also represent a form of privatisation of public knowledge. By examining the positive and negative feedback of spin-offs on the public research institutions, PROKNOW also critically tests the limits of a productive engagement of public institutions in entrepreneurial activities. The project thus explores the border that a public research institution should not trespass if it wants to remain an institution for the benefit of the public.

The third point PROKNOW refers to is the question of the relevance of different knowledge types for the innovation capacities of institutions. A public institution engaging in spin-off activities does not only initiate a transfer of codified knowledge as in the licensing of patent rights. Another important component of spin-off activities is the transfer of personal and often tacit knowledge, because spin-offs often include the transfer of individual scientists from public institutions to private enterprises. Therefore, the analysis of the interactions between spin-offs and parent institutions also offers insights into the characteristics and the social and economic relevance of tacit knowledge. At the same time, the project offers the chance to identify forms of interaction between public and private partners that allow for a further utilisation of tacit knowledge forms within the parenting institution.

5. Potential Impact

5.1 Contribution to standards

The present project also contributes to a sound scientific basis for evaluating spin-off activities at the level of research institutions. It therefore joins the recent efforts in standardizing evaluation of research and education activity at a European level. Based upon the proposed multi-national analysis, the project will define the above mentioned set of “good practices” for spin-off activities of public research institutions. In a second step, this set of good practices will be formalized into a framework that can be used for the further development and refinement of indicators of science-industry relations (WP 6).

5.2 Contribution to policy developments: Strategic benefits at institutional, national and EU levels

PROKNOW presents an innovative view on processes of knowledge production at the interface of public research institutions and private enterprises, thus enhancing the theoretical understanding as well as the policies of evaluation and support for these forms of knowledge production. The strategic impact of the project is based upon the cognition that in most European states prevailing policies to support academic spin-offs, a crucial mediator between public and private institutions of knowledge production, have narrowly focused on economic goals (technology transfer and job creation) and that recent research has shown the limited success of this approach. Other benefits of spin-off activities, for example located within the public research system, have hardly been examined and will be the main research focuses of this project. Furthermore, the project aims at an encompassing examination of spin-off policies, not only focusing on potential benefits, but also considering threats for parenting institutions.

In general, the strategic benefit of PROKNOW consists of a comprehensive understanding of the effects of spin-off activities on national innovation systems. In particular, we will propose a “second generation” of policies for evaluating and promoting spin-off activities, more resonant with a wider framework of science and innovation policy goals. Against this background, we expect impacts at three levels: research institutions, national science policy and structuring the emergent European Research Area (ERA):

a) PROKNOW’s results will help *public research institutions* to better understanding the role and importance as well as the risks of spin-off processes for their own core competencies. These insights will transcend the comparably narrow, market-oriented policies for spin-off promotion currently prevalent through the analysis of the profits and risks of entrepreneurial activities for the parenting institutions. Thus, the project will specify the instruments for an integrated management of the interface of public research institutions and private knowledge producers: such as contract research, patenting, co-operations with industry, shared labour markets, job rotations, continued education and so on. The results of the project will enable public research institutions to better decide to what extend spin-offs are relevant to them as a long term source of funding, for the networking with actors outside academia, for the development of new job opportunities for their own staff, or as mere marketing and communication instruments. The project aims at elaborating the different functionalities of spin-offs for their parenting institutions and to relate

these functions to the institutes' structural characteristics. Based on these results, more encompassing Management guidelines for research institutions will be elaborated within this project (WP 6; D 20).

b) On the level of *national science policies* PROKNOW will broaden knowledge about adequate instruments to evaluate and promote academic spin-offs. Spin-offs are not always a very effective means for directly strengthening the innovativeness and competitiveness of a national economy. Neither will labour market effects be very important. However, indirect effects (such as impacts on public research institutions studied in PROKNOW) might be considerable and have been overlooked in recent research. In order to develop tailor made approaches, the project will suggest a number of concrete policy measures geared towards specific forms of spin-offs (WP 5; D 18).

c) Also, the ERA should profit from the results of PROKNOW. There is a considerable added value by carrying out this project on an EU level. Current research suggests a high diversity of spin-off activities at the level of the member states. By setting up a comparative framework, the relevance of different institutional settings may be compared and different development paths for institutionalizing knowledge and technology transfer might be identified. Based upon this comparison the project will define a set of "good practices" for spin-off activities reflecting the needs of public research institutions (the set of "good practices" is part of the above mentioned Management guidelines for research institutions; WP 6, D 20). This set of good practices will be valid for the whole ERA, including research systems beyond the nations examined in the case studies of this project. By analysing different national styles of spin-off support, the project will facilitate knowledge transfer processes between the member states of the EU. Also on the European level, the project will answer the question whether the different national styles of spin-off activities are converging, and to what extent they are building a "European" type of spin-off activities, different from the American model for entrepreneurial universities (WP 5).

5.3 Risk assessment and related communication strategy

Not relevant.

6. Project management and exploitation/dissemination plans

6.1 Project management

The PROKNOW project will be coordinated by the Social Science Research Center Berlin (Wissenschaftszentrum Berlin für Sozialforschung, WZB), which will also be responsible for the operational management and the research supervision as well as the communication and negotiation with the European Commission. The persons in charge of these tasks will be Dagmar Simon and Andreas Knie. The management of the project essentially operates on two levels of responsibility: the coordination of the entire project, for the itemized work packages and for the transfer of the project results into the public. A management system on a shared responsibility basis will enable effective monitoring of the progress on the project work plan and the compliance of the schedule and deliverable dates.

6.1.1 Management structure

Apart from the national coordination structures to be organised by the respective national partners, two instruments are planned for the management of PROKNOW on an international level: first the Steering Committee, and second the Coordinator affiliated to the WZB.

a) Steering Committee: The communication and decision-making process among the work packages will be conducted by the Coordinator in conjunction the persons in charge of each partner. In the following, we refer to this body as the “Steering Committee”. The Steering Committee is the main decision-making body responsible for both the project’s research progress and its management among the partners of the consortium. It will facilitate the communication between different work packages and ensure the compatibility of the individual research packages. It will pay special attention to the communication and feedback among the work packages. The Steering Committee will hold regular meetings on two occasions: first at each of the three international workshops (Kick-off workshop, D 1; European workshop, D 17; International research conference, D 22); second after the conclusion of each work package in order to review the results of the previous work package, to decide upon upcoming work and to plan the future work packages. Insofar as we have defined the implementation of the work packages congruent for every participant of PROKNOW, each partner is responsible for its own administrative and research management within the work packages 1 up to WP 6. The members of the Steering Committee make use of their respective networks to ensure a wide dissemination of the research results. The Steering Committee is constituted by:

- Dagmar Simon, Andreas Knie, WZB, coordinators
- Michel Quéré, FNSP/OFCE/DRIC
- Martin Meyer, UoS
- Pirjo Kutinlahti, VTT
- Jürgen Enders, UT/CHEPS
- Ivan Tchalakov, IS-BAS
- Bernhard Truffer, EAWAG

b) Coordinator: The Coordinator (Dagmar Simon, Andreas Knie, WZB) pays particular attention to the fulfilment of formal criteria, the execution of financial affairs, the coordination all technical activities, the organisation of the milestones of the project and of a web based interaction platform for the project partners. The Coordinator will take the ascertainment of the single work packages in trade-off with the project partners and observes the work packages' implementation with regards to quality and schedule. If necessary, the Coordinator sets a target to complete the projects' goals in agreement with the partners. Moreover, the Coordinator's task includes the monitoring of the deliverables, the aggregation of the national reports for the partners, and the dissemination of results and decisions derived from meetings of the Steering Committee as well as from the project's workshops and conferences.

The Coordinator, in cooperation with the Steering Committee, is responsible for the organisation of the three international workshops/conferences of PROKNOW: the first of which (Kick-off workshop) will take place in Nice, France (WP 1; D 1), the second (European workshop) in Sofia, Bulgaria (WP 5; D 17), and the final (International research conference) in Brussels, Belgium (WP 6; D 22). Each of the local hosts will be responsible for the technical implementation of its workshop/conference. The workshops will be planned, carried out and evaluated by the Coordinator with support of contractor 2, OFRE/DRIC. Before the second workshop and the final conference, the work package members will submit an intermediate report on the progress of their research (WP 4; D 15). The workshops aim at discussing, adjusting and developing the results of the work packages. At the end of the project, the Coordinator will integrate the results of all members into the final report (WP 6; D 23). All reports will be publicly available on a PROKNOW-website on the Internet or printed on request. To guarantee good scientific practice, the Coordinator, together with the Steering Committee, also arranges an agreement with all project partners on the protection of the intellectual property rights within the project.

Expected results and deliverables of the Coordinator's activities are:

- Contract with the European Commission
- Consortium agreement on members, tasks and function of the Steering Committee
- Organising the communication structure of the project and the knowledge exchange
- Organising the meetings of the Steering Committee
- Organising the international workshops/conferences (D 1, D 17, D 22)
- Project presentation (D 7)
- Providing the Internal Report(s) (D 15)
- Providing the final report (D 23)
- Formulation of political recommendations for the European commission and national science politicians (D 20).

c) Advisors for scientific supervision: To strengthen the dissemination part of the project, to integrate policy partners early in the project, and to enable a permanent scientific supervision of the project and the coordinator's activities, PROKNOW will be supervised by three advisors for scientific supervision: Dr Georg Licht, Center for European Economic Research, Mannheim (ZEW), Department of Industrial Economics and International Management; Peter Hassenbach, Referat 614, Biological Research and Technology, Federal Ministry for Education and Research, Germany, and Dipl. Ing. Reinhard Hüning, BwFuhrparkService GmbH, Troisdorf, Germany.

6.1.2 Administrative management

The administrative management of the PROKNOW project will be carried out by the WZB. As a large social science research institute, the WZB has extensive experience in the management of international research programmes, including projects of European Framework Programmes. With this institutional affiliation, the Coordinator will profit from the support of a number of researchers as well as from the WZB's administration department.

6.2 Plan for using and disseminating knowledge

The results will be disseminated at different levels to the relevant stakeholders concerned with spin-off activities. First and foremost, we will intensively collaborate with those research institutes selected as case studies in the partner countries. There will be a strong interaction with the directorate of these institutes, transfer organizations, individual departments as well as with research groups and actual spin-offs. We plan to tightly involve these parties into the analysis and to organize workshops at the level of these institutes in order to discuss hypotheses, findings and suggested improvements on their policies (WP 4). Research institutions will be presented the specific chances and risks that entrepreneurial activities might bring for their own institution. This reflection might lead to a new understanding and awareness of public research institutions.

At the national level, we plan to organize workshops with all the research institutes involved in our analysis (one workshop per consortium partner) as well as with transfer institutions at a national level and with science policy officials and related ministries (WP 4; D 13). At this occasion, we will present the results of the different case studies and evaluate the presently available promotional policies, the attributed potentialities (as present in the public discourse about spin-off activities), and the potential for more strongly focus on hitherto underdeveloped functionalities. These national workshops serve in particulars for discussing and developing guidelines for spin-off promotion in accordance to the perspective of parenting research institutes (WP 4; D 15).

