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31. January 2011

Report on Evaluation and Negotiation of Projects under OP RDI

Fritz Ohler

with contributions from Ivo Šanc, Berghold Bayer,
Lothar Behlau, and Michael Stampfer

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Introduction

By joining the EU, the Czech Republic was included among the member states that receive financial support from the EU Structural Funds. For the period 2007–13, all regions of the Czech Republic (except the capital city Prague) are eligible for funding under the 'Convergence' objective. In compliance with the objectives of European Regional Policy, the priorities of the Czech Republic are to strengthen the competitiveness of the state and to foster the orientation towards a knowledge economy.

The Operational Programme Research and Development for Innovation (OP RDI) is one of the important operational programmes in the Czech Republic. Together with the Operational Programme Enterprise and Innovation and the Operational programme Education for Competitiveness, the OP RDI represents a mutually interconnected system of interventions, which aims at ensuring the long-term sustainable competitiveness of the Czech Economy and the targeted regions within the 'Convergence' objective.

The specification of the OP RDI is based on a rigorous SWOT analysis of the Czech research and innovation system and embedded into numerous national strategies, particularly the National Development Plan of the Czech Republic 2007-13 (NDP), the National Strategic Reference Framework (NSRF), the National Programme of Reforms of the Czech Republic (NPR), the Economic Growth Strategy of the Czech Republic (EGS), the National Innovation Policy of the Czech Republic for years 2005-10 (NIP), and the National Research and Development Policy of the Czech Republic for years 2004-08 (NR&DP).

The objectives of the OP RDI

The global objective of the OP RDI is to strengthen the research, development and innovation potential of the Czech Republic which shall contribute to economic growth, competitiveness and the creation of highly qualified workplaces. The OP RDI has chosen a two-tier strategy for supporting R&D:

- **Centres of Excellence (Priority Axis 1, PA 1)**. A relatively limited number of high quality interdisciplinary research centres. They are to use and strengthen the potential of existing high-quality research teams to become internationally visible research partners. The Centres of Excellence are expected to contribute in an essential way to the creation of new knowledge, to the training of (young) researchers and to the advancement of cutting edge science and technology in their respective field. The focus is clearly international and the centres of excellence have to be orientated towards the international research community.
- **Regional R&D Centres (Priority Axis 2, PA 2**). A larger number of sector-specific application-oriented, demand-driven research institutions that already have, or have the potential to develop, strong partnerships with the application sector. Their contribution is expected primarily in networking and close collaboration with the users of their results through contract research and the provision of services meeting the demand of the application sector, and in the training of people for highly qualified positions in R&D.

A key feature of both Centres of Excellence and Regional R&D Centres is an emphasis on performance. The Managing Authority negotiates a performance contract on an individual basis with each of the centres which forms the basis of the strategic orientation and operational activities of each centre. The performance contracts contain binding targets for the centres to achieve. The contracts are set individually, taking into account the different research profiles and related user groups. In its essence the performance contract is based on promises for future performance which

have to be based (i) on credible past achievements of key staff, and (ii) on a proper governance and management system. The performance orientation is built into the research programme as well as into the governance of each individual centre. This new feature, the performance contract, is of crucial importance for the overall strategic orientation and steering of the research activities supported through the OP RDI and it represents a completely new, progressive mode of operation in the Czech research policy.

1. The system to decide upon funding projects in PA 1 and PA 2 of OP RDI

A complex set of funding criteria has to be transformed into a manageable decision making process. The OP RDI has been set up to fund the establishment and operation of two types of research centres: (i) centres of excellence (Priority Axis 1) and (ii) regional research centres (Priority Axis 2).

In traditional research funding two criteria prevail: quality of the research programme and qualification of key staff. As the objects of funding in the OP RDI are highly autonomous research organisations the funding decisions have to reflect a wider range of criteria: not only the quality of the research programme and the qualification of key staff, but also the application potential and attractiveness for users, the management and governance model, human resource policy, budget and funding, and, not least, criteria reflecting environmental, spatial, and cohesion policy considerations.

Due to the fact that the objects of funding are highly autonomous research organisations the funding decisions have to reflect a wide range of criteria: not only quality of the research programme and qualification of key staff, but also application potential and attractiveness for users, management model, human resource policy, budget and funding, and not least, criteria reflecting environmental, spatial, and cohesion policy considerations.

Accordingly, decisions makers have to be skilled in a set of rather heterogeneous fields – which is obviously difficult to find in one person. To overcome these bottlenecks in the evaluation for funding has to be transformed into a sound process of subsequent checks, balances, negotiations, and decisions, involving different actors with different expertise at different steps.

A combined evaluation and negotiation process

The evaluation of proposals for funding is mainly based on the knowledge and experience of peers. In many – and quite important – aspects it is even the only available source and thus the determinant of the entire process. The most relevant determining factor, however, is rather mundane: experts love it to be invited for playing their expert's role on the one hand, but when it comes to reality they are rather reluctant to spent more than a couple of days abroad.

Taking into account these restrictions a sequence of several distinct and in some parts overlapping steps has been designed. Figure 1 describes the entire decision making process. The main emphasis is on evaluation and negotiation. The evaluation part itself is segmented into of a series of steps involving different types of expertise and thus of experts. Apart from formal check of eligibility, it is mainly based on two pillars:

- **Evaluation of application potential** performed by Czech experts mainly from industry and other application spheres, and experts on technology transfer, financing of R&D, management of R&D. Their emphasis is to assess the application potential within the Czech industry and other sectors of application.
- **Evaluation of the quality of the proposal**, in particular the quality of the research programmes, quality of the team, specification and understanding of users, human resource development, management, and budget & financial

sustainability. These experts from abroad are experts in the field and experienced in the management of research programmes or institutes.

The rather novel element in the funding process is the negotiation of funding contracts. Due to the complexity of the projects there is hardly any proposal which fulfils all relevant aspects sufficiently. There is thus always some room for improvement, particularly in those areas in which academic researchers typically have their blind spots: orientation of their research activities towards carefully selected user groups on the one hand, and governance, management and human resource development on the other hand. At the same time, it has proven important to direct the attention of key personnel, i.e. of directors of the centres and managers of research programmes on manageable outputs rather than on uncontrollable impacts. Accordingly, the negotiation of type and volume of outputs such as publications, patents, income from research contracts and grants immediately results in increased (final) performance.[1] At the same time, the case-by-case approach taken in the negotiations makes it possible to tailor these output targets to the justified specificities of every research field.

Figure 1 The cycle of decision making for funding in OP RDI

1. Submission of proposal
2. Formal evaluation and evaluation of eligibility
3. Expert evaluation
   - Evaluation of application potential, incl. synergies and financial sustainability
     - Evaluates the application potential (mainly in the Czech Republic), synergies with other OPs, and financial sustainability
     - Evaluated by Czech experts, mainly from industry / application sphere, experts on technology transfer, financing of R&D, management of R&D units / institutes
     - Evaluated by 3 (or 5) individual evaluators (individual qualitative and quantitative evaluations), followed by a consensus meeting → summary consensus report for all 3 (or 5) experts
     - Two types of results: Recommended to the next stage (in which case the score becomes a bonus that is added to the score obtained in step C), or not recommended to the next stage, i.e. failure to fulfil one of the binary criteria
   - Evaluation of construction and technical aspects of proposals (1st level)
     - Evaluation of construction and technical parameters of proposals: appropriate and economical construction costs, realistic construction plans - 1st level) and environmental criteria (low-energy buildings, building-up greenfield sites)
     - Evaluated by experts in spatial planning, civil engineering
     - Evaluated by 2 experts at each level (1st and 2nd), Points / scores only for construction readiness (planning/building permit) and environmental criteria
     - Excessive costs (to a degree) may be a reason for reduction of the budget, not necessarily rejection

[1] In Chapter 7 we will demonstrate the net gain of these negotiations.

- Panel for applications
  - Composed of respected Czech experts, mostly those who evaluated projects
  - Based on the results of preceding steps, approve a list of rejected proposals
  - Approves a list of recommended proposals with the percentage bonus (to be applied in the next step)
  - Carries out a calibration of proposals (esp. on the criterion of application potential)
- Evaluation by international experts
  - Evaluates the overall quality of the proposals: quality of proposed research programmes, qualification of the key staff / team, specification of users; human resource development, management, budget & financial sustainability
  - Evaluated by international experts in research, in evaluation of R&D and innovation projects, programmes and R&D institutions
  - Evaluated by 3 (or 5) individual evaluation reports (qualitative and quantitative evaluations), followed by a consensus meeting → summary consensus report for all 3 (or 5) experts (qualitative and quantitative)
- International panel
  - Approves the results of consensus reports
  - Calibrates the results between individual consensus reports
  - Adds the bonus from preceding steps
  - Agrees on the ranking of proposals and specifies: (i) proposals to be rejected, (ii) proposals to be invited to negotiation stage (depending on the final ranking and availability of funds).
  - Has the right to modify the scores but this must always be duly justified
  - May provide additional recommendations to the Managing Authority (Ministry) for negotiation stage.
- Evaluation of construction and technical aspects of proposals (2nd level)

4. Selection at the level of Managing Authority (Selection Committee)
   - Selection Committee at the level of the Managing Authority – has a rather formal function and should not change what is proposed by International Panel
   - Takes into consideration a bonus for so called Integrated Plan for City Development (IPRM) and gives a bonus of 10% for compliance to proposals that present such a document
   - Takes into consideration the results of 2nd level of construction evaluations (economical costs, investment readiness / feasibility) – may possibly be a reason for rejection
5. Specification of performance parameters ('negotiation')
   - Objectives
     - Ensure the specification of performance parameters (esp. concretisation and quantification of objectives / monitoring indicators, management

structure)

- Ensure adequate reflection of evaluators' comments in amended, corrected version of the proposal
- Give the applicant an opportunity to clarify any unclear aspects (in front of the negotiation team) + present eventual missing documents (building permit, etc.)

– Result

- Agreement on performance and other implementation conditions (annexed to funding decision)
- Funding decisions issued

Source: Briefing for moderators OP RDI, PA1 & 2, calls 1.1. & 2.2., Technopolis

The launch of the OP RDI has been performed in three calls in two subsequent periods:

Figure 2 Calls for proposals for PA 1 and PA 2

		From	To	duration
Priority axis 2	Call 1	1 March 2009	30 April 2009	2 months
Priority axis 1	Call1	4 August 2009	16 November 2009	3.5 months
Priority axis 2	Call 2	17 August 2009	16 November 2009	3 months

Source: Ministry of Education, Youth, and Sports of the Czech Republic

A closer look at the periods reveals rather short intervals for the preparation of proposals. In formal terms, this is certainly true, taking into account the enormous effort to put together a proposal of 400-1700 pages including the time consuming search for and negotiations with partners, the time needed for obtaining buildings permits etc. As a matter of fact, the periods, in which the calls for proposals have been launched, have been announced much earlier (up to one year ahead of the official start). Thus, there has been plenty of time and assistance from various sources to collect all relevant pieces of information and to draft a comprehensive proposal. Only a few candidates struggled from delays in obtaining, particularly the required buildings permit.

This report will mainly concentrate on the three most important steps in the whole decision making cycle:

- The evaluation of application potential, including synergies and financial sustainability
- The evaluation of the overall quality of the proposals, and
- The specification of performance parameters, i.e. the negotiation of funding contracts.

2. A synoptic overview of proposed and funded projects in PA 1 and PA 2

During the planning period of the OP RDI a minimal budget size per project was set: 200 MCZK (approx. 8 MEUR) for projects under PA 1 and 100 MCZK (approx. 4 MEUR) for projects under PA 2. Due to this set, it was expected that approximately 15 projects would be retained for funding under PA 2.1, some 20 projects were expected under the PA 2.2, and some 10 projects under PA 1. In total not more than 50 projects were expected to enter into the negotiation stage.

Figure 3 below provides an overview of proposals, which have been (i) submitted for funding, (ii) recommended for funding by the application panel, and (iii) recommended for funding by the international panel.

Figure 3 Applications and recommendations in all calls in all PA

	Submitted for funding	Recommended for funding by the application panel	Recommended for funding by the international panel
PA 1.1			
proposals	15	11	8
Acceptance rate (# applications = 100%)	100%	73% (= 11/15)	53% (= 8/15)
Acceptance rate (prior round = 100%)		73% (= 11/15)	73% (= 8/11)
PA 2.1			
proposals	44	24	13
Acceptance rate (#applications = 100%)	100%	55% (= 24/44)	30% (= 13/44)
Acceptance rate (prior round=100%)		55% (= 24/44)	54% (= 13/24)
PA 2.2			
proposals	52	36	22
Acceptance rate (#applications = 100%)	100%	69% (= 36/52)	42% (= 22/52)
Acceptance rate (prior round = 100%)	100%	69% (= 36/52)	61% (= 22/36)
PA 2.1 + PA 2.2			
proposals	96	60	35
Acceptance rate (#applications = 100%)	100%	63% (= 60/96)	36% (= 35/96)
Acceptance rate (prior round = 100%)		63% (= 60/96)	58% (= 35/60)
PA 1 + PA 2	111	71	43
Acceptance rate (#applications = 100%)		64% (= 71/111)	39% (= 43/111)
Acceptance rate (prior round = 100%)		64% (= 71/111)	61% (= 43/71)

Source: Ministry of Education, Youth, and Sports of the Czech Republic, own calcuations

A number of rather distinct patterns can be observed:

- **The comparatively low share of accepted proposals indicates a highly competitive selection**. 8 out of 15 proposals were accepted for funding in PA 1, 33 out of 96 in PA 2, thus 43 out of 111 in total. The share of accepted proposals is 39% – which can be considered highly competitive, comparable with research councils and highly above other structural funds programmes.
- **Both panels have exerted a strong selection**. In both evaluation panels the share of proposals recommended for funding were in the same order of magnitude, namely: PA 1 (73% application : 73% international), PA 2.1 (55% :

54%), PA 2.2 (69% : 61%), PA 2 (63% : 58%). Thus acceptance rate ranged between 73% (PA 1) and 61% (PA 2.1).

- **Higher hit rate in PA 1 than in PA 2.** The share of accepted proposals in PA 1 (53%) is significantly higher than in PA 2 (36%). This correlates with the lower entry barriers for PA 2 which attracted above average more candidates who submitted proposals.
- **The application panel and the expert panel are complementary** as they deal with different characteristics of the proposals. While the application panel exclusively addressed technical, planning and building aspects, readiness for execution according to the proposed timetable, and the appropriateness and economic efficiency of construction costs, the experts' panel had a sharp eye on the attractiveness and consistency of the research programme, the solidity of the key personnel, on human resource policy and on management. We therefore can conclude that both panels where complementary as both contributed to the selection from different types of knowledge based on a complementary set of criteria.
- **Contrary to some concerns, the application panel has proven a rather restrictive regime** as it has dropped between 27% and 45% of all application. It was indeed not foreseeable whether the application panel, composed exclusively from national experts would exert a strict regime in selecting proposals or would rather shy away in dropping 'their friends'' proposals, thus exhibiting a so-called reciprocal behaviour. Moreover, the application panel has repeatedly pointed to weak or questionable points (often labelled as 'recommendations') in those applications which were considered worth to be recommended to the panel of international experts and / or the negotiation committee.
- **In some regards both panels addressed the same characteristics, but with different sets of knowledge**. In doing so, they however contributed with different sets of knowledge. This holds particularly true for application potential and financial feasibility. Particularly, it can be demonstrated that both panels have different views on the application potential: the correlation coefficient between the respective scores of all proposals from priority axis 2, that have been evaluated by both panels is not higher than 0.48, with respect to those which have been recommended for funding is even smaller, namely 0.37. This means that either panels contribute with different sets of knowledge leading to different results. Thus it is not possible to exclude one of the two panels.

3. An overview of total effort: briefing meetings, consensus meetings, panel meetings, and negotiation meetings

The following Figure 4 provides a synoptic overview of total time spent for several types of meetings as well as their preparation. Meetings include the following ones: (i) briefing meetings for moderators and quality controllers for national and international consensus meetings, (ii) meetings of the national and international evaluators, (iii) meetings of the national and international panels, and (iv) negotiation meetings. A total of 296 person days have been spent in meetings.

To conduct these meetings effectively, an average effort of 0.5 day was required for the preparation of one single proposal. Thus another 55 person days have been spent for preparing the consensus meetings for 111 proposals in the first (national) round and 35.5 person days at international level (71 proposals), thus 90 person days in total for consensus meetings. This effort has to be completed by 4 hours for preparing one single negotiation meeting, in total 41 projects x 2 rounds (average) x 2 negotiators x 0.5 days = 82 person days.

Figure 4 An overview of total time spent for meetings

Activity	days
Briefing meeting for moderators national evaluation PA 2.1	4
Briefing meeting for moderators national evaluation PA 2.2 / PA 1.1	7
Briefing meeting for moderators international evaluation PA 2.1	7
Briefing meeting for moderators international evaluation PA 2.2 / PA1.1	7
Moderation of national consensus meetings PA 2.1	20
Moderation of international consensus meetings PA 2.1	26
Moderation of national consensus meetings PA 2.2 / PA 1.1	56
Moderation of international consensus meetings PA 2.2 / PA 1.1	37
Negotiation meetings PA 2.1	33
Negotiation meetings PA 1.1	37
Negotiation meetings PA 2.2	55
Panel meetings	8
Subtotal for meetings	**296**
Preparation of the consensus meetings	90
Preparation of the negotiation meetings	82
Total	**468**

4. Chairing of the consensus meetings of the national and international evaluators, ensuring quality of the evaluation process of PA 2.1, PA 1.1, and PA 2.2

4.1 Introduction: Evaluation as a combination of individual evaluation, consensus meetings, and quality control

Each application has been evaluated individually by 3-5 national experts; each proposal, which was recommended for funding by the national panel, has been evaluated by international experts respectively. However, as experience shows, the outcomes of individual evaluation exercises can differ widely, particularly in those cases, where proposals cover a wide range of heterogeneous issues. Therefore, it was essential to implement some sort of consensus mechanism in order to level out individual outliers and to minimise blind spots. Consensus meetings, in which all evaluators were present, have proven as most effective. Their main goal was to harmonise the outcomes of the individual evaluations and to achieve consensus with respect to the respective criteria. Three types of consistency had to be considered.

- To achieve consensus among the outcomes of the individual evaluations for a given proposal is without doubt necessary. Unfortunately, this **intra-team consistency** is not sufficient to justify a robust funding decision.
- A given consensus report can be inconsistent irrespective of the fact, that a consensus has been achieved among the individual evaluators. A typical case of inconsistency is to give high scores for a given criteria and at the same time ending up in a large number of recommendations for improvement. This is about **intra-project** consistency.
- However, even if intra-project consistency is achieved, we still have to deal with the problem of lack of **inter-project** consistency which occurs if two consensus

panels achieve the same scores but having different interpretations of the respective scores.

Moderation and quality control are thus key functions in the achievement of intra- and inter-project consistency. The respective roles are thus the **moderators**, mainly responsible for achieving intra-team and intra-project consistency, and the **quality controllers**, mainly being in charge of maintaining inter-project consistency.

4.2 Briefing the moderators and quality controllers

One-day briefing seminars were held in order to achieve a consistent understanding of the respective tasks and responsibilities among moderators and quality controllers. The tables below provide an overview of moderators and quality controllers participating in these seminars. A total of 25 person-days have been spent for attending these seminars.

These briefing seminars were also used for creating synergies within the Ministry: Project leaders and other officers from the Ministry participated in the briefing seminars and took the opportunity to get more acquainted with the broader process and context of the evaluation process.

One (major) part of the briefing seminars was covered by information provision: the basic parameters of the calls, the evaluation process, the selection criteria, and the organisation of the evaluation. The other, more interesting part was devoted to criteria and advices about 'good house-keeping' in order to produce a consensus report with reading pleasure for those involved in the subsequent tasks: 8-10 pages, in a clear language, with bold statements based on clear justifications, with comments and recommendations for further consideration. These are the most relevant aspects:

Figure 5 Criteria for achieving a high quality consensus meeting report

- Ensure a uniform interpretation of evaluation criteria among individual experts
- Ensure a clarity, un-ambiguity of reports, that they express the essence of evaluation result and provide a good guidance for negotiation stage
- Correctness of language use
- Correctness of facts stated referring to the text of the proposal
- Intelligibility and unambiguity of comments in the consensus reports
- Compatibility between quantitative and qualitative evaluation
- Concreteness and reasonableness of points for negotiation including their justification; ensures that such requests do not change the nature of the proposal and focus of specification of concrete aspects of the proposal
- Avoid speculation – only what is written counts, be careful with 'big names' – not always indicative of the quality of the proposal
- Highlight points that are important from the point of view of the Ministry but may be disregarded by experts, particularly: over-excitement of the scientific content, re-location from Prague, management, financial sustainability
- Budget reduction (what, where, how much); vagueness of objectives should be taken a reason for cuts
- Projects to be rejected – in the summary evaluation state explicitly on which criterion it failed and why (main weakness)
- Makes sure that the consensus report provides a good basis for negotiation: concrete recommendations / conditions for funding, esp. for budget cuts, management, human resources, business model

Figure 6 Briefing of moderators / quality controllers of consensus meetings of national evaluators in PA 2.1

Date of briefing	Moderators / quality controllers
24.06.2009	Miroslav Raus
24.06.2009	Milan Rieder
24.06.2009	Jan Samek
24.06.2009	Ivo Šanc (QC)
Total	4 person-days

Figure 7 Briefing of moderators / quality controllers of consensus meetings of national evaluators in PA 1.1 & PA 2.2

Date of briefing	Moderators / quality controllers
27.01.2010	Pavel Klůs
27.01.2010	David Kolman
27.01.2010	Milan Rieder
27.01.2010	Miroslav Raus
27.01.2010	Jan Samek
27.01.2010	Ivo Šanc (QC)
27.01.2010	Mirko Vaněček
Total	7 person-days

Figure 8 Briefing of moderators / quality controllers of consensus meetings of international evaluators in PA 2.1

Date of briefing	Moderators / quality controllers
26.08.2009	Fritz Ohler (QC)
26.08.2009	Anton Geyer
26.08.2009	Brigitte Tiefenthaler
26.08.2009	Michael Stampfer
26.08.2009	Lothar Behlau
26.08.2009	Berghold Bayer
26.08.2009	Ivo Šanc (QC)
Total	7 person-days

Figure 9 Briefing of moderators / quality controllers of consensus meetings of international evaluators in PA 1.1 and PA 2.2

Date of briefing	Moderators / quality controllers
12.03.2010	Fritz Ohler (QC)
12.03.2010	Anton Geyer
12.03.2010	Brigitte Tiefenthaler

12.03.2010	Michael Stampfer
12.03.2010	Lothar Behlau
12.03.2010	Berghold Bayer
12.03.2010	Ivo Šanc (QC)
Total	7 person-days

4.3 Chairing of the consensus meetings of the national and international evaluators of the quality of projects of PA 2.1

A whole week (29.06.-03.07.2009) has been scheduled for achieving consensus among individual assessments. Figure 10 provides an overview of the moderators and the quality controllers. A total of 20 person days over a period of one week have been spent to achieve consensus among proposals and related evaluation reports for funding 'Regional R&D Centres' (PA 2). A total of 44 submitted proposals have been discussed; 24 proposals (55%) were considered substantial to be further discussed in the international consensus meetings. The effort of the whole week has been awarded with the full consent in all applications, i.e. no one required a majority voting.

Figure 10 Date and moderators / quality controllers in consensus meetings of national evaluators of PA 2.1

Date of meeting	**Moderators**			**Quality controller**
	Miroslav Raus	Milan Rieder	Jan Samek	Ivo Šanc (QC)
29.06.2009	x	x	x	x
30.06.2009	x	x	x	x
01.07.2009	x	x	x	x
02.07.2009	x	x	x	x
03.07.2009	x	x	x	x
Total	20 person days			

A similar exercise has been performed with respect to the international evaluations. 26 person days have been spent between 31.08.2009 and 03.09.2009 (cf. Figure 11) to achieve consensus among 24 proposals and respective individual evaluation reports.

Figure 11 Date and moderators / quality controllers of consensus meetings of international evaluators in PA 2.1

Date of meeting	**Moderators**						**Quality controller**
	Berghold Bayer	Brigitte Tiefenthaler	George Bonas	Ivo Šanc	Lothar Behlau	Michael Stampfer	Fritz Ohler
31.08.2009	x	x	x	x	x	x	x
01.09.2009	x	x	x	x	x	x	x
02.09.2009	x	x	x	x	x	x	x
03.09.2009	x		x	x	x		x
Total	26 person days						

Again, all consensus reports were achieved without minority vote. A total of 24 proposals have been handed over from the national panel to the international evaluators to be dealt with in the consensus meetings. Here, 13 out of 24 (54%) have

been recommended for funding. Based on the grand total of 44 proposals, the remaining 13 proposals recommended for funding equals an acceptance rate of 30%. For an overview see Figure 12. As already mentioned, this acceptance rate indicates a highly competitive selection process.

Figure 12 Applications and recommendations in PA 2.1

PA 2.1	Applications	Recommended by application panel	Recommended by international panel
proposals	44	24	13
Acceptance rate (#applications = 100%)	100%	55% (= 24/44)	30% (= 13/44)
Acceptance rate (prior round=100%)		55% (= 24/44)	54% (= 13/24)

Source: Ministry of Education, Youth, and Sports of the Czech Republic, own calculations

4.4 Chairing of the consensus meetings of the national and international evaluators of the quality of projects of PA 1.1 and PA 2.2

A total of 56 person days between 01.02.2010 and 09.02.2010 have been spent to achieve consensus amongst proposals and related evaluation reports. Figure 13 provides an overview of the moderators and the quality controller of the national evaluators involved in this exercise.

Figure 13 Date and moderators / quality controllers in consensus meetings of national evaluators of PA 1.1 and PA 2.2

Date of meeting	**Moderators**							**Quality controller**
	Pavel Klůs	David Kolman	Jan Kubušek	Miroslav Raus	Milan Rieder	Jan Samek	Mirko Vaněček	Ivo Šanc
01.02.2010	x	x	x	x	x	x	x	x
02.02.2010	x	x	x	x	x	x	x	x
03.02.2010	x	x	x	x	x	x	x	x
04.02.2010	x	x	x	x	x	x	x	x
05.02.2010	x	x	x	x	x	x	x	x
08.02.2010	x	x	x	x	x	x	x	x
09.02.2010	x	x	x	x	x	x	x	x
Total	56 person days							

Likewise, to achieve consensus at the level of international evaluations another 37 person days have been spent to deal with 11 proposals in PA 1 and 36 proposals from PA 2. Figure 14 provides an overview of moderators and quality controller involved in the process.

Figure 14 Date and moderators / quality controllers of consensus meetings of international evaluators in PA 1.1 and PA 2.2

Date of meeting	**Moderators**						**Quality controller**	
	Anton Geyer	Berghold Bayer	Brigitte Tiefenthaler	George Bonas	Lothar Behlau	Michael Stampfer	Fritz Ohler	Ivo Šanc
15.03.2010	x	x	x	x	x	x	x	x
16.03.2010	x	x	x	x	x	x	x	x
17.03.2010	x	x	x	x	x	x	x	x
18.03.2010	x	x		x	x	x		x
19.03.2010	x	x		x	x	x	x	x
Total	37 person days							
International panel							x	x
Total	39 person days							

The participants of these two consensus weeks have dealt with two calls: the second call for funding Regional R&D Centres (PA 2.2) and the first and only call for Centres of Excellence (PA 1.1). Figure 15 provides an overview of success rates:

Figure 15 Applications and recommendations in PA 1.1 and PA 2.2

	Applications	Recommended by application panel	Recommended by international panel
PA 1.1			
proposals	15	11	8
Acceptance rate (# applications = 100%)	100%	73% (= 11/15)	53% (= 8/15)
Acceptance rate (prior round=100%)		73% (= 11/15)	73% (= 8/11)
PA 2.2			
proposals	52	36	22
Acceptance rate (#applications = 100%)	100%	69% (= 36/52)	42% (= 22/52)
Acceptance rate (prior round=100%)	100%	69% (= 36/52)	58% (= 22/36)

Source: Ministry of Education, Youth, and Sports of the Czech Republic, own calculations

- A total of 52 proposals have been submitted for funding Regional Research Centres (PA 2.2), while 15 proposals have been handed in for funding Centres of Excellence (PA 1.1).
- Regional Research Centres (PA 2.2): 36 out of 52 submitted proposals (69%) have passed the national panel and were recommended for further evaluation by the international panel. The latter panel finally selected 20 out of 36 (55%) were recommended for funding. The overall success rate, including both the national and the international evaluation, was 38%.
- Centres of Excellence (PA 1.1): 11 out of 15 submitted proposals (73%) were recommended for funding within the framework of the national evaluation, 8 of these 11 (73%) survived after the second step, in total 53%.

4.5 Some reflections on the consensus meetings

- **Timing, duration of the meetings**, **organisational setting**. The respective consensus meetings were organised for one week with 4-6 sessions in parallel. Originally, two or three hours were allocated to each meeting. In the second round half a day (4 hours) has been scheduled for each proposal. However, it turned out, that some meetings did not end up at 5 or 6 p.m., but close to midnight. The quality check has proven a certain bottleneck as there was no meaningful alternative to the 'first come, first serve' principle of logistics. In some cases a delay of up to four hours had to be accepted.

- **Consensus or majority**. Depending on content and scope of the project, 3-4, in exceptional cases up to six evaluators have prepared individual evaluations of the proposal. The goal of the consensus meeting was to align the individual evaluation reports in order to produce one complete and coherent consensual evaluation report. In reality, all reports and respective recommendations were achieved by consensus, the instrument of a majority voting remained in the drawer.

- **Participants in the consensus meetings: not only evaluators and moderators, but also staff members from the Ministry**. The main participants in the consensus meetings are the evaluators. To the extent they do their job properly the moderators can behave rather passively and vice versa. The presence of staff members from the Ministry has been proven a valuable opportunity to familiarise with the proposals, their key characteristics, critical issues, and how to deal with them.

- **The role of the moderators – theory and practice**. In theory, the task of the moderators is to assure completeness and coherence of the consensus reports, but not interfering into content. Further, the moderators supervise and manage the editing of the consensus reports, always keeping into consideration the rule not to interfere into the substance of discussed matters. In practice however the moderators have to fulfil a rather demanding job as they have to 'moderate' (in a strict sense of its definition) the dominant participant and try to support the moderate ones.