At the level of the EU, we will organize a European workshop with officials from science policy institutions, researchers of science studies and DG Research in order to present the overall findings of the project and to discuss and further development of a European strategy for spin-off promotion. It will be essential to invite experts on the US situation for this European Workshop in order to discuss mid to long term perspectives of the ERA with regard to spin-off activity (WP 5; D 17). One of the practical goals of the workshop is the formulation and mutual adoption of a "Management Guideline" addressing public research institutions and science policy actors in a European-wide context. The Management Guideline allows the actors of the ERA to institutionalize a set of good practices within their national science policy systems (WP 6; D 20).

Finally, PROKNOW plans to organize an International research conference inviting academics active in spin-off research in Europe and world wide in order to present our findings and to elaborate an agenda for future research on the relation between public research institutions and spin-offs (WP 6; D 22).

At the beginning of WP 1 we will post a PROKNOW-website on the Internet as instrument for communicating and disseminating the contents of the project.

6.3 Raising public participation and awareness

The project addresses several groups of actors in politics and society. First of all, PROKNOW is designed to address actors in science policy and in the management of public research institutions. PROKNOW will propose a “second”, reflexive generation of policies for evaluating and promoting spin-off activities, more resonant with a wider framework of science and innovation policy goals. Against this background, we will closely collaborate with research institutions and representatives of national science policy authorities.

By addressing those actors, PROKNOW is trying to convince them and the relevant institutions that the current interaction between public research institutions and academic spin-offs needs to be reflected in a more radical and critical sense. The continuous engagement of public research institutions in entrepreneurial activities poses a fundamental problem for our understanding of science policy mechanisms. Science policy authorities have to face the question whether the current assessment and evaluation procedures, moreover the governance of scientific institutions itself, is still appropriate – because traditional models still assume a divide between research and practice, between non-profit research and commercialized entrepreneurship – a division that is currently undermined by the entrepreneurial tendencies in science. A radically new understanding of the scientific process of knowledge production would have to include successful entrepreneurial activities; research in this sense would stretch from projects in basic research to efforts for producing a pilot series. Political and academic actors have to face the question whether today in order to be successful, scientific institutions would increasingly have to operate as full range suppliers dealing with the whole value chain of knowledge.

Further disseminating steps will be taken by publishing articles around the various workshops and conferences in newspapers, publication media of administration departments of universities and institutes and via the PROKNOW-website.

7. Workplan– for whole duration of the project

7.1 Introduction – general description and milestones

7.1.1 Structure of the workplan: criteria for selection of case studies

These aims of PROKNOW will be achieved by *organisational case studies on parent institutions of spin-offs in seven European countries*, including internal structure and practice as well as some parts of the organisational environment like organisational fields of the organisations. In terms of research sectors the project will concentrate the analysis on life sciences, information sciences and nanotechnology. Each case of the project follows the same structure. *The cases consist of the parent institutions and the cluster of successful spin-off firms founded by the parent institutions.*

The number of organisations (parent institutions) to be analyzed in each participating country of PROKNOW differs according to the size of the organisations. In general, the standard number of organisations should be between 3 to 7 cases. If possible the national samples should include universities and extra-university institutions in order to compare different forms of public sector research organisations.

Each case study *focuses both on the performance of the parent institutions and the patterns of interaction with their fostered spin-off firms.* Based on this analysis of the interaction, the relevance of the quality of interactions for the performance of public science institutions will be assessed. These analyses aim at identifying different patterns of interaction between parent institutions and their spin-offs and at building up typologies of more or less successful interaction practices.

7.1.2 Structure of the workplan: review of research on national systems of innovation

The case studies are arranged on a national basis. The following review of research on national innovation systems will be used by the Consortium partners as starting-point assumptions for the planned case study analysis.

Definition of National Innovation Systems

The National Innovation Systems (NIS) approach represents an analytical framework for technology- and information-based innovation processes stressing the contribution of people, enterprises and institutions. In a post-schumpetrian sense, the NIS approach understands innovation as a complex set of relationships, interactions and knowledge transfers between actors (i.e. people, enterprises and institutions, including universities and research institutions) in a system. In the analytical framework of PROKNOW, the flow of information and knowledge (also via personnel mobility) between enterprises, universities and public research institutes is seen as particularly crucial for the understanding of NIS. Based upon a review of the relevant NIS research, the following paragraphs outline the basic characteristics of the national innovation systems of the seven countries examined in the PROKNOW project.

Germany

In Germany, the public research system is divided in two sectors, both similar in size: the university and the extra-university sector. The predominant part of the university sector is decentralized and set under the authority of the Bundeslaender. The extra-university sector consists of a heterogeneous setting of basic and applied research institutions, including the Max-Planck-Society, the Fraunhofer-Gesellschaft, the Helmholtz Association of National Research Centres and the Leibniz- Association. Under these institutional conditions, regional differences (most importantly the difference between the old Bundeslaender in West Germany and the new Bundeslaender in East Germany, but also the division between the north and the south of the country) as well as the institutional pillarization of the public research sector is traditionally strong in the German NIS. In the private sector, the innovation system is dominated by the strong export-oriented industrial sector and its high- and advanced technological research activities (often delegated to SME's). The private sector innovation system is highly intensive (for example with an internationally high rate of patents) and focused on the life science sector, the automobile industry and information and communication technologies.

France

The public sector part of the French NIS is marked by an institutional divide between a university and a non-university research system, similar to the pillarized research system in Germany. Essentially, the latter includes the centralized CNRS, research units from the Grandes Ecoles and thematic-oriented research institutions (such as CEA, INRA, INRIA, INSERM etc.). The differences in the regulation of these public research institutions are reflected in a variety of types of science-industry relations and a comparable variety of types of academic spin-offs. Moreover, academic spin-offs cannot count on an established entrepreneurial culture at public institutions, due to historical reasons. For a long time, France was characterized by a philosophy of encouraging national industrial champions (the 'Grands Programmes' philosophy) underlined by the overlapping involvement of French engineers both in the government administration and the management of large corporations. As such, entrepreneurship in the traditional form (academic as well as non-academic) is rather weak in France, and the research system as a whole is quite disconnected from the industry. This inheritance has produced a crucial divide between the world of science and the world of industry – a divide still operating, despite renewed policy efforts to bridge the rift. A series of public measures are emerging with the aim of encouraging the mobility of individuals (academic people) from public research institutions towards industry, including a sustainable effort to support the development of science-parks in the vicinity of most French universities.

United Kingdom

In Britain, the public research sector is mainly dominated by the universities. Universities and associated bodies receive around 45 Percent of the Government's budget for science, engineering and technology (2003/04), whereas defence (and defence related R&D) receives 30 Percent (still an internationally high figure) and contract research in government departments gets 25 Percent. Government policy on research is centralized in the Office of Science and Technology, which is part of the Department of Trade and Industry and cooperates with the Research Councils for allocating funding. Thus, Britain has a long tradition in promoting entrepreneurial activities at the universities; reaching back to the change in laws on intellectual property rights in 1985, enabling the universities to commercialize their intellectual properties. The Labour government in particular has tried to promote an "entrepreneurial culture" at universities and research institutions; thus

a comparably big part of policy instruments have been on an educational level. Initiatives to promote the interactions between science and industry and the founding of academic spin-offs are therefore numerous.

Finland

In Finland, the public research sector follows the dual model. Universities are responsible for higher education and basic research whereas various state-owned research institutes carry out applied research. The latter includes institutes as the VTT Technical Research Centre of Finland, Agrifood Research Finland and the Geological Survey of Finland. Since the mid 1990s, universities and public research organizations have been increasingly seen as an essential catalyst of economic development and competitiveness-based knowledge and innovation. The two most important ministries are the Ministry of Education and the Ministry of Trade and Industry. In this context, universities and other public research organizations are being pushed to redefine their goals and missions. Furthermore, a number of public funding and incubator schemes have been launched and the new services for commercialising academic research and generating academic spin-offs are being strengthened. Industrial R&D is dominated by the traditionally important forest industry (with clusters of chemical industries) and by the growing sector of high tech (mainly information and communication technology) industries. The VTT acts as a bridging institution between research activities in the industrial and the university sector.

Netherlands

The Netherlands have a long tradition in entrepreneurial activities within the public research system. The Technology Foundation (STW) was, for example, already founded in 1981 with a two-fold mission: To finance and stimulate high-quality scientific research, and to promote the utilisation of results of research. Among the various programs implemented by STW to fulfil these goals, the Open Technology Program (OTP) is the most important as an instrument stimulating technology transfer via patent applications and spin-offs. In the 1990s, the Interdepartementale Commissie Economische Structuurversterking (ICES) initiated various investment impulses in the knowledge infrastructure known as KIS-1 and 2, and the more recent BSIK-program, The BSIK program has several objectives, the most important being to stimulate fundamentally strategic and industrial research, and to initiate long-term research collaborations and networks between public and private research organisations. Other important programs and initiatives include the Innovation subsidy (IS) for collaboration projects, the Innovation Oriented Research Programs (IOPs), and the Leading Technological Institutes (TTIs), established in 1997, which form largely virtual hubs between public research institutes, universities and the business sector. Programs that concern stimulating entrepreneurship among scientists' more specifically include a number of TechnoStarter and TechnoPartner initiatives as well as another interesting Dutch policy initiative, the Valorisation Grant, after an example of the US Small Business Innovation Research program.

Switzerland

The Swiss Science and Technology system is marked by its high productivity. Switzerland is regularly reported among the top five or top three worldwide with regard scientific publications, citations and patents per capita. Its federal technical university (ETH) ranks among the 20 most productive Universities of the world and is one of the leading European research institutes. However, the past 15 years of economic history have been marked by a virtual stagnation. The traditionally strong link between the technical universities and Swiss industry has been weakened

over the years. This has been interpreted as a sign for need to improve knowledge transfer between universities and industry.

As a consequence a broad range of activities have been set up in order to foster collaborative research in general and for promoting academic spin offs in particular. In the latter realm about 37 centres for technology transfer are currently operating in Universities, in the ETH domain and at the Universities of applied sciences (Fachhochschulen). Furthermore, student courses on topics like entrepreneurship, business plan development, fundraising etc have been strongly reinforced over the past few years. In 2003 an association of 25 transfer institutions has been founded under the name of the Swiss Technology Transfer Association (swiTT). Furthermore considerable energy and resources have been invested to set up collaborative research project between academia and industry through the Commission on Technology and Innovation (KTI).

Bulgaria

With the collapse of the communist era and its centralized system of scientific and technological research in the 1990s, the Bulgarian research potential was preserved in the institutes of Bulgarian academy of sciences and the universities, which in the early 1990s established themselves as autonomous institutions. However, their activity endured hard times because of lowered government funding, lack of industrial demand and ageing staff. With the dismantling of the DSO, the socialist industrial corporations for research and development, the previous science-industry relationships were nearly completely destroyed. Often, the integration of Bulgarian research institutions within European scientific and R&D networks was the only way that allowed these institutions in the 1990s to retain their human potential and research infrastructure. However, 1990s were also a period of massive ‘unwitting’ creation of spin-offs, since number of talented researchers established their private high-tech ventures, some of them willing to maintaining contacts with their parent research institutions. Recent years were marked by several national policy initiatives, inspired by the EU’s Lisbon strategy, aiming at improving the country’s science and research base and promoting the collaboration with newly emerging innovative businesses. It was finally recognized that innovative potential of the country has degraded significantly. The destruction of the relationships between universities and public research laboratories are considered as important setback, inherited from the transition period. In the late 2003 new Law for scientific research was passed in the Parliament, which established National Fund for Scientific research making special provisions for improving science-industry relationship.