- **Editing the consensus reports: a potential bottleneck**. Consensus reports have been edited by the moderators or by appointed rapporteurs, in some cases by staff from the Ministry, based on the dictate of moderators and / or evaluators. In the international consensus meetings it has proven rather helpful to have somebody with a good command in English. In the course of time moderators have learnt how to manage the editing effectively.

  - Efficient moderators have started the editing process rather soon. It has particularly proven useful to draft a zero-version of the consensus report by pasting respective statements from the reports of the individual evaluators and to focus at coherence and justification.

  - Moderators do play an active role in the justification and formulation of conclusions and recommendations as a useful input for the subsequent negotiation phase (cf. chapter 5 in this report).

- **Meeting with the applicants**. In those cases, where evaluators / moderators did not succeed a clear-cut result, the applicants were invited to respond to a small number of critical questions. Due to tight time-schedules an efficient logistic model was looked for. In practice, two models were applied, with different pros and cons:

  - The delayed model. The evaluators / moderators first produced a report, which included those questions to be asked to the applicants. One or two days later, a meeting with applicants took place for about one hour. Afterwards the preliminary consensus report has been re-edited and accomplished. Although

this procedure allowed certain flexibility in involving the applicants including their opportunity to prepare themselves, it suffered from a fragmentation of the entire process. All in all it was considered a difficult and less efficient organisational set-up.

- The integrated model, including the following steps. (i) The evaluators discuss about 1-2 hours about their evaluation. Differences in their opinions are transformed into questions to the applicants who are waiting next door. (ii) The applicants are allowed 15-20 minutes for preparation and are then invited for questions and answers, mainly by referring to the respective chapters in the proposal and explaining them according to the questions asked by the evaluators. (iii) The evaluators make their final decisions and edit their final consensus report (and not two versions as in the first model). The number of participants on the side of the applicants is limited, which allows, as a by-product, to check whether the proposal is sufficiently understood by their official representatives. External consultants should be excluded, except for construction issues.

- **Late delivery of the individual project proposal assessments**. Due to the tight overall schedule of the calls it was the rule rather than the exception that individual project proposal assessments were delivered lately. Quite many of the evaluators delivered their reports not earlier than a couple of days before the consensus meeting. In some cases they even delivered immediately before the meeting. For good reasons, this late delivery has created problems as it was difficult to seriously prepare for the meeting. The delays however diminished in the second round considerably.

- **Quality control: a redundant task**. Quality control takes place in several, overlapping modes. First, the quality controllers have attended each meeting for a limited time. Secondly, he or she read all consensus reports. Thirdly, representatives of the Ministry attended most meetings and assisted – on demand – the moderators and evaluators with methodological comments and advices.

4.6 Performance of the evaluators and quality of the consensus reports

- **Specifity and usefulness of consensus reports, some shortcomings among the evaluators**. Most of the consensus reports have been elaborated with appropriate quality, responsibility, and relevance. Some reports, however, either suffered from too general statements or from too vague indications for the subsequent steps, particularly when it came to use the consensus report as an input for the negotiation process. These cases quite often have been related to the observation, that some of the evaluators did not study the proposals thoroughly or did not internalise the rules of the evaluation process sufficiently. These deficiencies emerged in about one fifth of the involved evaluators, while the majority accomplished their task satisfactorily. Moreover, the process of consensus building substantially contributed to overcome these deficiencies.

- **Different approaches to evaluation due to different concepts of application potential**. Some evaluators required more concrete and binding declarations of future contractual research, while others were satisfied with more formal declarations of intentions. Some evaluators understood application potential including education and training of professionals, others appreciated only cooperation with the application sector and were thus oriented at contractual or collaborative research. Likewise, some evaluators were satisfied with brief and general descriptions of measures for protection of intellectual property rights while others required more specific description of the system of transfer of technologies and of a marketing policy towards commercial partners.

- **Application potential, esp. volume of future contractual research, is notoriously difficult to verify**. While the Guidelines for Applicants require

quite detailed information on application potential, the applicants are usually not able to present binding documents which would realistically prove future commercial activities. To handle this trade-off the evaluators and moderators tended to compensate this lacking information by an appraisal of (i) performance of the applicants in the past, (ii) their ideas about planned / expected changes in the future, (iii) the underlying business models, (iv) their understanding of their application sphere, and (v) their ways how to approach the respective application spheres / markets.

- **Information about other applications submitted to the same or to similar calls**. Applicants have not been asked to report about other proposals, which the applicants submit to the same or similar calls. Such information would have helped evaluators to better assess financial sustainability of projects ("Is the applicant capable to realise several demanding projects in the same time?"). Such information would also enable to assess potential thematic overlapping amongst particular projects.
- **Information asymmetry among evaluators, moderators, and panel members**. In a few cases, the evaluators voted for funding, while the moderator of the national evaluation and / or individual members of the panel strongly argued for non-funding based on certain insider knowledge. However, it would lead to an overload of the evaluation rules, if these (few) cases would be reflected in the formal framework. Rather, elementary rules of fairness and good behaviour seem sufficient to cope with these cases: (i) allegations have to be substantiated (ii) in an open debate, (iii) involving third, independent parties, particularly the international evaluators / panel.
- **Poor content of individual evaluation reports**. Some of the evaluation reports suffered from poor content. Moreover, often it was not clear what is considered a 'comment' and as a 'recommendation'. In practice, moderators were able to manage these grey zones as each chapter in the evaluation report mandatorily asked for recommendations. As a general rule, poor understanding or poor examination of content typically leads to an inflation of recommendations and advices.
- **A bias in the selection of evaluators for priority axis 2**. The evaluators should have a profound experience in contract research. Observations have been made that a too strong focus on scientific qualification as a selection criterion for evaluators can even lead to an underestimation of applied / contract research.

4.7 Interventions of the quality controller

- **Personal visits of the quality controller in the consensus meetings**. The quality controller personally attended the meetings of all consensus committees for a certain period of time. The controller read all consensus reports and met all evaluators. Both sources have been relevant inputs to accomplish one of the major requirements of quality check, namely to balance and homogenise the respective reports with respect to the comparability of language, lengths, level of details and specifity, and, most important, of the scorings.
- **The process of quality check**. Immediately after the individual consensual meetings, the quality controller read the draft consensual report in order to perform the following checks:
  - **Speaking with one voice**. Due to a sometimes complicated wording, due to copying from different reports and also due to time pressure unclear formulations and typing errors appeared quite often.
  - **Homogenisation of statements**. Apart from personal preferences one of the major issues in this step was to minimise the individual perception of what the evaluation should perform in terms of how specific and how detailed the

respective statements should be. A particular requirement in this regard was to obtain rather concrete and specific outputs serving as an input for the next stage, i.e. the international consensus meeting and / or the negotiation phase.

- **Homogenisation of scores within and between the consensus reports**. A major responsibility of the quality controller was the assurance of commensurability of scores (i) between the different chapters within the same report and (ii) between the respective report all the more as at the end of the process a centre of hop research had to be compared to that of fourth generation nuclear power or research in quantum computers.
- **Completeness of the report**. As a general behaviour, evaluators preferably addressed those issues which are stated in the application document. Likewise, the participant in the consensus meeting (evaluators, moderators) tended to fall into the same trap of having a blind spot in those chapters / criteria, in which the basic documents themselves did have a blind spot. Thus they tended to reproduce blind spots. The quality control therefore had to specifically address the issue of missing parts in the consensus report.

- **In the majority of cases the quality controller had to intervene into the consensus reports**. Small or bigger intervention of the controller was necessary almost in all consensus reports. In the majority of cases (three out of four) of all reports the controller asked for modification of the text. In a few cases the controller asked for a change of scores of the application potential, in order to achieve homogeneity between the text and the score or in order to keep the same level of rigorousness amongst the different consensus reports. The most common reason for interventions was the incompatibility of high scores on the one hand and quite a large number of recommendations on the other hand.

4.8 Reflections on criteria and questions in the application and evaluation forms

In the course of the consensus meetings a number of questions arose, which had their origins in the application forms, in other cases they emerged from the evaluation guidelines. Most of these problems were solved among the evaluation team members (evaluators & moderators) or between the evaluation teams and their moderators. The quality managers and the staff from the Ministry themselves permanently exchanged their experiences and views during the consensus weeks and tackled dominant issues. The briefing seminars ware used to address and clarify pertinent topics.

A.1.1.1.[2] – Question concerning the compliance with the call's overall goals

Centre-based centres can perfectly serve the periphery. Regional centres should be established in order to support competitiveness of convergence regions, i.e. regions except Prague. The call and related documents trigger a 'moving out from Prague' behaviour of Prague-based research institutions as the EU regional policy considers (the locus of) research performance as the key activity rather than the (locus of) adoption and use of research. Unfortunately, the question at hand does not fully

[2] A.1.1.1. "Is the proposal in line with the objectives of the call, i.e. the creation of a research Centre of Excellence – a research centre equipped with modern, often unique infrastructure, producing excellent international-level research results, including results with real-world applications, creating strong strategic partnerships with prestigious research organisations (private and public) in the Czech Republic and abroad contributing to the greater integration of Czech R&D teams with leading international research organisations and European research infrastructures, and contributing to the development of human resources in research through PhD. programs and attracting qualified researchers from the CR and abroad to Convergence regions?"

cover this principle, as a Prague-based centre could best serve the research needs of firms located in disadvantaged, remote regions.

Strategically motivated move to the 'periphery of the centre'. At the same time, several projects, while formally fitting to the formal requirements, create doubts about their strategic and operational autonomy. In the course of the debate in the consensus meetings it became difficult to deal with these grey zones. Here it is necessary, to re-think the concept of coherence and the spatial dimension of research, particularly by separating the locus of research performance and the locus of research use.

A.1.1.2.[3] – Compliance with the Long-term Basic Directions of Research (DZSV)

Compliance with DZSV is self-evident, with grey zones. The self-evident character results from the fact that the range of DZSV ('Long-term Basic Research Directions') is rather broad and allows for more or less all submitted proposals. However, a particular problem arose with respect to medical research. There have been several proposals that are clearly linked to the interest of big pharmaceutical firms by performing clinical research of the firms' products, which perfectly fits into the overall goals. However, sometimes a high quality medical research will not primarily serve the application sector in terms of private sector firms, but also, and sometimes much more health insurance organisations, public hospitals, not least the Ministry of Health. Problems arose as many of these public-health-related organisations cannot contract research or can only provide grants rather than contracts. Here, it would be necessary, to re-think the concept of application sphere and to reflect the ability of specific organisations to play a more active role, i.e. being capable to negotiate and enter into contractual relations.

A.1.2.1.[4] Use of results, application potential
C.1.3. Users[5]

A simplified understanding of the criterion 'use of research results'. This criterion is clear, specific, and meaningful. It covers in particular all types of centres, ranging from centres of excellence aiming at research results to be published in highly reputable scientific journals to very regionally oriented regional research centres. Both of them have to specify and approach 'their' user group.

Some evaluators (and applicants) however did not understand it correctly and clearly. Particularly in the first call they often reduced the system for exploitation of R&D results to the problem of IPR or to a summary of reference letters or letters of intent. In the second call a more explicit definition of 'use of research results' was given. Applicants, particularly in PA 2.2, were forced to define an active marketing policy (instruments, rules, capacities) and a system ensuring future success in the development of research contracts and international grants.

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3 A.1.1.2. "Does the proposal contribute to research development in one (or more) of the first seven Long-term Basic Directions of Research (LBDR) that represent the strategic research priorities of the Czech Republic?"

4 A.1.2.1. "Has the applicant put in place a system for the use of research results or presented a credible plan in the application for the development of such a system within the project or during project implementation?"

5 C.1.3. "Quality and the degree of specification of the users who may benefit from the activity (especially the application sector) and concreteness of their demands, relevance and an expected impact of the proposed activities / research programme from the point of view of users."

A.1.3.1.[6] – Credibility of the revenue plan

Revenue plans should be described in more objective / quantitative terms. This question opens space to the experience and knowledge of evaluators which have to decide whether the revenues are credible and clear for each category of revenues. More objective criteria should have been defined. E.g. several evaluators looked for precise information about the companies mentioned in a project proposal and found out that, in some cases, some companies declared total annual turnover of 500 thousand CZK, but the same companies promised contract research with the volume exceeding 1 mil. CZK. Even more, in several cases those companies are owned and managed by persons who are representing the applicant. Stricter (exclusion) criteria should be applied for proving the cooperation with application sector to prevent amongst others from fraud and corruption.

A.1.3.2.[7] – Justification of project costs

Double checking of justification of project costs. This criterion has proven useful. In some exceptional cases evaluators dealt with operational costs instead of investment + operational costs. Despite construction costs are evaluated by other experts (especially from the point of view of technical-financial parameters), also the evaluators of R&D application potential and international experts can provide valuable comments to the necessity of buildings / equipment from the point of view of achievement of research goals. This question should provide them the space for such comments. The request to assess not only the price, but also the justification of purchase of equipment should have been formulated more explicitly. Separate consideration should be paid to multiple investments.

Questions A.1.3.3.[8], A.1.3.4.[9] and A.1.3.5.[10] are interconnected, thus it is rather problematic to separate them. Re-investments are de facto part of operational costs. The answer to question A.1.3.3. (operational costs) depends also on the previous question of relevance and justification of investment costs: If purchase of some equipment is evaluated as useless or not justified, also operational costs linked with this equipment are inadequate. In some cases evaluators could not pay appropriate attention to the evaluation of operational costs, i.e. they had not sufficiently analyzed wages, operational costs of equipment, etc.

A.1.3.4.[11] – Justification of the reinvestment plan

The plan of re-investment should be based on 'bookkeeping depreciations' according to the rules of the Call. Those depreciations usually correspond to the practices of applicant's institution. However, from the point of view of the sustainability of the project, moral or technical lifetime is more relevant and logic. If 'bookkeeping

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6 A.1.3.1. "Is the revenue plan based on credible and clearly articulated assumptions (separately for institutional funding, competitive funding, funds from abroad, and funds from contract / collaborative research) and designed to provide assurance that the project will be financially sustainable for at least 5 years after project completion?"

7 A.1.3.2. "Are planned project costs efficient, justified and commensurate with the needs of the project and the applicant's site?"

8 A.1.3.3. "Are estimated operating costs after project completion commensurate with the type and structure of planned investment in a way that gives good reason to expect the project's financial sustainability for at least 5 years after project completion?"

9 A.1.3.4. "Is the reinvestment plan commensurate with the planned equipment replacement needs and are estimates duly justified?"

10 A.1.3.5. "Is the financial sustainability plan based on revenues other than state budget appropriations for RDI?"

11 Cf. footnote 9

deprecations' are applied, the plan of re-investment is done only by calculation, i.e. it does not allow to the applicant to decide and to create a real re-investment policy. Therefore the evaluator has nothing to evaluate. Instead of evaluation, the evaluator only performs a control. If the plan is based on moral and technical lifetime, the space for creative planning and subsequently the space for real evaluation would emerge.

A.2.1.[12] – Synergies with other operational programmes

'Synergies with other OPs' was considered a misguiding criterion. According to comments of evaluators and moderators, the criterion of synergies with other operational programmes was considered one of the most questionable components of the evaluation. Compared with other scored criteria, i.e. with application potential, the weight and significance of synergies was considered heavily overestimated. The criterion, as it was formulated, enabled the applicant to argue (and to improve score) by projects, which were submitted, but not approved for financing. It even allowed submission of such projects on purpose, i.e. without real interest to implement it.

Thus, a reduction of the weight of that criterion and also an evaluation by scores (i.e. 0 to 5 points rather than 0 or 5 points), would better allow to evaluate the extent of perceived synergies. Apart from it, the applicant should clearly declare, whether the projects have been approved or not. Other projects with European dimension could be also included into that criterion (e.g. FP7, EUREKA).

C1.1. Research programme[13]

Quite many applications had too many research programmes. This is typically motivated and triggered by the bottom-up approach in 'taking all eggs into one basket'. This often correlates with poor leadership, both in terms of social inclusion / exclusion of friends and colleagues, as well as in terms of lack of overview of research fields and related trends and opportunities. It has proven worthwhile to direct the attention both of applicants and of the evaluators to contemplate about a realistic number of research programmes.

C.1.2.[14] – Quality of the research team
C.1.5.[15] Quality of the management, organisational structure and quality and risk management

These two interrelated criteria have created some confusion. While the former addresses the scientific and management competence of the key researchers, the latter ask for the (formal) organisational and managerial structure, thus actors, roles, rights, responsibilities and relations, but not the competences of the managers themselves. Experience has shown that the formal set-up of the centre tends to be underestimated in the evaluation. The moderators thus had to address this aspect.

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12 "Is the applicant also taking part in a project funded by OP Business and Innovation or a project that has been submitted for a call for OP Business and Innovation (i.e. has it already obtained a Project funding decision or has it submitted a proposal in an open call) and that has complementary aims and the potential for synergies with the submitted project?"

13 "C1.1. Quality of the proposed activity or research programme in respect of the objectives of priority axis 1 (European Centres of Excellence)"

14 "C.1.2. Research team: Quality of the research team (key personnel) in respect of the objectives of the priority axis."

15 "C.1.5. Management: Quality of the management, organisational structure and quality and risk management"

5. Assistance during the specification and negotiation of project performance parameters

One of the most outstanding experiences in making funding decisions is that a given proposal rarely will be accepted without further adaptations. Taking into account, that projects to be funded within the OP RDI are by far more than (large) research projects, but fully fledged research centres with a size ranging from 50 to 1000 employees it is clear that further improvements here and strict conditions there has been the rule rather than the exception. Accordingly, proposals which were generally accepted by national and international panels for funding had to undergo substantial adaptations in particular aspects. And these are the typical concerns and requests (which we will elaborate in the following chapters).

- Lack of focus of individual research programmes and lack of coherence between them
- Dominance of supply-side orientation vis-á-vis poor understanding of the target group
- A 'leaning' of the management and governance model due to an underestimation of the role and power of management and governance and a too complex and at the same time inefficient management model
- A more explicit human resource policy
- Budgets cuts due to poorly focused / poorly linked research programmes
- A more active acquisition of research contracts and / or grants
- An increase of (tangible) outputs (publications, income from grants and contracts, patents, training, etc.)

While evaluators are perfectly able to address critical issues and indicate the direction of change, they are not in a position to ad hoc determine the required changes in detail, mainly for two reasons. One is mainly cognitive: the complexity of the proposals and the necessity to take into account contextual factors vis-á-vis the limited resources, mainly time and information, does not allow an in-depth analysis and determination of detailed adjustments in panel meetings. The other reason is more psychological: it has turned out that applicants' acceptance of the final performance contract is higher if the applicants themselves are invited to propose adjustments and negotiate these proposals rather than to react to propositions by the negotiation committee. It is not necessary for the negotiation committee to determine the type and rate of change in advance, while it is certainly helpful to perform an effective negotiation.

Accordingly, it is useful to carry out a separate negotiation phase with a rather clear division of labour: All adaptations and changes have to be worked out and proposed by the proposers themselves, the funding organisation / negotiating team had to comment, discuss, and finally agree on the (consensually) negotiated changes.

Figure 16 provides an overview of the negotiation process of proposals recommended for funding in PA 2.1: dates, negotiators, and respective centres.

- It can be seen that out of the 13 negotiated proposals, 2 proposals where accepted after the first negotiation meeting, 10 required two meetings, 1 took three rounds.
- A total of 17 meeting days / 33 person days where needed to negotiate a total of 13 proposals. While on 8 days it was possible to negotiate two proposals per day, on other 9 days only one proposal has been negotiated. This pattern changed over time: While the first meetings could be kept rather short (i.e. half a day), as it mainly served to put forward, explain, and justify the required adaptations, the

second (and third) meeting primarily served the purpose to negotiate and agree on the changes.

Figure 16 Negotiation of projects recommended for funding in PA 2.1

Negotiation date	Project No	Negotiators		Name of the centre
07.10.2009	5	Fritz Ohler	Ivo Šanc	Centre for Nanomaterials, Advanced Technologies and Innovation
07.10.2009	2	Fritz Ohler	Ivo Šanc	NETME Centre (New Technologies for Mechanical Engineering)
08.10.2009	6	Fritz Ohler	Ivo Šanc	Center for Advanced Microbiology and Immunology in Veterinary Medicine
12.10.2009	40		Ivo Šanc	Regional Materials Science and Technology Centre
12.10.2009	17		Ivo Šanc	Application Laboratories of Advanced Microtechnologies and Nanotechnologies
15.10.2009	7	Fritz Ohler	Ivo Šanc	Centre of the Region Haná for Biotechnological and Agricultural Research
15.10.2009	2	Fritz Ohler	Ivo Šanc	NETME Centre (New Technologies for Mechanical Engineering)
19.10.2009	30	Fritz Ohler	Ivo Šanc	Biomedicine for Regional Development and Human Resources (BIOMEDREG)
19.10.2009	5	Fritz Ohler	Ivo Šanc	Centre for Nanomaterials, Advanced Technologies and Innovation
20.10.2009	17	Fritz Ohler	Ivo Šanc	Application laboratories of advanced microtechnologies and nanotechnologies
21.10.2009	6	Fritz Ohler	Ivo Šanc	Center for Advanced Microbiology and Immunology in Veterinary Medicine
22.10.2009	1	Fritz Ohler	Ivo Šanc	CETOCOEN
22.10.2009	40	Fritz Ohler	Ivo Šanc	Regional Materials Science and Technology Centre
04.11.2009	7	Fritz Ohler	Ivo Šanc	Centre of the Region Haná for Biotechnological and Agricultural Research
04.11.2009	1	Fritz Ohler	Ivo Šanc	CETOCOEN
23.11.2009	12	Fritz Ohler	Ivo Šanc	Centre for Materials Research at FCH BUT
23.11.2009	14	Fritz Ohler	Ivo Šanc	Research and Technology Centre of Renewable Energy Sources
01.12.2009	36	Fritz Ohler	Ivo Šanc	Innovation for Efficiency and Environment
16.12.2009	12	Fritz Ohler	Ivo Šanc	Centre for Materials Research at FCH BUT
16.12.2009	36	Fritz Ohler	Ivo Šanc	Innovation for Efficiency and Environment
17.12.2009	14	Fritz Ohler	Ivo Šanc	Research and Technology Centre of Renewable Energy Sources
13.01.2010	24	Fritz Ohler	Ivo Šanc	South Bohemian Research Center of Aquaculture and Biodiversity of

				Hydrocenoses
18.02.2010	24	Fritz Ohler	Ivo Šanc	South Bohemian Research Center of Aquaculture and Biodiversity of Hydrocenoses
15.04.2010	24	Fritz Ohler	David Kolman	South Bohemian Research Center of Aquaculture and Biodiversity of Hydrocenoses
29.09.2010	27	Fritz Ohler	Ivo Šanc	HILASE: New lasers for industry and research
Total	33 person days			

Figure 17 provides an overview of the negotiation process of PA 1.1. Out of a total of eight proposals, one was completed after one single meeting. Three took two and another three took three rounds, in a remaining one four rounds were needed as the proposer had to resolve inconsistencies and frictions among partners.

Figure 17 Negotiation of projects recommended for funding in PA 1.1

Negotiation date	**Project No**	**Negotiators**		**Name of the centre**
16.04.2010	109	Fritz Ohler	Ivo Šanc	Biotechnology and Biomedicine Research Centre of the Academy of Sciences and the Charles University at Vestec (BIOCEV)
19.04.2010	60	Berghold Bayer	Ivo Šanc	The Telc Centre of Excellence
19.04.2010	90	Berghold Bayer	Ivo Šanc	New Technologies for the Information Society (NTIS)
20.04.2010	61	Berghold Bayer	Ivo Šanc	Extreme Light Infrastructure
21.04.2010	61	Fritz Ohler	Ivo Šanc	Extreme Light Infrastructure
22.04.2010	123	Fritz Ohler	Ivo Šanc	International Clinical Research Center (FNUSA-ICRC)
23.04.2010	73	Fritz Ohler	Ivo Šanc	Center for Global Climate Change Impacts Studies (CzechGlobe)
26.04.2010	68	Fritz Ohler	Ivo Šanc	Central European Institute of Technology (CEITEC)
26.04.2010	70	Berghold Bayer	David Kolman	IT4Innovations Centre of Excellence
10.05.2010	68	Fritz Ohler	Ivo Šanc	CEITEC
10.05.2010	123	Fritz Ohler	Ivo Šanc	FNUSA-ICRC
12.05.2010	123	Fritz Ohler	Ivo Šanc	FNUSA-ICRC
20.05.2010	61	Fritz Ohler	Ivo Šanc	Extreme Light Infrastructure
25.05.2010	70	Berghold Bayer	David Kolman	IT4Innovations Centre of Excellence
28.05.2010	73	Fritz Ohler	Ivo Šanc	CzechGlobe

02.06.2010	60	Berghold Bayer	Ivo Šanc	The Telc Centre of Excellence
21.06.2010	109	Fritz Ohler	Ivo Šanc	BIOCEV
22.06.2010	70	Berghold Bayer	David Kolman	IT4Innovations Centre of Excellence
28.06.2010	109	Fritz Ohler	Ivo Šanc	BIOCEV
25.08.2010	109	Fritz Ohler	Ivo Šanc	BIOCEV
02.09.2010	73	Fritz Ohler		CzechGlobe
Total	37 person days			

Finally, if we look at Figure 18, we can observe a rather steep learning curve in the negotiation of Regional Research Centres (PA 2): Out of a total of 22 proposals two out of three were accomplished after one round. Except for one, which took three rounds for achieving consensus the other one third was settled after the second negotiation round.

Figure 18 Negotiation of projects recommended for funding in PA 2.2

Negotiation date	**Project No**	**Negotiators**		**Name of the centre**
12.04.2010	58	Berghold Bayer	Ivo Šanc	Regional Centre of Advanced Technologies and Materials
13.04.2010	77	Berghold Bayer	Ivo Šanc	The West Bohemia Material Metallurgic Centre
14.04.2010	101	Fritz Ohler	David Kolman	Regional Centre of Applied Molecular Oncology (RECAMO)
15.04.2010	72	Fritz Ohler	David Kolman	Sensory, Information and Communication Systems (SIX)
15.04.2010	71	Berghold Bayer	Ivo Šanc	The Unipetrol Research and Educational Centre (UniREC)
16.04.2010	96	Berghold Bayer	David Kolman	The Engineering Research Development Centre in Liberec
21.04.2010	79	Berghold Bayer	David Kolman	The Regional Centre of Special Optics and Optoelectronic Systems (TOPTEC)
22.04.2010	82	Berghold Bayer	David Kolman	The Institute of Clean Technologies for Mining and the Utilization of Raw Materials for Energy Use
27.04.2010	86	Berghold Bayer	David Kolman	Regional R&D Centre for Low-cost Plasma and Nano-technological Surface Modifications
27.04.2010	69	Berghold Bayer	Ivo Šanc	Energetic Units for the Utilization of Non-traditional Energy Sources (ENET)
04.05.2010	125	Fritz Ohler	Ivo Šanc	Technology for Vehicle Centre for Sustainable Mobility
17.05.2010	97	Berghold Bayer	Ivo Šanc	Advanced Materials, Structures and Technologies (AdMaS)
18.05.2010	94	Michael	Ivo	The Regional Innovation Centre of

		Stampfer	Šanc	Electrical Engineering
19.05.2010	100	Michael Stampfer	Ivo Šanc	The Environmental Technologies Institute
26.05.2010	82	Berghold Bayer	David Kolman	The Institute of Clean Technologies for Mining and the Utilization of Raw Materials for Energy Use
31.05.2010	96		David Kolman	The Engineering Research Development Centre in Liberec
03.06.2010	88	Michael Stampfer	Ivo Šanc	The Centre of New Technologies and Materials
04.06.2010	64	Michael Stampfer	Ivo Šanc	The Transport R&D Centre
11.06.2010	125	Fritz Ohler	Ivo Šanc	Technology for Vehicle Centre for Sustainable Mobility
24.06.2010	110	Fritz Ohler	Ivo Šanc	Centre for Algal Biotechnologies (Algatech)
25.06.2010	93	Fritz Ohler	David Kolman	Regional Technological Institute (RTI)
26.08.2010	93	Fritz Ohler	David Kolman	Regional Technological Institute (RTI)
27.08.2010	64		David Kolman	The Transport R&D Centre
30.08.2010	111	Fritz Ohler	David Kolman	Centre of Polymer Systems
31.08.2010	91	Fritz Ohler	David Kolman	University Centre for Energy Efficient Buildings (UCEEB)
31.08.2010	125	Fritz Ohler	Ivo Šanc	Technology for Vehicle Centre for Sustainable Mobility
01.09.2010	89	Fritz Ohler	Ivo Šanc	Centre for Security, Information and Advanced Technologies (CEBIA-Tech)
02.09.2010	116	Fritz Ohler	Ivo Šanc	Research Institute of Pomology
17.09.2010	97	Berghold Bayer	David Kolman	Advanced Materials, Structures and Technologies (AdMaS)
09.11.2010	110	Fritz Ohler	Ivo Šanc	Centre for Algal Biotechnologies (Algatech)
09.11.2010	116	Fritz Ohler	Ivo Šanc	Research Institute of Pomology
22.12.2010	93	Fritz Ohler	David Kolman	Regional Technological Institute (RTI)
Total	56 person days			

Figure 19 provides a comprehensive overview of required number of rounds of negotiation. Three patterns can be observed: (i) initial learning on the side of the negotiation team in PA 2.1, (ii) a steep decrease of the number of required rounds of negotiation in PA 2.2, (iii) a larger share of lengthy negotiation processes in PA 1, due to the fact, that these projects have been larger on the average and had involved more partners. There is also some evidence that the profiles of the negotiation teams were not always optimal in terms of specialisation and in having a comprehensive understanding of the wide range of issues being discussed in the course of a six hours

meeting: the research programmes, the sometimes complicated / complex management system and human resource policy, highly specialised questions of equipment and building components and not least financials.

The following story might give an impression of learning. It goes like this: In a particular project it took almost two hours to negotiate and agree on the management model. A day later, a new project was on the agenda, however from the same university with the same representative of the university. Surprisingly, this particular representative opened the discussion by stating that he has slept over the issue of management, and that he is fully convinced of the model proposed the day before and that they feel no need for further discussion of management issues in the project at hand.