7.1.3 Structure of the workplan: selection of case studies according to nations and consortium partners

Based upon the review of research on the respective national systems of innovation (above, 7.1.2), each series of national case studies will be examined by the respective national partner of the Consortium. A review of the research on national innovation systems will be used by the Consortium partners as starting-point assumptions for the planned analysis (see 7.1.2 Review of research on national innovation systems).

Case studies in Germany

Consortium partner: WBZ (coordinator)

Work packages: WP 1 – WP 6

Person-months: 73 person-months incl. 11 person-months management tasks as Coordinator

In Germany, the entrepreneurial activities of public research institutions and the national policies supporting academic spin-offs are divided according to the two sectors of the public research system (the main part of spin-offs is initiated by universities, and a smaller but important part refers to the extra-university sector consisting of the Max-Planck-Society, the Fraunhofer-Gesellschaft, the Helmholtz-Association and the Leibniz-Society), the selection of case studies is structured along the institutional divisions but also along regional differences, most importantly the difference between old West German parts of the country and the New Bundeslaender.

We will examine five case studies, involving both university and extra-university institutions and cases from both regions, old and new Bundeslaender:

- a) University of Goettingen
- b) Technical University of Berlin
- c) Max-Planck-Institute (MPI) of Biochemistry (Martinsried)
- d) Forschungszentrum Rossendorf (Research Center Rossendorf)
- e) German Aerospace Center (DLR) (Deutsches Zentrum für Luft- und Raumfahrt, Cologne)

Case studies in France

Consortium partner: FNSP/OFCE/DRIC

Work packages: WP 1 – WP 6

Person-months: 54 person-month including around 10 person-months for scientific support of Coordinator. The person-months of the French partner include the regular work packages of each partner and an added workload for the general scientific support of the Coordinator (WZB), including the scientific preparation of the workshops in WP 1, 5, and 6 and an active involvement in the preparation of the final report. Due to the scientific qualifications of the French partner in the research area of PROKNOW, this partner has been chosen for these specific supporting tasks. The work related to this specific task is legitimating the extraordinary high amount of person-months of the French partner (compared to the other partners).

A similarity of France, as regards the German case, lies in the institutional divide of the public research sector between a university and a non-university research system. Essentially, the latter includes the CNRS, research units from the Grandes Ecoles and thematic-oriented research institutions (such as CEA, INRA, INRIA, INSERM etc.). As a consequence, the variety of academic spin-offs is considerable, and results from different habits and diverse opportunities stemming from differences in the regulation of these research institutions. Moreover, academic spin-offs cannot count on an established entrepreneurial culture at public institutions, due to historical reasons. For a long time, France was characterized by a philosophy of encouraging national industrial champions (the ‘Grands Programmes’ philosophy) underlined by the overlapping involvement of French engineers both in the government administration and the management of large corporations. As such, entrepreneurship in the traditional form (academic as well as non-academic) is rather weak in France, and the research system as a whole is quite disconnected from the industry. This inheritance has produced a crucial divide between the world of science and the world of industry – a divide still operating, despite renewed policy efforts to bridge the rift. A series of public measures are emerging with the aim of encouraging the mobility of individuals (academic people) from public research institutions towards industry, including a sus-

tainable effort to support the development of science-parks in the vicinity of most French universities.

In order to cover the landscape of different public and public/private pillars of the French research system, we select the following four case studies:

- a) “Département des Sciences de l’Ingénieur” (CNRS)
- b) University of Nice and Sophia-Antipolis
- c) CEA (Commissariat à L’Energie Atomique), Cadarache
- d) CEA (Commissariat à L’Energie Atomique), Grenoble

Case studies in the United Kingdom

Consortium partner: UoS

Work packages: WP 1 – WP 6

Person-months: 20 person-months

The British case study will be twofold. The national case study will begin with mapping out the relevant aspects of the British research system. This includes outlining the national framework and USO-relevant aspects of the UK innovation system. Also the study will report on previous work on UK university spin-outs: the UK has been a test bed for researchers interested in USO’s so there is already a considerable literature on the UK situation to draw on. Special attention will be paid to whether, and if so, how university spin-outs are included in performance indicators of universities. This is an increasingly important area as government and university stakeholders are exploring ways as to how to measure and benchmark of what is known as ‘third-stream’ activities.

To explore these issues further we suggest as a second step to carry out a small number of in-depth case studies of universities’ external relationships with non-academic actors and ways in which faculty and university try to exploit their research results in a commercial context. The survey would be web-based and explore the importance of a variety of types ranging from transmission (this is contacting firms and informing them of potentially relevant research) to commercialisation in the narrow sense, including university spin-outs. Another aspect of the research will explore the relationships that university spin-outs have with their parent organisation. We would focus on a range of nanotechnology-related start-ups. In a recent study we identified at least 120 UK companies exploring or exploiting aspects of nanotechnology. In this project we aim to extend this knowledge base and compile information on whether they have maintained links with their university and, if so, which kinds or forms of linkage and exchange specifically.

Previous work within the framework of the Gatsby Fellowship has allowed us to build up a network of relationships with a varied and diverse range of universities and transfer offices in the UK, including:

- a) Cambridge University and St John’s Innovation Centre
- b) The SET² Consortium, incl. the Universities of Surrey, Southampton, Bath and Bristol
- c) Sussex University, which houses SInC, the Sussex Innovation Centre
- d) Loughborough University of Technology

- e) Oxford University and Isis Innovation
- f) Imperial College London and its Entrepreneurship Centre
- g) University College London and its technology transfer operations

We aim to select at least four universities from the above. Most likely, we are to include Cambridge as well as one or two members of the SET² Consortium and Sussex University. Furthermore, we aim to select one institute of technology and another major research-intensive university to cover the spectrum of UK universities adequately.

Case studies in Finland

Consortium partner: VTT

Work packages: WP 1 – WP 6

Person-months: 32 person-months

In Finland, the public research sector follows the dual model. Universities are responsible for higher education and basic research whereas various state-owned research institutes carry out applied research. The latter includes institutes as the Technical Research Centre of Finland, Agri-food Research Finland¹ and the Geological Survey of Finland. Since the mid 1990s, universities and public research organizations have been increasingly seen as an essential catalyst of economic development and competitiveness-based knowledge and innovation. In this context, universities and other public research organizations are being pushed to redefine their goals and missions. Furthermore, a number of public funding and incubator schemes have been launched and the new services for commercialising academic research and generating academic spin-offs are being strengthened.

In order to broadly cover the diversified Finnish innovation system and the various university and governmental research institute frameworks, we will select the following four institutional cases for our study:

- a) Technical Research Centre of Finland (VTT)
- b) Tampere University of Technology *This case will mainly be investigated as secondary analytical study.*
- c) University of Art and Design
- d) University of Helsinki

Case studies in the Netherlands

Consortium partner: UT/CHEPS

Work packages: WP 1 – WP 6

Person-months: 44 person-months

The Netherlands have a long tradition in entrepreneurial activities within the public research system. Research on spin-offs from Dutch universities and (semi-)public research institutions has,

¹ MTT case will be excluded from the study because of the fact that the number of academic spin-offs is very few for analytical purposes.

like in many other countries, concentrated on a) the success and failure of policy initiatives to stimulate technology and knowledge transfer, and b) the economic and technological relevance of spin-offs. Recently interest has grown to study university cultures and the repercussions of spin-off activities on public research institutions. On the one hand, discussions stress the lack of entrepreneurial spirit among scientists as a potential barrier for science-industry knowledge exchange in general and spin-offs more specifically. On the other hand, unintended consequences of scientists' entrepreneurship are more frequently heard of, such as conflicts in the incentive structures of scientific rewards and shifts in the agenda from fundamental research to more applied research. Such discussion is so far largely based on literature from the US but will be reflected in the Dutch case studies.

In order to cover the landscape of spin-offs related to the different pillars of the public and public/private pillars of the Dutch research system, we suggest selecting the following five cases for our study:

- a) University of Twente
- b) University of Amsterdam
- c) Telematica Institute (TI) in Enschede
- d) Netherlands Organisation for Applied Scientific Research (TNO)
- e) National Research Institute for Mathematics and Computer Science (CWI)

Case studies in Bulgaria

Consortium partner: IS-BAS

Work packages: WP 1 – WP 6

Person-months: 20 person-months

The Bulgarian research system is structured along four axes: a) the universities against the research institutes of the Academy of Sciences and the industrial applied research institutes; b) the classical (universal) university against the applied higher education institutions; c) the public vs. private universities (private universities emerged in the 1990s); d) the regional research system in the capital Sofia vs. other regional centres of research institutions; the tension between the capital and other regions is a heritage from the over-centralized socialist society. Based upon this structure, the project proposes to choose at least six institutions to be examined in three case studies:

- a) Two institutes from the Academy of Sciences, Sofia: (Mathematical Institute; Institute of Parallel Processing; Laboratory of Optical Storage of Information, etc)
- b) Three university institutes from the Plovdiv region: (Plovdiv University, Agricultural University and the Higher Institute of Food Industry)
- c) One applied research institute: the Institute of Roses (Kazunlak, Plovdiv region) or the Research Center in Agro-biotechnology (Sofia); the New Bulgarian University in Sofia

Case studies in Switzerland

Consortium partner: EAWAG

Work packages: WP 1 – WP 6

Person-months: 23 person-months

Switzerland is an interesting case for comparative purposes because of its high level academic system and its recent efforts in promoting collaborative research in general and spin off activity in particular. It thus teams up with the Scandinavian cases and the Dutch case. It is a small but highly competitive university system which is confronted with a highly internationally oriented export industry on the one hand and a rather protected backward oriented domestic sector on the other hand. Spin off activity is therefore likely to be highly diversified with regard to these two segments. Based on this analysis we propose to select our case studies from the following pillars of the Swiss University system:

- Centre for Science and Technology Studies (CEST)
- ETH Zürich and ETH Lausanne
- University of St. Gallen
- CERN (European Organisation for Nuclear Research)

7.1.4 Methodology

The overall methodology of all case studies is based upon qualitative research instruments. In particular, the following instruments of analysis are intended:

- expert interviews
- document analysis
- panel discussions

Depending on the step and stage of the analysis, these instruments can be combined in different ways. A qualitative research design typically renounces an *ex ante* hypothesizing process; it rather generates its hypothesis in interaction with the empirical findings, for example as in the “grounded theory” approach. Such a conceptual openness is recommended particularly for studies in underresearched areas, such as the one PROKNOW is focusing on. At the same time, the complexity of the project demands that with the participation of researchers from different countries and academic cultures a certain standardization of the research methods is defined, in order to guarantee a consistent and mutual proceeding in all stages of the project. PROKNOW aims at resolving this problem through a semi-structured procedure. In practice, the knowledge of all partners of PROKNOW will be fixed in consensually written Guidelines, which shall structure each analytical step by organising international meetings in order to build a consensus over the procedure. The application of this Guideline is compulsory and will be monitored by the Steering Committee and by the Coordinator.

7.1.5 Description of workplan and milestones

The following description of the workplan and its milestones refers to the list of work packages (WP, see 7.4.), the list of deliverables (D, see 7.5.), and the list of Management of the Consortium activities (M; see end of this sub-chapter).