Figure 19 Distribution of required number of rounds of negotiation

	1 round	2 rounds	3 rounds	4 rounds	total	comments
PA 2.1	2 (15%)	10 (77%)	1 (8%)		13	initial learning
PA 2.2	14 (64%)	6 (27%)	2 (9%)		22	steep learning curve
PA 1.1	1 (13%)	2 (25%)	4 (50%)	1 (13%)	8	high share of big / complex projects multiple partners with conflicts and frictions between partners
Total	17 (40%)	18 (42%)	7 (16%)	1 (2%)	43	

6. Lessons learnt from the negotiation process

While chapter 4.8 has provided an overview of lessons learnt in the course of the **consensus meetings**, this chapter will elaborate lessons learnt in the course of the **negotiation process**. The major distinction between the two processes is the fact, that the consensus meetings were performed without interaction with the applicants (except for a short question-and-answer phase to clarify a small number of issues), while the negotiation meetings were explicitly aiming at a consensus among the two parties by the means of negotiation. Overall, the negotiation of funding decisions with the aim to agree on a funding vis-á-vis negotiated performance criteria is largely new in the research policy of the Czech Republic – and not only there. Therefore, the experience made in this rather large funding programme might built a platform for further development and learning with some spill-overs to national programmes and allocation of funds.

The overall rationale of the negotiation process was to invite the applicants to draft the so-called 'technical annex' based on a template covering all relevant parameters of the planned research centre. This approach, in which the **applicants** proposed the first draft, ensured that the negotiation dealt with **their** view on desired management models, human resource policies, types and levels of outcomes, etc. In this regard the process is considered asymmetrical favouring the applicant's view and position. At the same time, the Ministry mainly focused on the critical aspects of the proposed performance levels, models, and policies. As a general rule, the Ministry has tried to avoid proposing concrete solutions; rather it has waited for acceptable propositions, mainly to make sure that the 'ownership' of the respective models and performances are genuinely shared and adopted by the applicants. Therefore, the dominant attitude of the Ministry was to object, direct, and to approve rather than to propose concrete solutions. Thus, the 'art of negotiation' was mainly to maintain a constructive atmosphere and to stimulate and shape direct rather than to bargain and twist arms. The only exception from this rule was the chapter on the organisational structure, where the Ministry favoured a 'galvanic separation' between executive, supervisory, and advisory functions.

In the remainder of this chapter we discuss each single chapter of the technical annex.

6.1 Overall objective of the project

Name of the centre

Sometime problems arise at the very beginning of the document: an awkwardly formulated project title. The title should be well reflected to be used as an official name of the centre. At the same time it should be as specific as possible. A 'Center of Excellence Telc' or a 'Regional Technological Institute RTI' is a non-sense. Applicants should also carefully think of an acronym / abbreviation. Feasibility both in Czech and English should be tested.

Project partner(s)

Description of project partners should include authorised contact persons, representing the conceptual ownership of the centre, ideally the intended director, but not a contracted consultant or a project leader pro tempore.

Objectives of the centre

Applicants should be obliged to express the objectives of the centre as an exhaustive list. Quite often the research programmes and thus the objectives of the centre are determined by a bottom-up process, which ends up with a too large number of research programmes, quite often by 'putting all eggs into one basket'. Therefore it is helpful to reflect the number of objectives and – later in the document – the number of research programmes. Overall: Two objectives are not enough; two dozen might be too much.

Major research content and objectives

Often, content and challenges are lengthy described (but mainly in too general terms); user groups and deliverables, at the same time, remain poorly and vague. The description should therefore be well balanced between research content, dominant objectives, challenges, outcomes / deliverables, user groups. Statements should be put on the precision balance, i.e. they should be formulated in a way, that they can be contested. Each statement should be as specific as possible.

Typical problems in the specification of goals

This is the dominant pattern: Too general, too vague, and too broad, poor description of the linkages between different parts (goals, research programmes, equipment, outcomes). The reason for asking for a proper description of the respective parts is that, quite often, the origins of the proposed centre are the wish to modernise existing units with high-end equipment. In doing so, applicants are often ignoring the fact, that it is the joint research programme that will determine the profile of the centre, not the equipment. Therefore, if applicants start with shopping lists they notoriously end up in too broad and too vague descriptions of research goals and respective user groups.

How to react on too general / vague / broad goal statements?

Too ambitious (particularly vis-á-vis planned resources), too broad or too vague goals can be exploited to justify and announce serious budget cuts in order 'to shake the tree'. Due to the vagueness of their goal statements, applicants are in a difficult position to counter budget cuts. The applicants therefore have to make a proposal for the re-formulation of goals, not the negotiation committee. Here it is useful to have specific recommendations from the consensus panel at hand, preferably regarding both the alignment of the research programmes as well as cuts of less important equipment. Be aware of and prevent too serious declines in the number of publications, PhDs, income from research contracts and grants as a consequence of budget reduction.

Goals should be stated as specific as possible

Each of the goal statements should be checked whether they are stated in way that the goals can be seriously met. If statements like 'development of new technologies in …', the reader should be highly sceptical. In one particular case the negotiation committee was able to demonstrate that there are only two technologies existing at all and that it would be rather surprised if the planned centre would develop another three technologies in the field in addition to the achievement of 15 other goals.

Specificity should be rewarded

Hence, applicants who are ambitious, but at the same time specific with respect to goal and goal expectations, should be encouraged. Those with 'top dog' attitudes should be punished (through budget cuts).

6.1.1 List of research programmes

Formalise the description of the research programmes

Here it should suffice to have a list of research programmes since the detailed description of the respective programmes will be performed in Ch. 2. However, it is helpful to indicate the respective programmes with (i) the name and current affiliation of the programme leaders and (ii) the size of staff by end of the project in FTE / head counts.

Appropriate size of the research programmes

If these indicators are available [if not, they must be calculated], some first interpretations can be made: (i) If the size of an individual research programme is below 15-25 FTE, one can address the issue of too small subunits and propose a merger. (ii) A too large number of research programmes often has to do with a 'putting all eggs into one basket' attitude. Therefore, it is helpful to ask for relationships between individual research programmes, check the average size, and propose merger, if reasonable. Again, negotiators are in a better position, if they are provided with information by the evaluators about appropriate size of the research programmes.

Specification of goals[16]

Typical problems in the specification of goals: (i) Too general, too vague, and too broad, (ii) poor description of the linkages between different parts. The reason for asking for a proper description of the respective parts is that, quite often, the origins of the proposed centre are the wish to modernise existing units with high-end equipment. In doing so, applicants often ignore the fact, that it is the joint research programme, which will create the identity of the centre, not the equipment.

6.1.2 Milestones and expected results

Deliverables should dominate milestones

Here, an overview of major deliverables in the course of time should be given. Milestones can and should only be used to monitor intermediary results, particularly in long-term and/or complex situations. Deliverables, however, should be the dominant concept. Milestones should assist the achievement of deliverables and should thus be strongly linked to them. In fact, most applicants do not have a clear understanding of the difference between deliverables and milestones.

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[16] As this document can be read as a check-list, some statements hold true in different chapters. For the ease of reading they are sometimes repeated in other chapters later in the document.

Deliverables should be defined as 'tangibles'

Publications, (completed) PhDs, income from research contracts, grants, patents, a (policy) document, the accreditation of laboratories are typical deliverables. Do not accept vague statements or non-deliverables. Focus at those deliverables, which can be achieved mainly through management actions and decisions. Be sceptical about statements such as 'European dimension', 'world class', 'to the benefit of the national industry and society'. If they insist on these 'fancy' attributes, it might be a proper strategy to re-discuss performances such as publications in journals with high impact factors, international patents and substantial research contracts from abroad.

Tables and schedules / timetables can help to reduce complexity and vagueness

Always ask for timing and reference to the main text. Ask for (time) tables. Generally, the list of deliverables should comply with the needs of the Managing Authority, a mid-term or final review etc.

6.1.3 Binding values of project indicators

The indicators are sometimes misinterpreted

'No of PhD graduates' is sometimes understood as 'No of students', sometimes as 'No of completed PhDs'. The wording of the table should thus be reworked.

Inconsistent numbers

Apart from these confusions, the respective numbers are often inconsistent with the same or related numbers in the subsequent chapters (e.g. three vs. four research programme leaders at different places in the document). If appropriate, one can make a fuss out of it in the course of the negotiation process (→ poor quality management, poor project ownership).

6.2 Research programmes

6.2.1 Research programmes

Partnering

If the centre is partnering with other organisations, it is necessary, to indicate which of the programme(s) will collaborate with the partner organisations and to demonstrate how the cooperation will actually work.

In fact, most centres do not have formal partners. In these cases, the issue of partnering remains as each individual research programme can be considered as partner within the centre anyway. Thus the request for describing the links between research programmes within the centre still maintains.

Positioning of the user group(s) within and amongst the individual research programmes

Each of the research programmes has to highlight its relevance for and relationships to their sphere of application. In some cases, however, the main user group(s) are mainly collaborating with one specific research programme which itself acts as a channel to the sphere of application. Apart from the fact, that this managerial framework is second best, in this case, the modes of internal interaction have to be highlighted.

Number of objectives of the individual research programmes

Applicants should be obliged to express the objectives of each research programme as an exhaustive list. Two objectives are not enough, ten might be too much.

Balanced relationships between major research content and objectives

The description should be well balanced between research content, dominant objectives / challenges, outcomes / deliverables, user groups. Each statement should be put on the precision balance, i.e. it should be formulated in a way, that it can be contested. Each statement should be as specific as possible.

Typical problems in the specification of goals of research programmes

Typical problems in the specification of goals: (i) Too general, too vague, and too broad, (ii) poor description of the linkages between different parts. The reason for asking for a proper description of the respective parts is that, quite often, the origins of the proposed centre are the wish to modernise existing units with high-end equipment. In doing so, applicants are often ignoring the fact, that it is the joint research programme, which will create the identity of the centre, not the equipment.

How to react on too general / vague / broad goal statements

Too ambitious (particularly vis-á-vis planned resources), too broad or too vague goals can be used as a justification for serious budget cuts in order 'to shake the tree'. Due to the vagueness of the goal statements, they are not able to argue, that, if budget cuts will be exerted, that they cannot achieve the results. The applicants have to make a proposal for the re-formulation of goals, not the negotiation committee. It is generally useful to have propositions regarding options for re-arrangements or cuts in the portfolio of goals of the research programmes, and of course of less important equipment from the evaluators / consensus meetings. Be aware of too serious declines in the number of publications, PhDs, income from research contracts and grants as a consequence of budget cuts.

Goals should be stated as specific as possible

Each of the goal statements should be checked whether they are stated in way that the goals can be seriously met. In case of statements like 'development of new technologies in ...', the reader should be highly sceptical.

Full description of the individual research programmes

It is fair to ask each research programme (leader) to describe his or her research programme in a way, that the reader can understand the respective dimensions, particularly focus, user groups, and deliverables / milestones. Specifically, each research programme should be described in terms of expected / planned outcomes (publications, completed PhDs, income from research contracts, grants etc.).

Size of the individual research programmes

It is essential to carefully understand and value the size of the research programmes as well as the ratio between seniors and juniors. 'Juniors' are understood here as PhD students and junior researchers. If an individual research programme has less than 15-25 FTE staff, the question of merger should be raised. Particular attention should be paid to the senior / junior ratio, as one of the most relevant policy goals of the OP RDI is to increase the number of researchers. Accordingly, much attention should be paid to this aspect. Furthermore, if one senior supervises less than three juniors (which is considered as the lowest level), the question of efficiency should be raised, as it should be one of the requirements of a senior researcher to supervise a certain number of juniors. In some cases the senior (typically a professor) also supervises PhD students outside the centre. In those cases they should be asked to include **all** PhD students irrespective of where they are formally employed. Experience shows that the senior / junior ratio differs from one discipline to the other. Accordingly, the evaluators / the consensus conference should address this issue in order to provide a stronger backing in the negotiation process.

Changes in the staff tables

In the future, both lists on staff development over time should include the senior / junior ratio.

6.3 Key personnel, staff, human resource policy

Many, particularly academic, researchers exhibit a rather defensive attitude towards human resource policy. Rather, they consider it a tiresome administrative burden. The benefits from a more explicit recruitment policy, career development policy, mobility policy, not to mention of a well-thought gender policy are often not perceived as a source of performance gains and job satisfaction. Awareness for a systematic development of young researchers is particularly lacking. A poor or missing HR policy is often linked to and an indication of a lack in long-term thinking.

A handful of key researchers with management and leadership capabilities are crucial

Eventually, the development of human resources is the key throughout the entire effort to establish centres of excellence / regional research centres. It is both a precondition as well as a result. As a precondition the availability of a handful of key researchers with management and leadership capabilities is crucial. The respective qualities can be easily tested in the negotiation process. Here it is not the a priori quality of the respective documents. Rather it is the quality and speed of how the applicants react on critical comments, requests, or propositions for change.

As a result, the policy for recruitment (i) of key researchers, (ii) of young staff, and (iii) for exchange, particularly with the application sphere should be considered rather critical performance indicators as it determines the long-term performance of the centre.

Recruitment, career development and mobility policy are critical

Accordingly, the respective policies have to be valued whether they are able to actively support the development of human resources. The majority of policies are discussed in this chapter. However, the research programmes, their user portfolio etc. should also be considered relevant aspects of human resource policy, as they can be perceived as an invitation for external researchers and PhD students to join a team which is working on challenging research subjects.

6.3.1 Key personnel

Openness and room for growth – not all senior posts should be determined from the beginning

Experience shows that by far most of the centres had their team of key personnel complete one or even two years before the opening of the labs. Ideally, the majority of senior posts should be filled at the outset, while some of them should be recruited in the course of time and depending on the accomplishment of the research programmes[17]. This openness is critical, as it is one of the roles of the centre to attract qualified staff. Accordingly, those applicants who exhibit some N.N. in their staff list, to be recruited after a certain period, clearly demonstrate the explicit fulfilment of this policy goal. Thus, applicants should be encouraged either to leave some of the positions open or, even better, should increase the number of senior staff in the course of development of their centre.

[17] As a remainder: Half of the professors at ETH Zürich have been recruited without having applied for the post.

Involve key researchers also from partner institutions

If the applicant is partnering with other institutions, some of the key researchers should have their 'home base' with the partner institution, i.e. they should be in a management position in terms of leading a group or even a research programme.

Ideally, a certain share of key researchers should represent the field of application

If e.g. a centre plans to develop competences in certain classes of material, which can be used in certain industrial sectors, these sectors should be incorporated into the centre, at least at the level of senior researchers and thus by at least one research team.

The lie about the attractiveness of the centre

Often, applicants make bold statements about the attractiveness of the centre to act as a destination for qualified people at any level. While it is indeed import to think and act in those terms, the 'reality check' can easily be made by cross-checking the respective statements with the number and share of N.N. positions in the key staff list. If the number of N.N. positions is low or even zero, the applicants have to explain the respective mismatch.

The miracle about the FTE > 1

Again and again the level of FTE exceeds 1, which is both the outcome of sloppiness as well as of unpleasant practice amongst the universities and the Academy of Sciences, which allows leading persons a total employment of FTE > 1. Sometimes this can create problems. Don't miss the opportunity to make a fuss, if appropriate.

6.3.2 Development of staff over time

The miracle about the FTE > 1, continued

Sometimes the level of the FTE of the research programme leader position exceeds 1. In these cases it is helpful to cross-check whether or not more than one research programme leader is planned. If yes, check, whether they hold this position simultaneously or consecutively with an overlapping period. More than one leader at the same time should be generally questioned.

The number of staff as a reliable indicator for relevance

Number of staff should generally increase over time in order to demonstrate the endogenous potential of the centre to grow. Pessimism should not be on the agenda.

Ratio between seniors and juniors

It is essential to carefully understand and value the size of the research programme as well as the ratio between seniors and juniors. If a research programme employs less than 15-25 FTE staff, the question of merger should be raised. Particular attention should be paid to the senior / junior ratio. Accordingly, much attention should be paid to this aspect. If one senior supervises less than three juniors, the question of efficiency should be raised. In some cases the senior (typically a professor) also supervises PhD students outside the centre. In those cases they should be asked to include all PhD students irrespective of whether they are employed in the centre.

Changes in the staff tables

In the future it is advisable to calculate the senior/junior-ratio automatically.

Who should operate the equipment?

Specialised staff or PhD students? (Too) many of the centres underestimate the critical role of specialised staff in operating the scientific infrastructure. Some even argue that

PhD students should be those who run the equipment as they have to learn it. While half of this statement is true, all well performing experimental research institutes heavily agree on the necessity of well-trained support staff. Thus, most applicants are well advised to increase the number / share of support staff.

FTE levels with decreasing productivity

Likewise, it is helpful to have one table with FTE and one with head counts, as it is increasingly unproductive to have too many staff members smaller than 0.5 FTE. As a standard, one can assume that those staff members, who are employed at the university, will spent their entire 'research time' at the centre, which should be >0.5 FTE.

6.3.3 Human resource policy

Missed opportunities from uninspired human resource policies

As a general observation, most applicants / their proposals suffer from two problems: (i) They rely too much on already existing policies, mainly devised by the hosting institution, without substantially adding or specifying their individual 'finger print'. (ii) They do not provide a policy, rather they announce to provide it by a certain point in time; in some cases quite late (after one or two years).

Applicants should be encouraged to provide at least the basics of their respective policies before the launch of the project

The reasons to do so are rather obvious. As they have to recruit a certain number of staff, particularly junior researchers, they have to 'tell them the story about the centre', particularly why it is a better choice to join the centre instead of going elsewhere. Hence, they must be able "to tell their story" at any time. Even more, if it is clear how the centre will manage their human resources, they will have a clear idea of what the centre will develop and perform as a whole.

Poor fantasy about human resource development policy

Last, but not least, in those cases, where they present their policies, they rather present a table of contents without making substantial statements about the content of the policies themselves. In these and similar cases it is quite simple to convince the applicants of the necessity to re-work the document by asking whether they think that these statements can be considered a convincing story they will tell to attract new staff (ranging from PhD students to senior researchers from abroad).

6.3.3.1 A career development plan

"Tell the story about the people in your centre!"

In this chapter the request for 'telling your story' is of highest relevance. It has to cover all staff levels, particularly juniors and PhD students, all the more as these three levels have to be recruited in the course of time, but also some of the seniors.

The lie with the competition for senior levels

If applicants state "that all positions are filled through open hiring tenders", they have to be asked whether this holds true for the upper levels (seniors, research programme leaders, directors) which in most cases neither true nor necessary as the holders of these posts are known from the very beginning of the centres.

Inadequate appraisal instruments / criteria

Quite often, the applicants employ the same criteria for evaluating the performance of research staff, say, once a year, which are used to evaluate the overall performance of the centre. However, it often appears that the performance indicators they use,

particularly publication rate, patenting, etc are too 'lumpy' as the number of items (publications, patents, prototypes etc.) is in most of the centres in the order of 0.1-1 item / researcher x year. In those cases the negotiators may doubt the suitability of the indicators used in the appraisal process. Accordingly, they may request for more adequate approaches.

A multi-level appraisal system

In those cases it is more appropriate to agree on a set of performance indicators (as discussed in Ch. 4) at the centre's level and then to negotiate / agree internally (i.e. between the director and the research programme leaders) on certain achievements at the level of the individual research programmes by using the identical set of indicators. Below the level of the research programmes, however, it is inappropriate to use the same sets of indicators. Rather, the research programme leaders should negotiate a set of performances and related indicators with the team or project leaders or with the individual researchers. To combine the task of planning of research work with the negotiation of respective performance levels will enhance the entire process.

The career development chapter should set the framework for the subsequent chapters addressing specific aspects of human resource policy

Standards for recruitment, further training, performance review of employees, mobility plan (link with the applications sphere, abroad), and gender policy. Thus clarity about individual profiles of respective staff levels should be a prerequisite for creating an overall HR policy. As a general approach the centre's managers should aim at a clear understanding of the respective profiles of a senior researcher, a junior researcher or a PhD before outlining the overall HR policy.

6.3.3.2 A plan for staff mobility vis-à-vis the application sphere

Quite often, the policies for exchange with the application sphere are rather defensive, sometimes even misguiding

There is a dominance of formal arrangements such as workshops with (potential) users, installation of a technology transfer officer, participation in technology transfer courses, or utilisation of existing technology transfer units at the level of the hosting organisation. Sometimes it can even become misleading as a too strong reliance on formal approaches, particularly technology transfer officers / units often delegate responsibility (to less capable actors). While these formal measures might be useful as accompanying measures, the core of exchange with the application sphere is to enhance mobility of staff and to exchange money and research results.

Outbound vs. inbound mobility

The dominant direction is outbound, i.e. from the centre to the application sphere, thus the transfer of technology / knowledge, created within the centre to the users' sphere. Quite often, it might be equally important, to carefully organise inbound transfer and respective mobility. A specific reason for making great effort for inbound mobility is the transfer and adoption of knowledge about needs and requirements[18]. Academics often do have blind eyes for this (scarce) type of knowledge, as they typically follow a supply-side model of research work.

[18] Volkswagen employs 3.000 engineers only for the task of "requirement engineering". At the European Space Agency ESA in some programmes more than half of the resources are spent for the specification of requirements of a piece of equipment or a mission and less than half for developing, building, and testing it.

Exchanging staff can be a more effective approach

The centres should have a clear and active plan for exchanging staff in both directions, which is rarely the case in the presented policies.

6.3.3.3 A plan for staff mobility abroad

Build bridges before crossing the river

Here, one very striking pattern can be observed. In most cases, staff mobility to abroad is mainly represented by junior researchers or PhDs rather than seniors. Efficient mobility policy, however, goes to other way round. Here, senior researchers have to pave the ways ('build the bridges') to be followed by juniors. International projects can provide numerous opportunities.

6.3.3.4 A recruitment strategy for vacant posts

Recruitment is an undervalued part of overall human resource policy[19]

Most applicants are underestimating the innovation potential of recruiting higher level staff. Rather, they have filled all senior level posts from the very beginning of the project. Therefore, applicants should be encouraged to recruit a certain share of senior level staff in the course of development of the centre depending on 'managed opportunities'. Accordingly, the centre's managers are advised to actively search for adequate people.

6.3.3.5 The involvement of the centre in new or existing Master / PhD courses

Involvement of the centre Master / PhD courses is another undervalued part of human resource policy

There is a general observation, that most applicants do not fully realise the potential of being **actively** involved in Master / PhD courses. Rather, most of them have chosen to continue with existing courses instead of making use of the opportunity to upgrade existing courses or setting up new ones.

Strive for the establishment of 'Research Schools'

In the context of the newly established centres they rather should actively seek for opportunities to be involved in Master courses in order to feed PhD programmes with talented students. At more advanced levels, particularly Centres of Excellence, the applicants should be encouraged to maintain a high quality level, e.g. through external ex ante and interim evaluation of the content and faculty of the PhD programmes, typically labelled as 'research schools'.

Systematic training of practitioners

Again, the systematic involvement of practitioners in training programmes can be seen as another indication of an active approach to the application sphere. Hardly any of the centres takes up this opportunity.

6.3.3.6 A gender policy which should be reflected in the above mentioned policies and plans

There is a mixed awareness of gender issues

Some applicants do not have any gender policy at all. Some make formal statements. Some even say that they cannot do much about that. Others say that they want to have

[19] To remind: The former president of the ETH Zürich spent half of his time for recruitment.

more than x% female researchers. While the latter statement might be ambitious, it often does not reflect a minimum level at leading positions such as directors, research programme leaders, or senior researchers. Accordingly, the negotiators have to be aware of several traps. A safe strategy is to ask them (i) to describe the status quo and (ii) to explain what they intend to do in the course of time, to which end and why.

6.4 Planned results and indicators

Don't focus too much on aggregate outputs, rather discuss and negotiate productivity

Obviously, the chapter on results and indicators reflects the performance of the centre vis-á-vis the outside world: publications, patents, income from research contracts and public grants, completed PhDs etc. It attracts much attention in the negotiation process, particularly when it comes to productivity considerations (= outcome per researcher and year). Putting all arguments for the implementation of new research centres together, it will result in an increased productivity of public research. Thus, enhanced productivity in terms of more / higher level publications, patents, contract research, competitive funding etc. vis-á-vis traditional centres as well as increase in the course of development of the new centres are considered the ultimate keys from an outside (and policy) perspective.

Missing benchmarks for productivity

In the course of the negotiation process a number of difficulties can arise. The most serious one is the question for benchmarks, reflecting both historical performances of the applicants as well as international comparisons, taking into account that performance levels can differ substantially from one research area to the other.[20] It would be a considerable improvement if the international evaluators could propose ranges for appropriate levels of performances, particularly when it comes to publications and patents, not least to staff size.

The number and quality of publications is a key issue

Accordingly, there is always some tough discussion about the appropriate publication levels. Often, it helps to encourage the applicants to ask themselves and their colleagues whether they would be amazed about the productivity they propose themselves. It always helps, if one relates it (i) to the number of publications over the life time of a researcher and thus extrapolated and expressed as the harvest of their academic life, and (ii) to the number of PhD, particularly if they are obliged to produce a certain number of publications as a pre-requisite for achieving the PhD.

A specific Czech phenomenon is the rather detailed system of 'soft' performance indicators such as utility models, prototypes, collections, methodologies, or breeds

It creates more problems than it resolves. Experience from the negotiation process shows that most participants (both applicants and Ministry) shy away from a serious discussion of these soft research outputs and related indicators.

Achievements in the very first years of the implementation of the project

Some of the applicants exhibit achievements in the very first years of the implementation of the project, which are mainly the phase of the erection of buildings

[20] This is not only between fields (e.g. engineering vs. life sciences), but also within fields: The world champion in dental medicine cannot achieve more than 7 impact factors, while an ambitious team of say, two dozen researchers in the field of systems biology can regularly publish a paper counting for > IF12.

and the installation of laboratories. In these cases the applicants should be encouraged to reduce the respective performance levels to zero. A similar behaviour emerges with respect to a too optimistic granting of patents – not taking into account a sometimes considerable delay between filing and granting.

The given layout of the table does not allow for directly obtaining data on productivity

Accordingly, cumbersome calculations are required. Thus, to be more convenient, it would be of great help to automatically calculate the most relevant indicators per researcher as well per senior level researcher (= senior researcher + research programme leader). This does not only hold true for publications and patents but also for income from (i) research contracts, (ii) national and (iii) international grants, which are considered as performance indicators. Like in the case of publications and patents it would be helpful to express the respective incomes not only as an aggregate sum but also as income per researcher (total, senior researcher) to allow an assessment of productivity.

The numbers dealing with PhDs do have two different interpretations

(i) PhD students in the pipeline and (ii) completed PhDs. Depending on the average time for completion the ratio between 'pipeline' and 'completed' should not exceed 1:5. The (historical) argument of sometimes high drop-out rates should not be accepted as it is one of the policy goals to provide above average good conditions for research and thus for talented and motivated students to perform well and to complete their studies in due time. A further, (iii) aspect of PhD students is linked to the number of senior researchers, as it can be assumed that 1 senior researcher should supervise >5 junior researchers (= PhD + junior researchers). A number <5 should be questioned, <3 should not be accepted at all, particularly in those cases where the share of junior researcher (i.e. PostDocs) is high, as these juniors can contribute to the supervision of the PhD students by themselves.

6.5 Management

6.5.1Organisational structure

The organisational structure is often conflicting, lacking clear-cut attribution of responsibilities, hardly ever well-thought

These are the most prominent problems: (i) Unclear roles and role descriptions, particularly at the management level, (ii) unclear or poorly described role and responsibilities regarding the supervisory or advisory bodies and their composition, (iii) the emergence of 'mixed bodies' with a combined decision-making, supervisory, and advisory function. These 'mixed bodies' are often influenced by the academic tradition of collective decision making combined with mutual / peer control.

In all cases it is appropriate to ask the applicants to describe the tasks, rights, and responsibilities / reporting of the respective individual or collective actors

In all, but particularly in those cases where the collective actors (advisory, supervisory bodies) meet several times a year, it helps to think of the agenda of the respective meetings, of respective information requirements and of presumable types of outcomes.

Often, applicants refer to existing rules implemented by the hosting institution

In those cases, they should be asked to outline the basic principles as well as the direct implications to the planned centre. Having done this, they should be encouraged to create their own rules by making creative use of the given basic rules or add new ones.

Avoid conflicting roles

There is hardly any proposal without the occurrence of multiple roles, even accumulation of titles and related role conflicts. There has been one case, in which one person aspires to be at the same time dean, director, and research programme leader. Thus, there is a strong need (i) to minimise role conflicts, and (ii) to aim at flat organisations. The principle of flat organisations is both a goal in itself and at the same time contributing to minimise role conflicts / role overloads.

Clear definition of partners, particularly advisory boards

Partners, if any, should have a well-defined role and position, again, making use of the tasks-rights-responsibilities triangle and respective reporting. The roles and responsibilities of advisory boards in particular should follow the following lines of reasoning:

- They should primarily represent the outside world (academic + business + public, e.g. food safety authority)
- They should have a clear agenda (for their meetings)
- Their members should be obliged to react on the agenda at least one week ahead of the meetings, which reduces opportunistic behaviour
- How they reach a consensus (including minority votes)
- Members of the centres' management should not be members of the advisory board; rather they may have a permanent seat for information provision.

6.5.2 Measures for financial management and controlling

Separate space in the accounting / controlling space

Most applicants refer to their hosting institution, saying that they will make use of their accounting systems by representing the centre as a separate space within the larger system. So far, so good.

Most of the documents are missing is a clear and unequivocal reporting structure

Most proposals are missing answers to the following questions: (i) Which kind of information? (ii) Provided by whom? (iii) To which actor? (iv) In which intervals? As reporting is a vital function for operating the centre as an economic entity, it is fair to ask the applicants for an adequate structure already in the planning phase of the centre.

Monitoring of performance parameters

Specific attention should be devoted to the timing of controlling of performance parameters as these time intervals have to reflect the lead times of respective interventions, which can take one year and more. Many applicants are not aware of these time delays.

6.5.3 Risk analysis / risk management

Many applicants are not clear about risks and risk management

Generally, risk management includes an analysis of probability and impact of risk and setting of appropriate measures to prevent risks or mitigate impacts. In negotiation meetings it is helpful to provide an integral view on risks by using a two-dimensional framework for discussing risks. One is the development of performance indicators over time. It can be extremely helpful using this framework as it immediately directs the attention to the agreed goals and the risk of not meeting them. In this framework,

the concept of risk is directly related to the concept of goals. A second, complementary and rather fruitful approach results from looking at various risks from the perspective of the management model in terms of poor performance of the managers and the respective bodies. Accordingly, the centre is running risks if managers / bodies do not sufficiently fulfil their tasks, do not make sufficient use of their rights, or do not sufficiently take over their responsibilities etc.