WP 1: months 1-6

The activities will begin with a Kick-off workshop in Nice, France, organised by the Consortium Management in collaboration with the French project partner (WP 1; M 1), and be attended by both Advisors for scientific supervision. At this workshop the Steering Committee will be constituted (D1; M 2). Also, the main organisational parameters for the implementation of PROKNOW will be decided by the Steering Committee (upon the recommendation of the Consortium Management): this includes the arrangement of an agreement with the project partners on the protection of intellectual property rights within PROKNOW (M 3), the organisation of a Consortium agreement on members, tasks and function of the Steering Committee (M 4), the organisation of the communication structure of the project and the knowledge exchange (M 5) and the installation of the PROKNOW website (M 6).

The main task of the Kick-off workshop is the preparation and organisation of the first work package (WP 1; to be achieved by month 6). The work package includes the following deliverables (D 4): Description and typology of successful academic spin-offs and of parent organisations (on a national level, according to the parameters set at the Kick-off workshop); final denotation of the organisational case studies (on a national level, according to preliminary choice of case studies made at the Kick-off workshop). As part of this research, the partners of PROKNOW will identify successful fields of academic spin-offs, set within their national and reflect the national-specific circumstances. “Successful” spin-offs are defined as enterprises that prove to have survived under market conditions at least on a mid-term basis (e.g. three years). The dominant sectors for spin-off-activities, particularly life sciences and information sciences, will be reflected in all national part of PROKNOW studies. Thus, the project designs a multi-national framework that will enable the collaborators to draw cross-country comparisons and conclusions on a European level. Based upon the identification of successful fields of academic spin-offs, the project then identifies the corresponding public research institutions parenting and collaborating with these spin-offs.

The research related to this deliverable (D 4) will be done in the months 1-6 and will be summarized by the Consortium partners in a Synthesis report to be submitted in month 6 to the Steering Committee for a review process (D 5). The Steering Committee will review the reports in month 6 at its second meeting (M 7). At this meeting, the Steering Committee will also specify the guidelines for the second work package (D 6) and project presentation (D 7).

WP 2: months 7-9

The second work package will provide a performance analysis for the case studies chosen in the WP 1. The partners of PROKNOW will analyse the general quality of the performance of the public research institutions examined (D 8). This data provides the point of reference with which the interactions between public and private actors can be compared. Only by this comparison, the effects and repercussions of spin-offs on public research institutions can be adequately appraised. To analyse the institutional performance, PROKNOW draws on instruments and models developed by the evaluation research and evaluation practices – a field with a long tradition on the level of individual countries and the European Union. Of particular relevance are generalised quantitative indicators for the comparative assessment of research institutes and their respective research missions, for example national evaluation standards developed in some countries. The project reflects on this discussion, also considering the problems and limitations of ranking and rating assessments. As a pragmatic starting point, the project uses a number of common indica-

tors for appraising the performance of research institutions. Quantitative indicators for the performance of a research institution to be considered are:

- Amount of research budget;
- Amount of external, third-party funds (beyond basic, institutional funding);
- Publications (refereed and non-refereed journals);
- Regional and international co-operations (research clusters).

Nevertheless, qualitative indicators might be used as well to appraise the performance of the research institution, namely:

- Profile and coherence of research focus;
- Practical relevance of research;
- Attractiveness to “customers”;
- Service functions;
- Career system;
- Quality of teaching;
- Exploitation and technology transfer;
- Prizes and awards (e.g. patent activities).

The research related to this work package (WP 2) will be summarized by the Consortium partners in a report to be submitted in month 9 to the Steering Committee for a review process (D 8). The Steering Committee will review the reports in month 9 at its third meeting (M 8). At this meeting, the Steering Committee will also specify the guidelines for the third work package (D 9). The guidelines will lead the Consortium partners through the work package 3. Also, the guidelines for the panel discussions, for the interviews and for all the analytical steps for the data analysis will be identified and defined concordantly on the third meeting of the Steering Committee (M 9).

WP 3: months 10-17

This third work package will provide the analysis of the patterns of interaction between the parental institutions and their spin-offs. This analysis aims at identifying and assessing the effects and repercussions of spin-offs on their parenting institutions; it is an essential precondition for the ensuing development of hypotheses in WP 4. The Steering Committee will provide a State of the art report (D 10) at the beginning of this work package.

Based on panel discussion and expert interviews at the level of the selected individual parent institutions in all countries, the Consortium partners will provide preliminary hypotheses on the coherence of patterns of interaction and the policies of the institutes (D 11). Patterns of interaction between research institutes, universities and spin-offs are not mere linear transfer processes. These interactive relationships are influenced by many heterogeneous aspects. Within the framework of the 2002 survey “Knowledge as a Cross-Over Project” we succeeded in designing a typing that enabled the differentiation of two dimensions: the intensity of the knowledge exchange (high vs. low) and the reflux to the research institute (synergistic vs. conflict oriented). Our aim is to further develop this typing against the background of different national characteristics.

In this respect, a variety of possible interaction forms is of interest:

- Formal agreements (licensing contracts; cooperation contracts etc.);
- Financial earnings from co-operations (licence fees etc.);
- Informal interactions (alumni circles, informal networks, etc.);
- Organisations and policies to support spin-offs like “transfer offices”, advisory services, incubators, combination between university campuses and science/technological parks;
- “Weak” factors like a business-friendly culture at public institutions;
- Recruitment and personnel policy rules, such as perspectives for further vocational training; support for developing further career options etc.

An important additional question for this analytical step is to what extent supportive science policy instruments influence the interactions between spin-offs and public research institutions as an intervening variable.

The data of this enquiry will first be arranged according to different patterns and intensities of interaction (forming types or patterns of *interaction*). Next the institutes will be differentiated according to their institutional policies towards spin-offs (forming types or patterns of *policies*). As a last step, the relation between patterns of *interaction* and patterns of *policies* will be examined. The differences in the relation between policies and practices will be interpreted; and hypotheses will be formulated to explain the differences (for example: the „rhetorical type of interaction“: many policies, no practical interaction; etc.).

WP 4: month 18-23

The fourth work package aims at fleshing out the positive and negative impacts of collaborations with spin-offs for the public research institutions (universities and non university research organisations), based upon the patterns of interaction identified in work package 3.

This step of analysis will answer the core question of PROKNOW: What impact does the continuing relation between parenting organisations and spin-offs have for the research quality in the public sector institution? And how do specific patterns of interaction determine the gains and losses of research institutions from spin-off activities?

The work package is based upon the result of the analysis of the interaction between the public research institution and academic spin-offs in work package 3 and the results of the performance analysis of the research institution in work package 2. These results will be summarized at the fourth meeting of the Steering Committee before the start of the work package 4 (D 12; M 9; month 17). In the work package 4, the PROKNOW partners will assess the relevance of the interactions with spin-offs for the general performance of public research institutions for all cases of their national sample. This will be done in national reports to be delivered in month 23 (D 15).

These national reports are based upon an analysis of the parent organisations according to their success in research. A wide range of possible impacts on the parent organisations are to be examined, such as for example the following effects:

- Direct or indirect contributions (funding, fees, personnel etc.) of spin-offs to the work of the parenting research institution;
- Direct or indirect losses of parent institutions performance (e.g. funding, personnel, profile, know how etc.) to spin-offs;

- Changes in the positioning of the parent institution as an effect of collaborations with spin-offs;
- Changes in the evaluation of the institution by external actors reflecting the collaboration with spin-offs.

The result of this analysis will be summarized in a typology, describing the extent to which a parent organisation profits from its spin-off activities. The typology will be based on the patterns of interaction and the particular benefits and losses for parenting organisations gained by interactions with spin-offs. In order to validate these analytical hypotheses, all partners will test their analysis in a national workshop with experts and spin-off representatives (one workshop for validation of hypotheses per national partner; in month 18; D 13; M 10).

The results of this analysis will be presented and publicly discussed at a second national workshop including a press conference (one workshop for presentation and press conference per partner; in month 20; D 14; M 10).

At the end of the work package the results will be summarized in the national reports to be delivered to the Steering Committee (month 23; D 15) to be discussed at the fifth meeting of the Steering Committee: M 11). Afterwards, the typology will be tested on an international level as part of work package 5.

WP 5: month 24-30

This work package achieves the generalization and integration of the empirical findings of the national PROKNOW partners (in WP 3 and 4) on a transnational and European level. The starting point will be the fifth meeting of the Steering Committee, which will summarize the empirical findings of the national case studies (D 16). In particular, this work package aims at testing the typology of parenting organisations developed as part of work package 4 (that is on a national level) on an international level (D 18). The typology is not per se a national typology as its criteria are not necessarily nationally-specific. Thus, this work package will show to what extent the interactions between public research institutions and spin-offs depend on national styles and to what extent they are determined by transnational factors (such as organisational culture or scientific disciplines).

In order to test to what extent national-specific circumstances still indirectly determine the quality of the interaction, the work package includes two steps:

1. A national comparison of different national patterns of interaction is undertaken to show to what extent national-specific science policy arrangements have an impact on shaping the relations between spin-offs and parent organisations.
2. A comparison of factors across national contexts (or factors overlapping several national cases), such as organisational cultures or scientific disciplines, will be used as an alternate hypothesis, to test the limits of the assumption the national-specific institutions would bear on the interactions between research institutions and spin-offs.

Based on this evaluation and the comparative hypotheses, the project generalizes a typology on an international level (D 18). This will be done in the course of a European workshop in Sophia, Bulgaria, attended by all Consortium partners (D 17; month 30; D 7; M 13) and by both Advisors for scientific supervision.

Based on this evaluation of the gains and losses for public research institutions, the project also aims at developing a system of categories to assess and indicators to measure the influence of spin-off-cooperation on public research institutions (D 18).

At the European workshop in Sophia, Bulgaria, the Steering Committee will also have its sixth meeting (M 14; D 19; month 30). The meeting will be dedicated to organising the preparations of the International research conference (month 35; M 17).

WP 6: month 31-36

The aim of the sixth work package is to define policy recommendations based upon an integrated, international view on the research results of the national project partners. This will be done in the course of the preparation and the accomplishment of the final International research conference in Brussels, Belgium (month 35; M 17; D 21; D 22). Accordingly, the sixth work package is accomplished over several steps:

1. The outline of science policy recommendations for the European Commission and the formulation of Management Guidelines for parent organisation will be discussed at the 6th meeting of the Steering Committee (month 30; M 14), drafted by the coordinator/management of the Consortium (month 31; M 15; D 19); then circulated among the partners of the Consortium and reviewed by them (month 31-34), revised by the coordinator/management of the Consortium (month 34; M 15) and then published at the International research conference in Brussels, Belgium (month 35; D 22; M 17).
2. Also as part of the preparation of the International research conference, the Consortium partners will revise their national reports (D 15, delivered month 23) in the light of the results of the comparative and international analysis (D 20). This revision will be accomplished from month 31 to month 34. As a product of this work, the Consortium partners will hand in their final national reports to the coordinator of the Consortium (month 34; M 16).
3. The integration of the national reports in the final report of PROKNOW will be achieved from month 34 to 36 (M 16; M 19). A first version of the final report will be reviewed by the Steering Committee at its 7th final meeting (M 18; month 35), the end version of the final report will be published in month 36 (M 20; D 23).