Select the 5-7 most important risks and address them

If these two complementary approaches are used, and if the applicants select the, say 5-7 most relevant risks they will be on the safe side in terms of understanding the functioning of their centre, likely uncertainties, related risks and impacts and appropriate countermeasures.

Extra effort has to be made to sensitise the applicants for the time dimension of the emergence of risks, of risk perception, the selection and implementation of countermeasures and some time-delays until countermeasures become effective. Accordingly, it will be necessary, to include an adequate understanding of timing as a constitutive part of risk analysis, not least an attribution of 'risk ownership' to managers or bodies.

6.5.4 Quality management

Quality management and risk management do have much in common

Both of them deal with different aspects of the same crucial issue: the (non-)achievement of goals.

Most of the applicants do not relate quality management with factors supporting goal achievement, rather with – often poorly related – additional activities and efforts

Particularly in those centres, where the hosting organisation has achieved certain advancement in their management systems, the centres directly adopt their ready-made quality management system. In doing so, they use and reflect those indicators and information which are collected in the hosting institution rather than those which are relevant to the centre. This particularly includes an often un-reflected use of the Register of Information on Results (RIV) or the Information Register of R&D Results (RVVVI).

Link quality management with risk management

In the future, it is useful, to link the quality management system (i) to the system of risk management, and (ii) to adopt the same procedure as outlined in the risk management, i.e. to the fulfilment of the agreed goals and to the tasks and responsibilities of the respective managers and bodies.

6.5.5 Intellectual Property Policy

This is one the most misperceived chapters in the entire negotiation process

There are several problems: (i) A conceptual reduction of Intellectual Properties to Intellectual Property Rights, thus to patents and licences and royalties etc. (ii) Accordingly, neglecting the role of publication and contract research, prototypes, seeds, methodologies etc. as substantial components when it comes to intellectual properties, not to mention the know-how and experience incorporated in (experienced) staff.

Of all chapters, the IP chapter is poorest related to the others

Very often, applicants simply copy and paste existing systems, either from professional firms or from the IPR policy of the hosting institution and the related transfer unit.

Most applicants exhibit a considerable naivety with respect to IPR

This can be tested, simply by asking whether they talk about or filed or granted patents. If they do not react promptly, the hypothesis on naivety can be considered proven.

The most serious problem is the absence of an integral view on the different types of research outcomes: publications and contract research, prototypes, seeds, methodologies, patents, but also experience, trust, and access to particular actors, partners in particular, and communities, not least the creation of firms.

Extra effort has to be made to sensitise the applicants for the complexity of the intellectual property issue under real-world conditions

The most important task is creating awareness for the need for an integrate view, starting with the two most common modes of managing knowledge, namely academic publications and contract research. Having achieved a certain level of awareness and routine it is reasonable to create niches, in which advanced practices can be adapted.

6.5.6 Business model for the exploitation of the infrastructure / core facilities

Misperception of the request for a business model

This chapter is mainly focused on those centres which both exhibit expansive research infrastructure and claiming for a certain monopoly in the country regarding range and performance of their infrastructure. However, most applicants either have not planned any meaningful income from the use of the infrastructure for third parties or mixed this chapter with general business making (contract research, licensing of IPR, general marketing).

Those centres, which plan to establish (national) platforms of which kind ever, mandatorily should outline a business model regarding membership, usage, and maintenance.

6.6 Budget

Imbalance between the research programmes and infrastructure

Most proposals are defined in a bottom-up process. And most proposals do have a focus at the accumulation of infrastructure (equipment, buildings). Thus, as a standard, most proposals suffer from an imbalance between the research programmes and equipment. Moreover, in most cases, the goals of the research programmes are mainly defined too general, too vague, and too broad and have thus to be focused.

Budget cuts as a powerful approach to focus the research programmes

Actually, there is no feasible alternative, as there are only two parties which are able to perform the task of streamlining the research programmes and to better relate them to the investment needs: the evaluators and the proposers. Since the evaluators are only able to check the balance of the 'big picture' but not the details – mainly due to limited availability as no one is willing to spend more than a few days per proposal –, the only remaining approach is to ask the proposers themselves. Thus the most appropriate strategy is to ask the proposers 'to shake the tree' by themselves. The negotiators, however, have to be aware of too serious declines in the number of publications, PhDs, income from research contracts and grants as a consequence of budget reduction.

Evaluators should make explicit statements about consistency and balance

To be better prepared for the negotiation process, the evaluators should make explicit statements about consistency and balance between research programmes and investments and propose opportunities for budget cuts.

Clearly separate budget cuts for the sake of focusing research programmes and cuts due to general budget limitations

While budget cuts in order to focus the research programmes irrespective of availability of budgets may indicate a serious effort to strive for quality, budget cuts to allow for more funding might be (mis)perceived as a strategy 'to take the money from the best to serve the mediocre'. Again, the evaluators should be asked for a clear-cut borderline between those to be funded provided sufficient availability of funds and those of insufficient quality.

7. The negotiation process from a mercantile view

It was said that the funding decision cannot end up with a go or no-go decision. Due to the complexity of the objects of funding in the OP RDI – research centres ranging from 50 to 1000 employees –, the peer-based evaluation has to be followed up by a separate negotiation phase. The major reason was to adjust management and governance structure, human resource and IP policy.

In this chapter we direct our attention to a rather 'mercantile' view, namely counting number before and after negotiation. The results are quite satisfactory, as can be seen in Figure 20.

Before discussion major finding a short explanation of the content of the table and related assumptions and caveats is appropriate:

- The coverage of the data is 38 out of 43 projects. Data cover the aggregate achievement from the start of the centres until end of 2015.
- Figure 20 represents the most relevant indicators from the point of view of research policy: number of completed PhD, number of publications, number of patents, number of applied results, and volume of contract research.
- The reference points are the data from the application (ESOP) on the one hand, shown in the column 'Before negotiation (ESOP)' and the data after completion of the negotiation on the other hand, shown in column 'After negotiation'.
- The increase / decrease as a percentage of the ESOP data can be seen in the column 'Difference [%]'.
- In some projects certain performance indicators where zero in the original application, particularly patents or applied results. In those cases where after negotiation the respective scores were >0, a 100% increase was defined, irrespective of whether 5 additional patents or applied results have been achieved or just 1. This modified parameter of change is listed in column 'Difference [%]*'. The respective entries are highlighted in grey.

Figure 20 Gains from the negotiation process

	Before negotiation (ESOP)					After negotiation					Difference [%]					Difference [%]*)				
Project	PhD	publ	patents	applied results	contract research (kCZK)	PhD	publ	patents	applied results	contract research (kCZK)	PhD	publ	patents	applied results	contract research (kCZK)	PhD	publ	patents	applied results	contract research (kCZK)
1	26	89	2	1	18.000	20	82	2	1	34.800	-23%	-8%	0%	0%	93%	-23%	-8%	0%	0%	93%
2	65	366	12	35	34.416	65	457	20	41	53.324	0%	25%	67%	17%	55%	0%	25%	67%	17%	55%
5	16	80	5	13	57.101	17	127	6	13	57.101	6%	59%	20%	0%	0%	6%	59%	20%	0%	0%
6	23	426	0	41	85.120	35	403	1	41	78.020	52%	-5%		0%	-8%	52%	-5%	100%	0%	-8%
7	65	422	9	12	77.766	67	326	9	12	72.000	3%	-23%	0%	0%	-7%	3%	-23%	0%	0%	-7%
12	6	90	0	13	11.800	6	141	9	15	31.200	0%	57%		15%	164%	0%	57%	100%	15%	164%
14	36	146	1	73	28.000	36	127	7	35	26.920	0%	-13%	600%	-52%	-4%	0%	-13%	600%	-52%	-4%
17	7	81	0	28	43.355	10	91	0	28	54.355	43%	12%		0%	25%	43%	12%	100%	0%	25%
24	34	334	11	93	31.300	29	339	7	91	77.000	-15%	1%	-36%	-2%	146%	-15%	1%	-36%	-2%	146%
30	92	344	21	6	49.000	25	320	3	1	82.500	-73%	-7%	-86%	-83%	68%	-73%	-7%	-86%	-83%	68%
36	4	50	4	12	7.400	8	68	4	17	16.250	100%	36%	0%	42%	120%	100%	36%	0%	42%	120%
40	61	325	3	24	75.000	61	325	3	24	65.000	0%	0%	0%	0%	-13%	0%	0%	0%	0%	-13%
58	29	451	9	14	41.080	22	426	7	14	51.119	-24%	-6%	-22%	0%	24%	-24%	-6%	-22%	0%	24%
60	3	34	1	9	4.300	3	55	0	10	4.550	0%	62%	-100%	11%	6%	0%	62%	-100%	11%	6%
61	10	136	4	4	0	10	377	10	4	2.000	0%	177%	150%	0%		0%	177%	150%	0%	100%
64	5	0	15	0	112.259	6	55	22	44	129.718	20%		47%		16%	20%	100%	47%	100%	16%
69	21	144	4	47	25.100	21	129	4	44	26.800	0%	-10%	0%	-6%	7%	0%	-10%	0%	-6%	7%
70	215	1.151	12	108	134.550	22	987	11	121	133.650	-90%	-14%	-8%	13%	-1%	-90%	-14%	-8%	13%	-1%
71	11	109	2	55	58.900	11	109	2	55	58.900	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%

72	10	253	2	66	15.911	28	287	1	76	15.912	180%	13%	-44%	15%	0%	180%	13%	-44%	15%	0%
73	8	244	1	0	6.800	23	329	2	18	23.600	188%	35%	100%		247%	188%	35%	100%	100%	247%
77	8	76	9	113	26.000	8	91	5	74	35.450	0%	20%	-44%	-35%	36%	0%	20%	-44%	-35%	36%
79	8	102	2	4	37.630	8	95	2	4	37.600	0%	-6%	33%	0%	0%	0%	-6%	33%	0%	0%
82	86	206	20	65	28.260	83	183	1	74	25.000	-3%	-11%	-95%	14%	-12%	-3%	-11%	-95%	14%	-12%
86	11	127	2	10	10.260	12	131	3	11	11.180	9%	3%	50%	10%	9%	9%	3%	50%	10%	9%
88	12	55	0	0	31.900	13	137	5	38	31.900	8%	149%			0%	8%	149%	100%	100%	0%
90	27	90	0	0	15.120	16	113	0	16	27.040	-41%	26%			79%	-41%	26%	100%	100%	79%
93	12	0	0	20	21.000	10	48	3	20	41.250	-17%			0%	96%	-17%	100%	100%	0%	96%
94	12	0	0	12	15.000	12	93	0	12	23.200	0%			0%	55%	0%	100%	100%	0%	55%
96	12	277	21	85	140.500	12	323	23	85	165.060	0%	17%	10%	0%	17%	0%	17%	10%	0%	17%
97	47	75	0	93	78.000	37	159	0	71	120.563	-21%	112%		-24%	55%	-21%	112%	100%	-24%	55%
100	33	217	0	4	45.900	17	100	2	3	26.900	-48%	-54%		-25%	-41%	-48%	-54%	100%	-25%	-41%
101	5	300	0	0	21.100	5	267	2	2	43.205	0%	-11%			105%	0%	-11%	100%	100%	105%
108	3	51	0	18	0	3	422	4	18	39.789	0%	727%		0%		0%	727%	100%	0%	100%
109	38	351	6	7	30.000	37	296	2	6	41.974	-2%	-16%	-66%	-12%	40%	-2%	-16%	-66%	-12%	40%
110	13	116	9	19	10.038	18	144	5	14	8.907	38%	24%	-44%	-26%	-11%	38%	24%	-44%	-26%	-11%
123	81	484	14	97	110.650	14	399	2	21	54.986	-83%	-18%	-86%	-78%	-50%	-83%	-18%	-86%	-78%	-50%
125	4	165	4	28	14.000	6	168	6	28	27.000	50%	2%	50%	0%	93%	50%	2%	50%	0%	93%
Changes between application (input) and negotiation (output) as a mean of changes in each project																13%	40%	25%	-2%	39%
* The same formula as above, except that each shift from "0" (e.g. no patents) to ">0" (i.e. at least one patent) := 100%																13%	44%	42%	8%	42%

Source: Ministry of Education, Youth, and Sports of the Czech Republic, own calculation

Negotiation increases output performance by 25% on the average

- The number of PhDs completed by 2015 has been increased by 13%.
- The number of publications enjoys an increase by about 40%.
- After negotiation the new research centres will increase their patenting activities by about 30%.
- In the field of applied results the changes are slightly positive. This has mainly to do that this type of research output has not been appreciated that much by the negotiation team. The low change rate reflects this intention.
- Income from contract research will increase substantially, notably by 40%.
- All in all the accomplishment of the evaluation by an additional negotiation phase has certainly paid off, all the more as the budget decreased at the same time by at least 10%. Taking into account, that the centres have to perform at least to the end of the decade, the negotiation will pay off even more in the long term.
- A speculation may be allowed: Assumed, the applications have put their better parts together and have gambled rather on the upper side of the performance they felt being capable of, the negotiation can certainly considered an additional push towards increased performance in the Czech research system. To bridge this gap, additional effort in management and human resource development has to be made. The next chapter deals with the question, how and to which extent the Ministry can provide respective support.

8. Some ideas and suggestions for making the research centres run smoothly

The new research centres as the backbone of the future Czech research system

In the coming years new buildings will be erected, laboratory equipment will be purchased and installed; people will be busy with familiarising themselves with their shiny new gadgets and new projects will be set up. Much will happen in the years when the research equipment is in its operational mode. Provided the Czech Republic will continue to direct substantial shares of Structural Funds of the next funding period to research and development, those who have successfully applied for funding in this period, will be the candidates for winning in the next period. In the 20ies of the 21st century the research landscape will have changed significantly as the winning institutes including the hosting institutions will dominate the research performance in the Czech Republic and will have caught up with their Western neighbours.

This is an optimistic scenario. A more pessimistic one emerges when considering the investments from the OP RDI and the respective research centres as a mere infrastructure for doing research, but continuing with present concepts of management, human resource, and IPR policies, thus pouring old wine in new skins.

Missed opportunities from underestimating management issues

It was said in the guidelines for applicants, that "Management is the difference, which makes the difference!" The experience from the evaluation and particularly from the negotiation process clearly supports this view.

Lack of awareness of the power of management typically leads to missed opportunities. Researchers often conceive management either as administration or as politics. It does not reflect the fact, that management and leadership is the art of framing mind-sets, of directing attention, of making creative use of resources, of dealing with trade-offs in a creative way.

Having said this, it is also worth mentioning that whenever applicants and future managers of research centres suffered from poor understanding and solution of certain management issues and could not think of a solution, there have always been some centres which had a proper understanding and were able to provide a suitable solution to the problem at hand. This insight is of great value as it indicates that whenever somebody has a certain problem they in most cases they can find somebody else who can provide help and assistance. Thus sharing of know-how and information is a proper strategy, however, it needs some systematic attempts to provide and have access to these particular types of resources.