List of Management of the Consortium activities (activities of the co-ordinator) (M)

Management activities	Deliverable of Management activities	Delivery date	Nature	Dissemination level
M 1	Organisation of Kick off workshop in Nice, France (in collaboration with French partner)	1	O	CO
M 2	Constitution of Steering Committee (1 st meeting) at Kick off workshop in Nice, France	1	O	CO
M 3	Arrangement of an agreement with project partners on protection of intellectual property rights within PROKNOW	1	O	CO
M 4	Organisation of Consortium agreement on members, tasks and function of the Steering Committee	1	O	CO
M 5	Organisation of the communication structure of the project and the knowledge exchange	1	O	CO
M 6	Installation of the PROKNOW website	1	O	PU
M 7	Meeting of Steering Committee (2 nd meeting) in Berlin, Germany	6	O	CO
M 8	Meeting of Steering Committee (3 rd meeting) in Berlin, Germany	9	O	CO
M 9	Meeting of Steering Committee (4 th meeting) in Berlin, Germany	17	O	CO
M 10	Coordination of national workshops (two workshops per national partner: one validation workshop; one presentation and press conference workshop)	18 + 20	O	RE/PU
M 11	Meeting of Steering Committee (5 th meeting) in Berlin, Germany	24	O	CO
M 12	Collection of intermediate reports on research progress from partners as preparation of European workshop in Sofia, Bulgaria	29	O	CO

M 13	Organisation of European workshop in Sofia, Bulgaria (in collaboration with Bulgarian and French partner)	30	O	RE
M 14	Meeting of Steering Committee (6 th meeting) at European workshop in Sofia, Bulgaria	30	O	CO
M 15	Formulation of political recommendations for European Commission and national science politicians; formulation of Management Guidelines for parent organisations	31-35	R	CO
M 16	Collection of final national reports on research findings from partners as preparation of International research conference in Brussels, Belgium	34	O	CO
M 17	Organisation of International research conference with press conference in Brussels, Belgium (in collaboration with French partner)	35	O	RE/PU
M 18	Meeting of Steering Committee (7 th , final meeting) at International research conference in Brussels, Belgium	35	O	CO
M 19	Integration of results of PROKNOW into final report	36	R	RE
M 20	Publication of final report on PROKNOW-website	36	R	PU

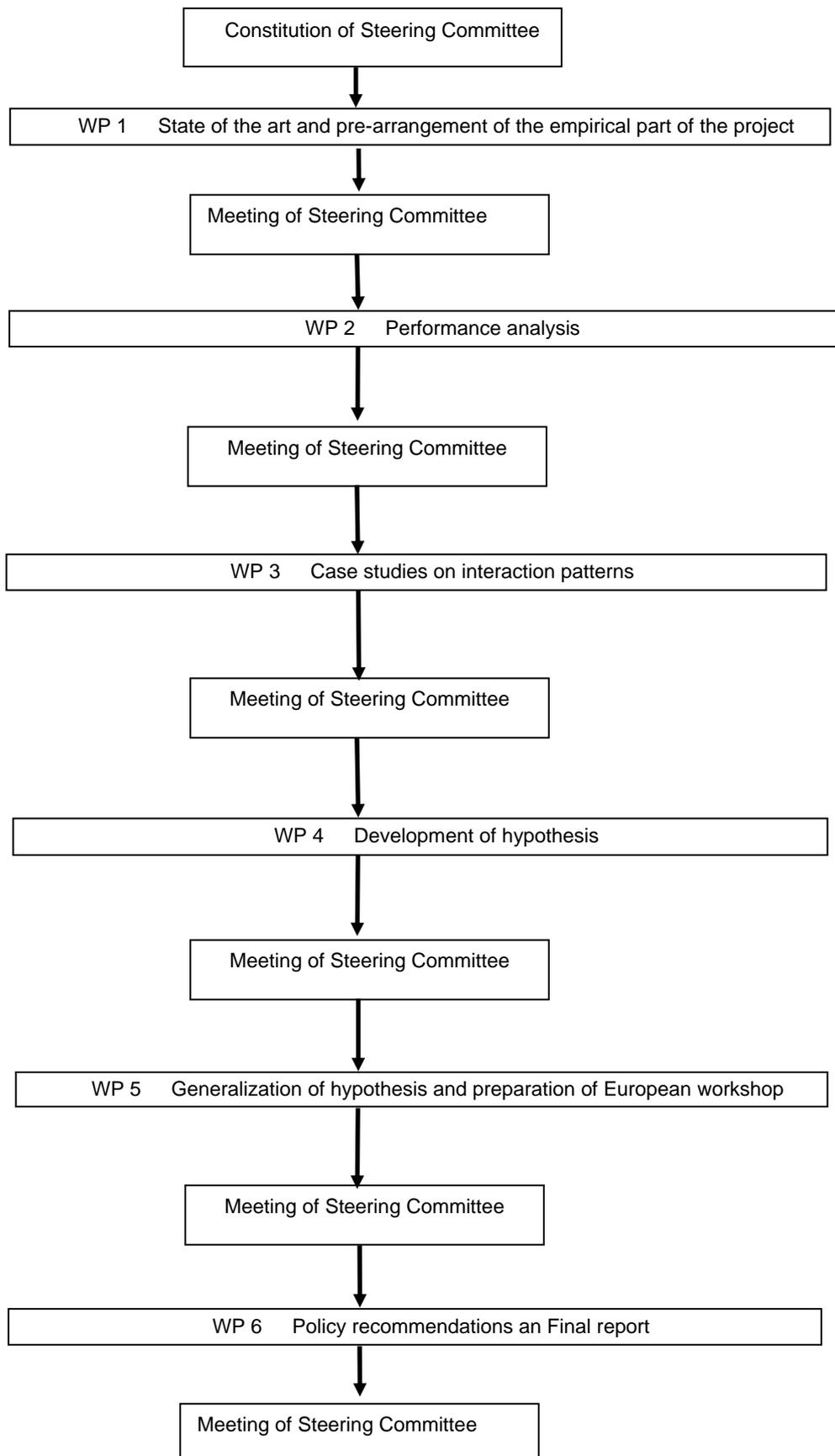
7.2 Work planning and timetable

Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36																					
WP 1	Organisational constitution and selection of successful spin-offs																																																								
WP 2							Comparison of interaction public and private actors			Analysis of patterns of interaction between parental institutions and their spin-offs; Preliminary hypothesis										Impacts of collaborations with spin-offs for public research institutions										Integration of empirical findings on a transnational, European level and testing of typology						Definition of policy recommendations																					
WP 3							Meeting of Steering Committee National report																																			Guidelines										1. National workshop 2. National workshop, report and press conference					
WP 4																				Kick-off workshop Constitution of Steering Committee Synthesis report Website Meeting of Steering Committee						Meeting of Steering Committee			Meeting of Steering Committee																												
WP 5										Kick-off workshop Constitution of Steering Committee Synthesis report Website Meeting of Steering Committee						Meeting of Steering Committee			Meeting of Steering Committee																							Meeting of Steering Committee										Meeting of Steering Committee International research conference Final report					
WP 6																													Kick-off workshop Constitution of Steering Committee Synthesis report Website Meeting of Steering Committee						Meeting of Steering Committee																						
Coordination and dissemination activities	Kick-off workshop Constitution of Steering Committee Synthesis report Website Meeting of Steering Committee						Meeting of Steering Committee National report			Guidelines Meeting of Steering Committee										1. National workshop 2. National workshop, report and press conference																		Meeting of Steering Committee European workshop Meeting of Steering Committee						Meeting of Steering Committee International research conference Final report													
Month	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36																					

7.2.1 Planned schedule of meetings, workshops and conferences

Meeting	Month	Place	Participants
Kick-off workshop with constitution of Steering Committee	1	Nice, France	Members of the consortium
Meetings of Steering Committee	1, 6, 9, 17, 24, 30, 35	Nice, France 4 x Berlin, Germany Sophia, Bulgaria Brussels, Belgium	Steering Committee
National workshops	18	Local	National participants
National workshops and press conferences	22		Invited experts End-users
European workshop	30	Sofia, Bulgaria	Members of the consortium External experts End-users
International research conference with press conference	35	Brussels, Belgium	Members of the consortium Invited experts

7.3 Graphical presentation of work packages



7.5 Deliverables list

Del. no.	Deliverable name	WP no.	Lead participant	Est. person-months	Nature	Dissemination level	Delivery date (project month)
D 1	Kick-off workshop and constitution of Steering Committee with Scientific supervisors	1	1	1	O	RE	1
D 2	Website	1	1	1	O	PU	1
D 3	Report of 1 st meeting of Steering Committee	1	1	1	R	CO	1
D 4	Description and typology of successful academic spin-offs Description and typology of parent organizations Denotation of the organizational case studies	1	1	1	R	CO	6
D 5	Synthesis report by Coordinator submitted to review to Steering Committee	1	1	1	R	CO	6
D 6	Report of 2 nd meeting of Steering Committee with review of Synthesis report and specification of guidelines for WP 2	1	1	1	R	CO	6
D 7	Project Presentation	1	1	1	O	PU	3
D 8	Performance Analysis for the case studies, summarized by Coordinator submitted to review to Steering Committee	2	1	1	R	CO	9
D 9	Report of 3 rd meeting of Steering Committee with review of Performance Analysis report and specification of guidelines for WP 3	2	1	1	R	CO	9
D 10	State of the art report by Steering Committee	3	1	1	R	CO	10
D 11	Guidelines for the interaction analysis and for panel discussions, interviews, and data analysis Preliminary hypothesis on the coherence of patterns of interaction and the policies of the institutes	3	1	1	R	CO	17
D 12	Report of 4 th meeting of Steering Committee	3	1	1	R	CO	17
D 13	National workshops dedicated to validation of hypotheses	4	1	1	O	CO	18
D 14	National presentation workshops & press conferences	4			O	CO/P	20
D 15	National report(s)	4	1	1	RE	CO	23
D 16	Report of 5 th meeting of Steering Committee	5	1	1	R	CO	24
D 17	European workshop	5	1	2	O	CO	30
D 18	Generalized typology on an international level	5	1	1	R	CO	30

	Indicators to measure the influence of spin-off-cooperation on public research institutions Revised national reports						
D 19	Report of 6 th meeting of Steering Committee	5	1	1			30
D 20	Revised and final version of National reports Management guidelines for parent organizations Science policy recommendations	6	1	1	R	CO	34
D 21	Report of 7 th meeting of Steering Committee	6	1	2	R	CO	35
D 22	International research conference	6	1	2	O	CO	35
D 23	Final report; collective publication	6	1	1	R	PU	36
TOTAL				12			

7.6 Work package descriptions

Work package number	1		Start date or starting event:				Month 1	
Activity Type	RTD/Innovation activities							
Participant id	1	2	3	4	5	6	7	
Person-months per participant:	10	9	4	5	7	3	4	

Objectives

The aim of this work package is the theoretical and conceptual preparation of the empirical phase, and the final selection of the cases to be examined.

Description of work

- Literature review, specification of particular state of the art on both cross national and national level on spin-off activities
- Specification of project design both cross national and national level)
- Secondary analysis of survey data (if existing) or (if not) expert interviews complemented by document analysis (national level) to identify successful spin-offs and their parent institutions
- Identification of corresponding parent organisations of these spin-offs
- (if this step has already been taken, check-up of the selection)
- Description of these parent institutions in respect of their entrepreneurial activities, completed by data raised by internet inquiry (national level), classification of the entrepreneurial activities of these institutes on national level.
- Selection of appropriated parent institutions for the national part of PROKNOW studies.