In the remainder of this chapter we provide a list of issues which we have faced in the course of the evaluation and negotiation process and which are worth being recognised at the level of the respective policy levels. The Ministry of Education, Youth, and Sports is of course a preferred actor, but by no means the sole one.

8.1 Governance and top management: Focus at management learning

Background

Many centres do not a clear understanding of the three major actors in the governance of their centres: the executive, the supervisory board and the advisory board. The negotiations have clearly shown that most representatives of the hosting institutions and the future executives of the centres have to familiarise with the practical handling of three bodies and their interactions: distribution of tasks, range of involvement, and respective workload; setting the agenda over the year and for the respective meetings of the two boards, frequency of meetings, information needs, implementation of decisions and their supervision etc.

They certainly will learn their lessons. However, exchanging with other centres can and will help to shorten the phase of trial and error. Therefore it is worthwhile to support appropriate exchange and coaching programmes.[21]

Actions

1. Set up a platform where the managers of the centres can meet and exchange their problems, experience and solutions. This platform will be restricted to the managers of centres established under OP RDI, but should be opened for other centres after a certain consolidation period. The platform can organise lectures and trainings as well as stays abroad. In the medium term a master course might be worth considering.
2. Set up a partnership / scholarship scheme with research organisations abroad, both at the level of associations (e.g. Fraunhofer, DE) as well as at the level of individual research centres (e.g. the Transport Research Laboratory, UK) for staff exchange.

[21] To provide an example from the Czech Republic: A researcher from an applied research centre had the ambition to apply for the director's post. As a researcher he was involved in numerous European projects. What he did, was to combine a project-related stay with holidays and spent two months as a 'shadow' of the director of a similar institute in UK: He became familiar with the business, he prepared his application including a new strategic plan, he improved his English, he got a new friend – and he became the director of the centre.

8.2 A more creative use of evaluation, establishment of an evaluation culture

Background

Generally, many centres / their managers do have an ambivalent attitude towards evaluation. The more advanced ones are making use of evaluation as a management tool. They link evaluation exercise with their long-term planning. In particular, they organise peer-based evaluation exercises every two or three years and in doing so they obtain an extra-benefit of attracting attention from well selected representatives in the field and use this as a resource for partnering. Admittedly, it's a bit of a gamble. However, if nothing ventured, nothing gained.

It would be worthwhile encouraging and supporting centres and their managers to employ the instrument of external evaluation more creatively and particularly to link it with management decision of strategic relevance. This approach would contribute to overcome the uninspired and quite often misleading exercise of counting outputs, as does the Evaluation Methodology. The establishment of an evaluation culture is the key word in this respect.

Action

3. The Ministry can contribute through the support of an evaluation platform, asking the newly created centres and other research institutions, but also funding agencies and ministries to participate. Experience shows that it takes a couple of years to find the right profile. Thus, the years to the end of the present structural funds period can be considered the incubation and learning phase, in the next period the evaluation platform will have 'grown up' and can play a certain role for the next period and related operational programmes.
4. As many newly created research centres have a considerable infrastructure component, it would be worthwhile aiming for a formal accreditation and certification of laboratories / core facilities (cf. Chapter 8.6 below8.7).

8.3 Strategic partnering

Background

All centres do have partners. In most cases there are too many of them with too vague roles; often they are considered strategic partners because they are partners in collaborative projects of strategic relevance. Strategic partners do have preferred status with respect to joint projects or programmes, exchange of staff, joint application for grants, sharing of equipment; sharing of results. And there can only be just a few.

Centres need some help to align their numerous partnerships. In order to do so, they have to have a clear idea about their overall goals in terms of content, qualification, staff, and type of outcome.

Action

5. The key actors to decide about strategic partners are the executive members, the director and the research programme leaders, as they have to draft respective policies. The supervisory board and advisory board do play the role of consulting and approving respective policies. It will be critical to take into account partnering from the very beginning of the centres. The main challenge here is not to forget about the issue and to recognise that partnering needs systematic effort. Partnering with the application sphere should receive particular attention. The main 'action' is for different actors to maintain a high level of attention for the subject. The issue of strategic partnering can easily be linked with the management exchange platform (cf. Action 1 in Chapter 8.1).

8.4 Human resource management, support of (young) researchers' careers

Background

For many centres and their managers, human resource policy does not play the role it could and should play. Many of them underestimate the long-term benefits of a more active and systematic recruitment and career development policy. Quite many of the planned centres are going to implement an appraisal scheme in which individual researchers are appraised by more or less the same set of indicators as it is used to monitor the progress and evaluate the performance of the entire centre: number of publications, number of patents, number and volume of grants and contracts and so on. While this approach is appropriate at the level of the centre and might also sound reasonable at the level of individual research programmes, which in itself can be considered a small research centre, it is certainly not feasible at the level of individual researchers. Appraisals of individual researchers thus require different approaches.

Recruitment is another blind spot. There are numerous examples where centres do not create and offer opportunities for additional senior researchers in the course of their development. This pattern often correlates with the implicit decision for a non-growth trajectory. Further, they do not spend sufficient attention to recruitment and development of young researchers via-à-vis long-term plans.

Shortcomings in the field of human resource management are more an expression of insensitivity and helplessness rather than a deliberate choice or the outcome of legal or institutional restrictions. It turned out that people sometimes – mainly during the negotiations – would wake up and realise the enhanced gains resulting from a more deliberate involvement in human resource issues. Accordingly, it should be a fruitful strategy to invest in human resources related support.

If human resource policy is taken seriously it automatically forces managers to think in the long-term: involvement in master programmes to feed into PhD programmes and to turn them into PostDocs including a year or two abroad, takes ten years. Thus, strategic and long-term planning is in some way linked to human resource development.

Action

6. Raise awareness for a more concerned handling of human resource issues. To provide two examples of some relevance:
   - Recruitment and respective decisions should not be made solely by the respective immediate head of the research group or department. Rather it should be a concern of the higher hierarchical levels. Ideally it should be done by committees, which can include external people, e.g. from strategic partners or members of the advisory board.
   - Consider and use strategic partners as partners in recruitment and career development. Senior researchers do play a crucial role as they have to build the respective bridges, which then can be passed by junior researchers.

   Human resources consideration should have a high priority in all relevant support actions aiming at improving management performance (cf. Chapter 8.1). Thus a separate line of action within the above proposed management support platform can help.[22]

[22] To invite e.g. Olaf Kübler, the former president of the ETH Zürich, to talk about his motives and experiences having spent half of his time for recruitment of top positions in his university.

7. Implement proper appraisal schemes and link them to career development schemes. The critical issues here are: timing (which interval), agenda (which issues should be discussed, which should not be on the agenda), criteria (which criteria should be employed, how should they been handled and related to higher level issues), setting (links to other policy agendas, e.g. research programmes, salary / bonus, mobility, gender).[23]
8. The outcome of appraisal talks and related career steps are a kind of internal contract. All appraisal talks and career steps are crucial building blocks which contribute to building the research programmes. Executive managers (director, research programme leader) need systematic coaching and support in appraisal and career development. The major challenge here is to introduce a way of thinking among the executives which considers appraisal talks and career planning to be high on **their** management agenda.
9. Recruitment for top positions should not be done solely by public announcement; rather it should be complemented by search committees, which themselves allow for additional networking and partnering. The Ministry can take a role (i) of funding the respective actions and in doing so (ii) implementing appropriate quality standards.
10. Establish Research Schools, particularly within Centres of Excellence and their academic partners. These Research Schools are high quality doctoral programmes, which run over a period of 10-12 years, and in which both the curriculum **and the faculty** is evaluated by external experts. An underlying research programme including strategic partners can be considered a preferred set-up for a Research School. The establishment of a fully-fledged Research School would be a rather novel element in the Czech research and higher education system and worth being invented and developed. Some coaching from other countries would help to avoid blind alleys and speed up learning. The Czech Republic's direct neighbours, Austria and Germany, are quite advanced in this regard and could fulfil such a coaching role.

8.5 Management of intellectual capital

Background

Here we can observe the largest distance between claims and reality. First, most centres do not have a clear understanding of the large variety of types of research outcomes, which have to be considered when talking about 'intellectual capital': publications, patents, and PhDs, research contracts and grants can be considered highly tangible outputs. Experience, competence, access (to markets, partners), visibility, reputation, and trust[24] are without doubt valuable assets, unfortunately difficult to measure and to trade.

Experience in the negotiation of funding / performance contracts has revealed that most centres reduce intellectual capital to patents as they are neither sufficiently aware of the wide range of **intangible** intellectual capital. Nor do they in particular

[23] The implementation of the mere rule, that PhD students have to publish x first author publication, y co-author publications, and z conference contributions directs the attention not only of the students, but also of their supervisors. Furthermore, a proper management of this rule directly links to the overall performance of the centre.

[24] High levels of experience, competence, access (to markets, partners), visibility, reputation, and trust are the perfect indicators and basis for entrusting those people higher amounts and shares of funding. As they cannot be measured by universal quantitative indicators, they have to be determined by other methods; informed peer-review is a rather trustworthy approach.

recognise the mutual relationships e.g. between academic publications and patenting and between patenting and contract research. The most common failure here is that they consider patenting **after** completion of their academic-type research work instead of planning and aiming for patents in parallel to planning and aiming for academic publications. Further, as regards to contract research and collaborative research, most centres are far away from implementing advanced business models to exploit their infrastructure and intellectual capital properly. As some of the newly created centres heavily built on their research infrastructure, respective business models are key for optimal use (cf. Chapter 8.6, below).

While there is a high level of awareness regarding the broad range of measurable outputs of academic and public research in the Czech Republic (cf. the Evaluation Methodology including their numerous indicators and respective weights), there is considerable lack of awareness and attention for intangible assets. Moreover, recent experience with the Evaluation Methodology clearly indicates a trend toward perverse behaviour.[25]

Action

11. In this field, the entire Czech research system needs a reform. The centres set up within the OP RDI can serve as a role model for the overdue reform. The main action is to create attention for the broader concept of intellectual capital rather than intellectual property (rights) at the level of long-term planning, particularly when starting new research programmes or bigger projects, when entering into strategic partnerships both with academic partners, but in particular with partners from the application sphere. Again, coaching of executive managers (directors, research programme leaders; specialised staff) by training courses and hands-on learning through stays abroad are the proper approaches. Patience and persistence are the right attitudes, as the reform will require the changes of mind-sets and behaviour and will thus take many years.

8.6 Operation of laboratories / core facilities

Background

Most centres are going to heavily invest in research infrastructure. Many of them underestimate the role and relevance of qualified technical staff in order to make the facilities running. Other centres suffer from the absence of a well-thought out business model of how to operate their facility vis-à-vis (i) internal use, (ii) use within their hosting institution(s), (iii) use by other public institutions (from abroad) and (iv) the private sector.

[25] A public research centre, a winner of a Regional Research Centre within OP RDI, used to distribute its research findings mainly in professional journals and national conferences. This distribution policy has been chosen mainly due to the fact that it reached their target group in an optimal way: policy makers at municipal, regional, and national level, transport utilities and construction firms. Due to the fact that these types of outputs have no more relevance as they are no more counted in the National Research Register, it has changed its publication policy. It has significantly reduced its traditional publication activities, and has increased its production of utility models, which is perceived an administrative exercise without any significant risk. As a matter of fact, this publicly funded research centre has undergone a dramatic change from the distribution of free information to a rather restricted policy which mainly monopolises its research findings through formal IPR measures.

If carefully arranged and managed, a proper infrastructure / core facility policy does not only create additional financial income but provides in particular additional input for research projects.[26]

Action

12. Centres should be encouraged and supported to go for an accreditation and certification of (parts of) their laboratories / core facilities. In more business oriented cases this can be performed by specialised authorities. In more research oriented cases it will be necessary to involve carefully selected experts from abroad to test the quality of the respective installation. The Ministry should support these ambitions both in its role as supervising authority, by setting minimum standards and by providing financial support. Learning from other places is a must.
13. Centres should go for elaborated business models to maximise the exploitation of their infrastructure both for academic and commercial purposes. Learning from other examples (mainly from abroad, but not exclusively) is the key issue.

8.7 Quality management

Background

As in many other (business) organisations, quality management is – often for good reasons – not necessarily conceived as the management of quality but as a laborious administrative exercise. The main challenge is thus to link quality management with and integrate it into general management: evaluation, recruitment, career development, strategic partnering, accreditation / certification of research infrastructure.

Action

14. Learn from others how they deal with the subject of QM. Again, study visits and follow-up staff exchange with institutes abroad can help a lot. This can be easily done during the period before the operational start of the research centres. The Ministry can provide support.
15. Think twice before adopting formal QM systems (ISO 9001, EFQM).

8.8 Summary

The Centres of Excellence and the Regional Research Centres to become established in the next 3-5 years do have the potential to become the reference system for public research in the next decade. However, new buildings and advanced laboratory equipment have to be linked with advanced management systems. The next years should therefore be used for setting up proper management systems and related learning. Special attention should be paid to underestimated issues and blind spots, in the following expressed as desiderata:

- Learning how **executive, supervisory and advisory functions interplay**. (External) evaluation should be perceived as a source of advice rather than examination and control.

[26] To give an example from a food research department of a university of agriculture: Laboratory equipment is used for commercial purposes. In doing so, the centre has the right to measure a given set of indicators from the samples at their own cost. Because they have a joint research programme with the departments of soil science, meteorology and climatology and with animal husbandry they have splendid data over years, 365 days a year, to relate soil quality, weather conditions, animal health, and milk products. The farmers and the dairy receive valuable input for their management of their farms and dairies.

- **Acknowledging and integrating of human resource policy**, particularly recruitment and career development as active elements on the agenda of the top executives.
- Acknowledging and prioritising the **management of quality** and encouraging to think twice before adopting formal quality standards.
- **Acknowledgeing non-quantifiable intellectual assets** such as proper management and business models, reputation, trust, strategic partners. External peer-based evaluation can help to benchmark centres or research programmes.
- **Acknowledging laboratory equipment and core facilities as an asset** which can and should considerably go beyond internal use, ranging from a pure commercial exchange to a source of partnering and increase of research performance.

Action

16. The Ministry can and shall act in taking over several roles:
    - First of all it should financially support a number of actions and initiatives.
    - In doing so, it has the opportunity to implement and maintain certain standards, as the allocation of funds can be related to quality requirements.
    - The Ministry should preferably support those measures and actions which have a potential of self-sustainability in the long term.
17. In concrete terms, the following measures are worth being on the top of the agenda for the next years:
    - **Installing search committees to recruit the top positions** of selected centres. This will take about one year.
    - **Setting up a visiting scheme for executives** (directors, research programme leaders, specialised managers where appropriate). The respective trips serve a first step to create an identity among future directors and research programme leaders, which can then be supported by several actions. Can and should be scheduled over the next three years.
    - Based on the experience **a training and coaching programme/platform for executives** should be implemented, provided by both a domestic and foreign faculty.
    - **Setting up of an evaluation platform**, inviting a wide range of institutions to become members. The funding agencies and the Ministries should be members anyway. This platform needs permanent funding mainly from the Ministry, not least to have a saying in the specification of the agenda.

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Technopolis Forschungs- und Beratungsgesellschaft m.b.H.
Rudolfsplatz 12/11
A-1010 Wien
Austria
T +43 1 503 9592 12
F +43 1 503 9592 11
E info.at@technopolis-group.com
www.technopolis-group.com