Deliverables

- Kick-off workshop, constitution of Steering Committee in Nice, France and report
- Description and typology of successful academic spin-offs
- Description and typology of parent organisations
- Denotation of the organisational case studies
- Synthesis report submitted to review by Steering Committee
- Report of meeting of Steering Committee in Berlin. Germany

Milestones and expected result

- Kick-off workshop
- Constitution of Steering Committee

Work package number	2		Start date or starting event:				Month 7	
Activity Type	RTD/Innovation activities							
Participant id	1	2	3	4	5	6	7	
Person-months per participant:	5	4	3	3	5	2	2	

Objectives

The aim of this work package is to analyse the general quality of the performance of the selected parent organisations (as identified in the first work package). This data provides the reference for interpreting the impact of academic spin-offs on public research institutions.

Description of work

Based on document analysis and semi-structured interviews with experts of and representatives of the public research institutions, the PROKNOW partners analyse and assess the performance of the parent institution on comparable indicators. These indicators will be specified, evaluated and reviewed by a meeting of the Steering Committee. General guidelines for that should be national as well as international approved evaluation criteria for ascertain successful science institution. As a pragmatic starting point the following indicators could be appointed:

- research budget
- amount of external, third-party funds (beyond basic, institutional funding)
- publications (refereed and non-refereed journals)
- profile and coherence of research focus
- practical relevance of research
- attractiveness to “customers”
- service functions
- regional and international co-operations (research clusters)
- career system
- quality of teaching

Deliverables

- Performance Analysis for the case studies (national report)
- Report of the meeting of the Steering Committee

Milestones and expected result

- Meeting of Steering Committee
- Indicators and Guidelines

Work package number	3	Start date or starting event:					Month 10	
Activity Type	RTD/Innovation activities							
Participant id	1	2	3	4	5	6	7	
Person-months per participant:	14	11	6	9	12	6	7	

Objectives

The aim of this work package is the analysis of the interaction between parent organisations and spin-off firms.

Description of work

Based on expert panel discussions and expert interviews at the level of the selected individual parent institutions in all countries the interaction between parent organisations and spin-off firms will be analyzed. Of interest are interactions such as

- formal agreements (licensing contracts; cooperation contracts etc.);

- financial earnings from co-operations (licence fees etc.);
- informal interactions (alumni circles, informal networks, etc.);
- organisations and policies to support spin-offs like “transfer offices”, advisory services, incubators, combination between university campuses and science/technological parks;
- “weak” factors like a business-friendly culture at public institutions;
- recruitment and personnel policy rules, such as perspectives for further vocational training; support for developing further career options etc.

The discussion and the expert interviews will be audio recorded and summarized along central questions, which have been derived from the guidelines.

The data of this enquiry will first be arranged according to different patterns and intensities of interaction (forming types or patterns of interaction).

Next the institutes will be differentiated according to their institutional policies towards spin-offs (forming types or patterns of policies).

As a last step, the relation between patterns of interaction and patterns of policies will be examined. The differences in the relation between policies and practices will be interpreted; and hypotheses will be formulated to explain the differences (for example: the „rhetorical type of interaction“: many policies, no practical interaction; etc.).

The guidelines for the panel discussions, for the interviews and for all the analytical steps for the data analysis will be identified and defined concordantly on a meeting of the Steering Committee.

Deliverables

- Preliminary patterns of interaction
- Guidelines for interaction analyses
- Report of meeting of Steering Committee

Milestones and expected result

- Meeting of Steering Committee
- Guidelines for interaction analyses

Work package number	4	Start date or starting event:					Month 18	
Activity Type	RTD/Innovation activities							
Participant id	1	2	3	4	5	6	7	
Person-months per participant:	9	9	3	6	7	3	4	

Objectives

This part of the analysis aims at fleshing out the positive and negative impacts of collaborations with spin-offs for the public research institutions (universities and non university research organisations), based upon the patterns of interaction identified in work package 3.

This step of analysis aims at answering the core question of PROKNOW: What impact does the continuing relation between parenting organisations and spin-offs have for the research quality in the public sector institution? And how do specific patterns of interaction determine the gains and losses of research institutions from spin-off activities?

Description of work

1. This work package is based upon the result of the analysis of the interaction between the public research institution and academic spin-offs in work package 3 and the results of the analysis of the general performance of the research institution in work package 2. In this work package 4, the PROKNOW partners will assess the relevance of the interactions with spin-offs for the general performance of public research institutions for all cases of their national sample.
2. This assessment is based upon an analysis of the parent organisations according to their success in research. A wide range of possible impacts on the parent organisations are to be examined, such as for example the following effects:
 - direct or indirect contributions (funding, fees, personnel etc.) of spin-offs to the work of the parenting research institution
 - direct or indirect losses of parent institutions performance (e.g. funding, personnel, profile, know how etc.) to spin-offs
 - changes in the positioning of the parent institution as an effect of collaborations with spin-offs
 - changes in the evaluation of the institution by external actors reflecting the collaboration with spin-offs.
3. The result of this analysis will be summarized in a typology, describing the extent to which a parent organisation profits from its spin-off activities. The typology will be based on the patterns of interaction and the particular benefits and losses for parenting organisations gained by interactions with spin-offs.
4. The results (hypotheses) will be presented and publicly discussed on the level of national workshops.
5. The typology will be tested on an international level as part of work package 5.

Deliverables

- National workshops and reports, reviewed by Steering Committee
- Development of a typology on national levels

Milestones and expected result

- National workshops dedicated to validation of hypotheses press conferences

Work package number	5			Start date or starting event:	Month 24		
Activity Type	RTD/Innovation activities						
Participant id	1	2	3	4	5	6	7
Person-months per participant:	12	11	2	4	6	3	3

Objectives

This work package achieves the generalization and integration of the empirical findings of the national PROKNOW partners on a transnational and European level. In particular, it aims at testing the typology of parenting organisations developed as part of work package 4 (that is on a national level) on an international level. The typology is not per se a national typology as its criteria are not necessarily nationally-specific. Thus, this work package will show to what extent the interactions between public research institutions and spin-offs depend on national styles and to what extent they are determined by transnational factors (such as organisational culture or scientific disciplines).

Description of work

In order to test to what extent national-specific circumstances still indirectly determine the quality of the interaction, the work package includes two steps:

1. A national comparison of different national patterns of interaction is undertaken to show to what extent national-specific science policy arrangements have an impact on shaping the relations between spin-offs and parent organisations.
2. A comparison of factors across national contexts (or factors overlapping several national cases), such as organisational cultures or scientific disciplines, will be used as an alternate hypothesis, to test the limits of the assumption the national-specific institutions would bear on the interactions between research institutions and spin-offs.

Based on this evaluation, the project also aims at generalizing the typologies developed in work package 4 on an international level.

3. Based on this evaluation of the gains and losses for public research institutions, the project also aims at developing a system of categories to assess and indicators to measure the influence of spin-off-cooperation on public research institutions.

4. Preparation of international conference; development of comparative hypotheses

Deliverables

- Report of meeting of Steering Committee
- Generalized typology on an international level
- Indicators to measure the influence of spin-off-cooperation on public research institutions
- Revised national reports

Milestones and expected result

- Meeting of Steering Committee
- European workshop

Work package number	6		Start date or starting event:				Month 31	
Activity Type	RTD/Innovation activities							
Participant id	1	2	3	4	5	6	7	
Person-months per participant:	12	10	3	5	7	3	3	

Objectives

The aim of the work package is to define policy recommendations based upon an integrated, international view on the research results of the national project partners.

Description of work

- Summary and integration of national reports
- Analysis of the results and consideration of consequences for science policy actors
- Formulation of policy recommendations (international and EU-level)

Deliverables

- Final national reports

- Management guidelines for parent organisations
- Science policy recommendations for national and EU level
- Final report, published online and printed (on request)
- Report of meeting of Steering Committee

Milestones and expected result

- International research conference
- Meeting of Steering Committee
- Press conference for presentation of the final report
- Final statements and ending of the project

Appendix A - Consortium description

A.1 Participants and consortium

Participant 1 and Coordinator **WZB, Berlin, Germany**
Dr. Dagmar Simon; Prof. Dr. Andreas Knie

Description of the institution

The Wissenschaftszentrum Berlin für Sozialforschung (WZB), (Social Science Research Center Berlin) is committed to problem-oriented basic research in social sciences. Since its foundation 1976, the institute is co-funded by the Federal Republic of Germany and the state of Berlin. The WZB is the largest research institution of its kind in Europe. Approximately 140 social scientists conduct research on the developmental trends, problems of adaptation, and possibilities for innovation in modern societies. The research is carried out in selected problem areas with a special emphasis on society under the general theme of developmental trends, problems of adaptation, and possibilities for innovation in modern democratic societies. The focus is on the problem-solving capacities of social and governmental institutions, often with the cross-national comparative context being emphasized that approaches taken by countries can also be learned. As a major publicly funded research institution, the WZB is part of the Gottfried Wilhelm Leibniz Wissenschaftsgemeinschaft (WGL), a member of both the Association of Social Science Research Institutes (ASI), and a member of the European Consortium for Political Research (ECPR), among other organizations.

Project affiliation

The research project will be affiliated with the recently founded “Project Group Science Policy Studied”. Within the WZB, the Project Group is part of the Office of the President. The group deals with the relationship between science and politics from an interdisciplinary perspective integrating approaches from sociology, political science and history. Of particular interest are current changes in the production and application of scientific knowledge, new governance regimes in science policy, new evaluation forms, quality assurance in science, and recent shifts in the promotion of junior scholars. The project group follows up discussions held at an international conference on the “Shifting Boundaries between Science and Politics” at the WZB in June 2004. It also offers a discursive and organisational framework for research projects at the WZB dealing with science policy studies and science studies related issues. Examples include the study on “Spin-Offs as Border Crossing and New Mode of Knowledge Production?”, funded by the Federal Ministry of Education and Research (BMBF) as part of the program “Science Policy Studies”, or the project on “Organisation and Gender – A Reconstruction and Reinterpretation of Empirical Findings in the Case of Knowledge-based Fields of Activity”, funded by the German Research Foundation (DFG). The project group intends to organise conferences and establish collaborations with international guest scientists and with academic networks in Europe and abroad in order to develop further the international perspectives in science policy studies.

Project members

Project Group Science Policy Studies, hosting the project

Dr. Dagmar Simon
Prof. Dr. Andreas Knie

Dr. Martin Lengwiler
Dr. Hildegard Matthies
Dipl.Soz. Joerg Potthast

Project staff

Research assistant: to be appointed

Assistant for coordination and management tasks: Dipl.Pol. Anke Borcharding

Dagmar Simon

She studied Political Science at the Johann-Wolfgang-Goethe-Universität of Frankfurt/M. and at the Free University of Berlin, where she received her doctoral degree (Dr. rer.pol.) in 1986. She is a senior fellow at the WZB, which she joined in 1989. She is the head (together with Georg Thurn) of Research Policy and Coordination. She has initiated several research projects on structural issues of science and research. Since 2004 she coordinates the „Project Group Science Policy Studies“ together with Andreas Knie. Before joining the WZB she has worked for several publishers. Her research focuses on evaluation research, organisational studies and gender studies. She is the author and co-author of numerous books and articles.

Andreas Knie

He is a professor of sociology at the Technical University Berlin since 2000. He received his Diploma in Political Science at the Free University, Berlin in 1986, and his Dr. phil. at the Technical University, Berlin in 1990. He is a senior fellow at the Wissenschaftszentrum Berlin für Sozialforschung (WZB) which he joined in 1987 and cofounder of the WZB's roject group on Mobility. From 1986-87 Andreas Knie was a researcher at the Free University of Berlin, responsible for a project on technology policy; from 1996-99 he held a temporary position as professor in the Sociology Department at the Technical University Berlin; and from 1998-2002 he served as managing director for choice Mobilitätsproviding GmbH, Berlin. Since 2002, he is area manager for Inter modal Services at the Deutsche Bahn AG (DB Rent GmbH). His research interests focus on Public Transport, Transport Research, Technology Policy, Science Policy Studies, and Analysis of Innovation Processes. Since 2004 he is co-ordinator of the “Project Group Science Policy Studies“ at the WZB, together with Dagmar Simon. He is author and co-author of numerous books and articles.

Martin Lengwiler

He is a research associate at the WZB (since 2002) and an assistant professor (Privatdozent) at the University of Zurich, Switzerland (since 2004). He received his Diploma in History and Sociology (1994) and his Dissertation (1998) from the University of Zurich. He received scholarships from the Swiss National Science Foundation and the German Humboldt-Foundation and was research fellow at institutions in France (EHESS), Britain (University of London; Wellcome Institute), and the USA (University of California Los Angeles; Humanities Research Institute, University of California Irvine). He also acted as founding member and co-president for the Swiss Society for the Studies of Science, Technology and Society (STS-CH; 2001-2003). He is the author and co-author of several books and articles in the fields of modern history, science studies and sociology of science.

Hildegard Matthies

She studied sociology and social economy at the Hamburg University of Economics and Politics and received her Dr. rer. pol. in 1999. In 1987 she has been fellow of „Harvard German Workshop

on American Politics and Society“ in Cambridge, MA. Between 1987 and 1998 she was research fellow at the Kooperationsstelle Gewerkschaften/Hochschule of Hamburg and at the Hamburg University of Economics and Politics. Since 1998 she has been research fellow at the WZB and responsible for projects on careers and organization in science. Her research interests focus on Science Policy Studies, Organisational Theories, Regulation of Work, Communication and Bargaining in Organizations, Gender Equality and Gender Mainstreaming. She is the author and co-author of numerous books and articles.

Joerg Potthast

Joerg Potthast studied sociology, philosophy, and comparative literature at the Free University, Berlin. His PhD thesis in sociology of organizations and technology (ethnographic case studies on the management of large airport infrastructures) is due to be completed in May 2005. He contributed to several research projects in the domain of science policy (Relationship between Social Sciences and Management Consulting; Transport Research; Academic Spin-Offs). Joerg Potthast has received dissertation grants from "Deutsche Forschungsgemeinschaft" (1998-2001) and Frankfurt Airport Foundation (2002). He has research positions at TU Berlin and Social Science Centre Berlin (WZB) and has also been a guest researcher at Université Paris 1 (1999) and ETH Zuerich (2002-03).

Anke Borchering

She studied Political Science at the Free University of Berlin. Since 1989 she has been an Assistant in The Greens Party on a local level and in the Berlin House of Representatives. From 1990-2000 she worked for the project development, project management and public relations within an urban renewal company in Berlin and Leipzig. In 2001 she was an Assistant in the Berlin office of a German online news magazine. She has been a research fellow at the Wissenschaftszentrum Berlin für Sozialforschung, Research Unit "Innovation and Organization", Project Group on Mobility (responsible for the report on Swedish transport research and policy/ SmartBenchProject) since 2002. Presently, she is working as a free-lance editor.

Participant 2

FNSP/OFCE-DRIC, Nice-Sophia-Antipolis, France
Prof. Michel Quéré

Description of the institution

OFCE (Observatoire Français des Conjonctures Economiques) is a non profit French organisation created by 1981 and currently managed by J.P. Fitoussi with the double aim of studying French and European Economy and providing economic forecasting in the short and long run. OFCE is an independent institution which is a main guarantee for the quality and credibility of its research activity. Mainly public-funded, a contractual agreement between the French Prime Minister and the President of the 'Fondation des Sciences-Politiques', from which OFCE is attached from an institutional viewpoint, is renewed on a six-year base. OFCE drives a specific review (revue de l'OFCE) which is a selected vehicle for promoting research results provided by the institute. OFCE rassembles more than 30 research fellows allocated into four complementary research Departments:

- 'Analysis and Forecasting', essentially dedicated to macroeconomic modelling;
- 'Globalisation', discussing the different consequences in that general improvement of trade liberalisation;
- 'Studies', which investigates more thematic-oriented topics and their consequences on the French economy;
- 'Innovation and Competition', which mainly deals with the characterization of firms' innovative behaviours, industry dynamics and regional policy implications.

Project members

Prof. Michel Quéré

Research Assistant: to be appointed

OFCE-DRIC research programme focuses on three major topics: innovation, firm and industry dynamics; regional attractiveness; innovation and public policies. Moreover, topics such as firms' outsourcing, financial markets' regulation, science and R&D policies, regulatory policies, competition policies are also investigated. OFCE-DRIC is used to deal with either quantitative or qualitative methods, provided they are relevant to the problem under scrutiny. Finally, OFCE-DRIC is involved in an international network of research activity, not only including some partners in most of large European countries, but even beyond including connections with Japanese and US research teams.

Michel Quéré

Michel Quéré is CNRS senior fellow in economics. His main topics are related to innovation studies, including the analysis of firms' innovative behaviours, sectoral studies of innovation and industrial dynamics, and the understanding of science-industry relationships. He belongs to a research team of CNRS (Innovation, competition and growth (I2C) which is part of a CNRS research unit (GREDEG). That research unit is located in the Sophia-Antipolis park surrounding Antibes city in the South of France. GREDEG associates four research teams that cover three disciplines (economics, law and business science); I2C-GREDEG is around ten people that are working together in the field of economics of innovation. I2C-GREDEG has a significant experience in the field of EU-funded research projects and is currently part of two so-called networks of excellence (PRIME and DIME).

Participant 3

**UoS (SPRU), Brighton, United Kingdom
Dr Martin Meyer**

Description of the institution

SPRU (Science and Technology Policy Research) is ideally suited to carrying out this assessment. Since it was created almost 40 years ago, it has established a reputation as a world leader in research on policies for science, engineering, technology and innovation. It remains probably the world's largest research centre dedicated to science and technology studies.

In May 2003, SPRU moved into the Freeman Centre, named after SPRU's founder Prof. Chris Freeman, and funded by grants of £9 million from the Research Councils of the UK. This provides extensive state-of-the-art facilities for analysis of research performance and other interests. It incorporates the re-equipped and refurbished SPRU Library, which is believed to be the world's largest library specialised in science and technology studies. It provides spacious capacity for up-to-the-minute work by faculty and research students in these fields, and for their visitors.

Many of the studies in which it has been involved have yielded results of direct relevance to science policy. In particular, it has been a pioneer in the area of assessing research performance, and in identifying the factors that affect research performance. SPRU combines deep understanding of science and technology indicators with expertise innovation policy.

More recently, SPRU has become involved in combining its expertise in research and policy studies with more applied projects. The Gatsby Fellowship is a good example for such activities. The main objectives of this research programme are to improve our understanding of university-industry technology transfer processes and contribute directly to the technology transfer activities of participating universities.

The British Consortium Partner has the possibility to employ Dr Pablo D'Este to join the ProKnow project as the second SPRU researcher. This differs from the original PROKNOW proposal, in which the British Partner suggested to commit a doctoral student for its research. Dr D'Este has a significantly higher qualification for collaborating in PROKNOW than the previously suggested doctoral student (see short curriculum below). We therefore believe that employing Pablo as a Research Fellow will add considerably more value to the project than a doctoral student would have as a research officer. Given his background, Pablo D'Este will be able to carry out the tasks laid out in the project plan more efficiently than a research officer and require less time. We therefore reduced the total amount of personmonths from 23 to 20 personmonths. We are confident that this is in the sense of both the European Commission and our project partners.

Project member

Dr Martin Meyer

Dr Pablo D'Este, Research officer

Martin Meyer

He is Gatsby Fellow for Technology Transfer in SPRU, a leading research unit for science and technology policy based at the University of Sussex (UK). He also holds an adjunct position as Visiting Senior Lecturer for Innovation Policy at the Department of Industrial Engineering and Management at Helsinki University of Technology (Finland) where he has been working in various capacities since 1999. In addition, Dr Meyer is a visiting research fellow at Steunpunt O&O Statistiek, a centre for science and technology statistics at the Catholic University of Leuven (Belgium). Previously, Dr Meyer worked as research director of the Finnish Institute for Enterprise Management. While obtaining a doctorate in science and technology policy studies at SPRU, he worked as a consultant for Technopolis Group, an international innovation policy consultancy based in Brighton (UK) and as a research fellow for Linköping University (Sweden). Dr Meyer has led research projects on knowledge transfer between university and industry, academic patenting and emerging science-based technologies. He has published more than twenty articles on these topics in international, peer-reviewed journals and has served on advisory boards or in expert groups of a number of public and private sector organisations.

Pablo D'Este

He has a Degree in Economics, Autonomous University of Barcelona (UAB, Spain) 1992, and a Master Degree in Applied Economics and European Studies at UAB, Spain since 2003. He has a strong record in research on technology transfer and university-industry collaboration. He worked on several major research projects for the European Commission and European Commission. Currently, Pablo D'Este works on the BIOPOLIS project and is finishing work on a study on University-Industry research collaborations in the UK. He has also published in prestigious journals, such as Research Policy and Industrial and Corporate Change.

Participant 4

VTT Espoo, Finland
Pirjo Kutinlahti

Description of the institution

VTT Technical Research Centre of Finland is a contract research organisation involved in many international assignments. With its 3000 employees, VTT provides a wide range of technology and applied research services for its clients, private companies, institutions and the public sector. It serves annually over 5000 domestic and foreign customers. Turnover is about 220 million euros. VTT Technology Studies performs interdisciplinary research on the interface between technology, the economy and society including technology foresight and technology assessment studies. The research of VTT Technology Studies supports strategic choices and decisions made by actors and organisations of innovation policy and businesses nationally and internationally. The assessment of economic, social and ecological effects of technological change is an integral element of this research. Accordingly recent research consists of studies with different aspects of the innovation system and technological developments. For example in the project commissioned by the Finnish Association of Graduate Engineers a future oriented technology barometer was developed intended to measure the state of technological and scientific expertise in a given country. One of the recent projects surveyed European TF&TA practices for developing the national activities in the field in Finland. The group has carried out several TA and TF studies commissioned also by the Committee for the Future of Finnish Parliament.

Project members

Pirjo Kutinlahti, doctoral candidate

Juha Oksanen, researcher

Pirjo Kutinlahti

Pirjo Kutinlahti studied sociology at the University of Tampere. In 2000, she did her licentiate degree at the University of Helsinki. From 1996 she has worked as senior researcher at Technical Research Centre of Finland, at VTT Technology Studies, being responsible for projects related to the science and technology policy evaluation. Before joining the VTT Technology Studies in 1996, she worked 8 years in the Academy of Finland as a project researcher and policy advisor. She was appointed a deputy research manager for VTT Technology Studies in 2001-2003. Involved in several international research projects related to the policy research in the field of science and technology. Since 2000, she has been a country correspondent in the project of Trend Chart on Innovation funded by EU Commission. Her recent research projects include university-industry linkages and commercialisation of academic research. Since 1996 she has been taking part in number of evaluations on the impacts of Finnish participation in EU framework programme. She has also taken initiatives to develop measurement tools for socioeconomic impacts of R&D activities by public research organisations. Currently she is completing her doctoral dissertation on the changing role of universities in commercial utilisation of research (manuscript entitled "University Approaches on Market Demands. Balancing with scientific, economic and societal missions").

Juha Oksanen

He is a researcher for VTT Technology Studies. He has specialised in evaluation of R&D activities, working of national innovation systems and regional dimension of innovation activity. He has involved in OECD Monit-subproject on horizontal innovation policy from the viewpoint of information society development in Finland. He is also participating in "Foreign takeovers competence gain or competence drain" project funded by the Nordic Innovation Centre. He is also Finnish correspondent of the European Innovation Trend Chart network, and the VTT contact of the European Science and Technology Observatory (ESTO) network.

Participant 5

UT/CHEPS, Enschede, Netherlands
Prof. Jürgen Enders

Description of the institution

The Center for Higher Education Policy Studies (UT/CHEPS) is an interdisciplinary research-institute located within the faculty of Business, Public Policy and Technology (BBT) of the University of Twente, the Netherlands. It is a core group within the Faculty's research centre of excellence, the Institute of Governance Studies (IGS). Since 1984, UT/CHEPS has undertaken and published a significant amount of research on higher education especially at system and institutional levels and is widely recognised to be one of the world's leading centres in this field. UT/CHEPS is member of the European Network of Excellence 'PRIME'.

UT/CHEPS contributes to the advancement of the study of higher education as well as to the development of theory grounded in the disciplines as a means of increasing our understanding of institutional, national and international issues that bear upon higher education. UT/CHEPS meets this objective by conducting research, both fundamental and applied, and by undertaking activities in education, training and consultancy (ET&C). The following characteristics best describe the UT/CHEPS approach: Inter-disciplinary perspectives; Multi-level approaches to higher education; Broad and comparative research interests; and participation in International networks.

Our major fields of research include: Institutional governance, management and planning; Higher education reform and steering approaches at the system level; Quality assurance and accreditation; Institutional and student funding and internal institutional finance; The European Higher Education Area and the European Research Area: impact and challenge across Europe; Internationalisation and globalisation; The role and potential of Information and Communication Technologies; The Entrepreneurial/Innovative University; and trends in higher education systems, particularly within Western Europe.

Project member

Prof. Dr. Jürgen Enders

Dr. B.W.A. Jongbloed, research assistant to be appointed

Jürgen Enders

He is Full Professor at Center for Higher Education Policy Studies, University of Twente, Enschede, The Netherlands since 2002. He received his First State-Exam in Social Sciences and Education, at the University of Kassel, Germany, in 1985 and in 1995 his Dr. rer. pol. (PhD) at the Department of Social Sciences, University of Kassel, Germany.

Since 2004 he is Director of the Center for Higher Education Policy Studies, University of Twente, Enschede, The Netherlands. His research interests focus on Sociology of education and the professions, organizational studies, policy and multi-actor governance in higher education and research, relationship between higher education and work, development of higher education systems in comparative perspectives and the academic profession.

A current research projects of Jürgen Enders deals with "New Modes of Training – Different Careers? Reform in doctoral training and further careers of PhD graduates".

Ben Jongbloed

He is a senior researcher at the Center for Higher Education Policy Studies (CHEPS), University of Twente. He holds a Master's degree in Econometrics from the University of Groningen and a PhD in Public Administration from the University of Twente. Since joining CHEPS in 1993 his research has concentrated on the theme of Higher Education Economics. He has written extensively on topics such as funding methodologies, student financial support, marketisation, financial management,

and per student costs. As a staff member of CHEPS he has been involved in commissioned research projects, training seminars and consultancies on the area of higher education policy and institutional management. His current research projects focus on university research management and university-regional interaction.

Participant 6 **IS-BAS, Sofia, Bulgaria**
Dr Ivan Tchalakov

Description of the institution

The Institute of sociology at Bulgarian Academy of Sciences was founded in 1968. There are 54 researchers and 38 administrative staff, and about 15 PhD students. The Institute of Sociology carries out fundamental and applied research, consulting and expert activities, application of scientific results, training of highly-qualified specialists, as well as other activities under the Law of the Bulgarian Academy of Sciences. The basic research fields of the Institute of Sociology are: social organizations and politics; work and employment, poverty and unemployment; ethno-sociology and social psychology, ethnic communities and conflict, social integration and segregation; deviant behaviour, delinquency, corruption; *science and education, technological innovation* and personality; religion and everyday life; village and agriculture; methodology of sociological survey and public opinion studies. Since 1997 the researchers at the Institute have been partner of co-ordinator of number of large international projects, among which 5 projects under EC Framework Programs (FP4, FP5, and FP6). To this end special office of project and financial management was established, which help the researchers in administrative and financial management of the projects. The Institute of Sociology is running the sociological journal *Sociological problems* (ISSN 0324-1572).

Project member

Dr Ivan Tchalakov
Mimi Ivanova Vassileva, research assistant

Technology Studies Group at Institute of Sociology (TSG-IS), Bulgarian Academy of Sciences has been established in 1999. The TSG research program is focused on scientific and technological development in Eastern Europe and National Innovation System of Bulgaria. Preceding activities of the members of the group include and ethnographic study of holographic laboratory (CLOSPI) at BAS (1993-1997), studies on transformation of the research and innovation systems in post-socialist countries, and others. Projects on dual-use technology policy in Bulgaria (John D. and Catherine T. MacArthur Foundation", USA, Programme on Peace and International Cooperation – 1997), and on transformation of financial system, entrepreneurship and innovations (Open Society Foundation, 1999, 2001) have been carried out. The TSG-IS has been scientific coordinator of TACTICS project - industrial comparative study of the introduction of telecommunication and information technologies in Bulgaria, Romania and Macedonia and their effect on local industries (EU INCO-Copernicus IV Program, 1999 - 2001). During the period of 2000-2004 there are three PhD students working in the group on the following topics: Heterogeneous community in large technical systems: conditions for sustainability (Tihomir Mitev), regional innovation system (Mimi Vassileva), dual-use technologies in Bulgaria (Todor Galev).

Ivan Hristov Tchalakov

He is Senior Research Fellow at the Institute of Sociology, Associate Professor on Science and Technology Studies and Head of Technology Studies Group at the Institute of Sociology,. His main research field is sociology of science and technology, sociology of knowledge. His current research interest focuses on sociology of laboratory sciences and large technical systems, socio-economic

and technological development in post-communist Eastern Europe and national Innovation Systems. From 1990-1991 he was fellow on "Science&Technology Studies" at University of Amsterdam, Netherlands; 1994, 1998, 2003: DAAD fellow Institute of Science and Technology Studies (IWTF), University of Bielefeld, Germany; 1995 ACE-Phare fellow on Socio-Economics of Innovation at CSI, Ecole des Mines, Paris, France; 1998-1999 he received an MacArthur Foundation Research and Writing Grant on Peace and International Cooperation; 1999-2001 - scientific coordinator of TACTICS project under the INCO-Copernicus IV Programme of EC.

Mimi Ivanova Vassileva, research assitant

She is research assistant (part-time) at the Technology Studies Group, Institute of Sociology-BAS. During the 2002-2004 she was PhD student at Technology Studies Group and now she is completing her theses on *Regional Innovation Systems: The case of Plovdiv Region, Central South Bulgaria*. In 2004-2005 she was research assistant in the project *Entrepreneurship and Innovations* (studying innovative entrepreneurs in Bulgaria and FYR of Macedonia), Open Society Institute, Sofia. Since May 2005 she is research coordinator of the project *South-East European Network for Science and Technology Studies: STS Contributions to the Governance of Sociotechnical Change*, Austrian Science and Research Liaison Office, Sofia. She is also part-time assistant professor on Sociology of Science & Technology, Department of Sociology, Plovdiv University. Her research interests are in regional innovation system, sociology of innovation, science and technology policy.

Participant 7

EAWAG, Kastanienbaum, Switzerland

Dr Bernhard Truffer

Description of the institution

The Swiss Federal Institute for Environmental Science and Technology, EAWAG (Eidgenössische Anstalt für Wasserversorgung, Abwasserreinigung und Gewässerschutz, is a publicly funded research institute of the domain of Swiss Federal Institutes of Technology. EAWAG counts about 400 collaborators mainly for the natural, engineering and social sciences. Its main focus of activities is on research, teaching and consulting in water related problems (aquatic ecosystems, drinking water, waste water). Although EAWAG has a strong focus on high level academic research it also fosters new modes of problem oriented research. It has a long tradition in carrying out and reflecting problem-oriented, transdisciplinary research projects.

The Centre for Innovation Research in the Utility Sector (CIRUS, www.cirus.ch) is an interdisciplinary social science research group within the Swiss Federal Institute for Environmental Science and Technology (EAWAG). The research focus of CIRUS is on Science and Technology Studies in particular in the domain of environment related innovation research. Research areas of CIRUS are the analysis of environmentally relevant innovations, and the interaction between research and society in the resolution of environmental problems. CIRUS has been active in the development and research of transdisciplinary projects especially in the domain of environmental research. It has been awarded with the first national transdisciplinarity award in 2000. Furthermore, members of CIRUS have researched the role of spin-off activity and other boundary activity between science and society. Currently, CIRUS is collaborating in a German research project on spin-off activity for academic research institutes.

Project members

Dr Bernhard Truffer

Dr Kornelia Konrad

Bernhard Truffer

Bernhard Truffer studied geography, mathematics and economics at the University of Fribourg, CH and finished his PhD in economic geography in 1993. From 1993 to 1996 he worked as researcher at EAWAG. Various national and international research projects on sustainable innovation and transformation. 1997-2001 initiator and head of a major transdisciplinary research project on Green Power certification in Switzerland. In 2000 awarded with the first Swiss Transdisciplinarity award for its Green Hydropower research project. In 2001 and 2002 research fellow at DaimlerChrysler Research, Berlin and at the Wissenschaftszentrum für Sozialforschung, Berlin. Since 2001 head of CIRUS at EAWAG. Lecturer at ETH and the University of Berne. In 2004 co-organizer of the Spring School “sites of knowledge production” at the chair for science studies at the University of Basel.

Kornelia Konrad

Kornelia Konrad has done research on the role of expectations, visions and agendas for innovation projects and the dynamics of social expectations in her PhD (Konrad, 2002; Konrad, 2004). She is part of an emerging international research network focusing on expectations in science & technology. She studied sociology, physics and mathematics in Freiburg i.Br. and did her PhD at the Graduate College of Technology and Society at the TU Darmstadt. Since March 2002 she has a postdoc position at CIRUS, currently working on projects on foresight and sustainable transformation in the utility sector.

A.2 Sub-contracting

The subcontractors for the audit certification for partners 1 & 3 are KPMG Deutsche Treuhand-Gesellschaft AG (WZB) and KPMG LLP (UoS).

A.3 Third parties

Not foreseen.

A.4 Funding of Third country participants

Not foreseen.

Appendix 2 - Optional/mandatory Deliverables

1.1 Optional deliverables

Project Presentation: foreseen (D 7)

1.1 Obligatory deliverables for Specific Targeted Research or Innovation Projects

Final Plan for using and disseminating knowledge