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EUROPEAN RESEARCH AREA COMMITTEE
High Level Group for Joint Programming

Secretariat

ERAC-GPC 1309/10

NOTE

Subject:	Voluntary guidelines on framework conditions for joint programming in research 2010

Delegations will find in the annex the Voluntary guidelines on framework conditions for joint programming in research 2010, as agreed by the GPC at its meeting on 4 November 2010.

VOLUNTARY GUIDELINES ON FRAMEWORK CONDITIONS FOR JOINT PROGRAMMING IN RESEARCH [1] 2010

FOREWORD

The Communication of the Commission to the Council of 15 July 2008 "Towards Joint Programming in Research: Working together to tackle common challenges more effectively" defined an ambitious new approach for making better use of Europe's limited public R&D funds through enhanced cooperation. The new initiative, namely Joint Programming, marked a change in European research cooperation, offering a voluntary process for a revitalised partnership between the Member States based on clear principles and transparent high-level governance.

The Council Conclusions on Joint Programming of 2 December 2008 welcomed the concept and objectives as formulated in the communication of the Commission. The Council recognized the competence of Member States and regions over their choice of research and innovation policies and related allocation of resources, and underlined that the participation of Member States and FP associated countries in Joint Programming should be carried out on voluntary basis and according to the principle of variable geometry and open access. The participation in Joint Programming should also be based on scientific excellence and full utilisation of the research potential of its members.

The importance of jointly addressing global challenges has been also recently re-iterated and reinforced in the Commission Communication of 3 March 2010 "EUROPE 2020 - A strategy for smart, sustainable and inclusive growth", endorsed in the Council Conclusions of 17 June 2010.

Joint Programming is then a process led by Member States, and the Commission's role is to facilitate the process and provide support as necessary. All related procedures must be examined within the framework of the general approach to optimise the governance of the European Research Area.

[1] Annex IV to draft biennial report to the Council on the JP process.

To fulfil these aims, the Council asked Member States to collaborate in a dedicated "High Level Group for Joint Programming" or GPC, to identify, in accordance with a specific mandate, themes for Joint Programming chosen following broad public consultation of the different regional, national and European scientific communities, and of the private sector where appropriate. Each thematic proposal presented to the GPC by one or more of its members should include preliminary suggestions concerning a common vision, the governance and implementation of Joint Programming initiatives.

The GPC should evaluate each thematic proposal for Joint Programming on the basis of the following criteria:

- Sufficient and effective commitment of the Member States concerned;
- The theme addresses a European or global challenge and is sufficiently focused so that clear and realistic objectives can be laid down and followed up;
- It brings a clear added value to overall current research financed from national and Community public funds, as regards both economies of scale and better thematic coverage;
- Relevant regional, national and European stakeholders, including where appropriate the private sector besides scientific communities and funding agencies, have been involved in developing the theme;
- A Joint Programming approach has the potential of translating the output of good public research into benefits for European citizens and European competitiveness, and of increasing the efficiency and impact of public R&D financing by involving the key public initiatives in the area.

The Council Conclusions on Joint Programming of 2 December 2008 also encouraged Member States, with the support of the Commission, to consider how best to find common approaches to a number of issues, usually referred to as “Framework Conditions”, thought to be essential for an effective development and implementation of Joint Programming in Research:

- Peer Review Procedures
- Foresight Activities
- Evaluation of Joint Programmes
- Funding of Cross-border Research by National or Regional Authorities
- Optimum Dissemination and Use of Research Findings
- Protection, Management and Sharing of Intellectual Property Rights

The debate taking place so far has come to the conclusion that establishing binding European rules for all the Framework Conditions would be difficult.

In practice, a distinction should be made between horizontal aspects, for which a general approach could be considered, and more specific ones, where tailor made solutions would be preferable, if not an absolute requirement.

Recent experiences with ERA-NETs, Joint Technology Initiatives and Article 185 (ex Article 169) Initiatives seem to indicate that striking the right balance between developing a “standard model” and “flexibility within the model” is crucial to prevent a fragmented landscape deriving from applying a completely different set of rules to each initiative.

A supple approach appears therefore the preferable option, whereby the Framework Conditions could be implemented as a set of non-binding recommendations, which are the object of the present "Guidelines", based on available best practices and identifying the possible alternatives for supporting common policy actions.

A suitable monitoring at political level could be useful to stimulate maximum compliance. However, the ultimate measure of the success in introducing the Framework Conditions would be a spontaneous adoption, based on the simple recognition of the practical usefulness of what is being proposed.

Cross-border sharing of information on the state of play of national and European research initiatives in each area chosen for a Joint Programming Initiative (including all possible related fields) will be, however, an important pre-requisite for developing effective JPI actions.

As for all other cases where public funding is involved, JPIs should focus their attention to maximise the benefits that the tax-paying citizens could derive from the activities being carried out while, at the same time, ensure that potential economical gains are equitably shared among the participants in the initiative.

THE FRAMEWORK CONDITIONS

Introduction

Taking into account the actual context in which the Framework Conditions for Joint Programming (FC) would find practical application, the FC formulation could be oriented along the following set of ***General Principles***:

a) **Consistency with the Joint Programming concept** of increasing the efficiency and effectiveness of Member States' efforts in dealing with large scale, pan-European socio-economic challenges.
b) **Voluntary Nature**, where the ultimate measure of success would be a spontaneous adoption based on the simple recognition of the practical usefulness of what is being proposed.
c) **Streamlined and simple implementation**, taking into account that an element of urgency is implicit in tackling the big challenges our society is facing and therefore any unduly complex and lengthy management procedure would be utterly out of place.
d) **Flexibility**, in allowing individual Joint Programming Initiatives (JPIs) the possibility to choose, within a range of reference models and for each of the Framework Conditions, the option considered most suitable in the specific case and circumstances.
e) **Openness to natural evolution**, so to maximise the benefits that could be derived from the experience gradually gained in running actual JPIs.

f) **Low perceived administrative overhead** by all categories of actors involved in the Joint Programming process (research funders, research managers, scientists, industrial partners, etc.)

1. Peer Review Procedures

1.1 Objective

Peer review of proposals is at the heart of any excellence-based research policy and practice, as it forms the basis for decisions on which research(ers) will be funded. Procedures for peer review may vary across the Member and Associated States, thereby making it difficult to compare potential and achievements at the European level.

The rationale for commonly accepted peer review procedures is most pressing in the cases when actual joint funding of research takes place through competitive calls. In those instances, commonly accepted peer review procedures are essential for a smooth management of the joint calls.

1.2 State of Play

In order to facilitate the exchange of good practices and make available the wealth of experience matured within the ERA-NET scheme, the European Commission (EC) set up the ERA-NET Learning Platform (a support action started in 2009), which will produce a call implementation toolbox and a set of recommendations for evaluation standards and funding modes.

The EC and, more recently, the European Research Council (ERC) have developed also a lot of direct expertise in organising peer reviews in the context of implementing the successive Framework Programmes.

ESF and EuroHORCs have been studying the peer review issue since 2006 and included it prominently in their strategy document "Vision on a Globally Competitive ERA and Road Map for Actions"[1], where the two organisations propose to establish European-level benchmarks for peer review processes, to set up European peer review panels and to develop European-level peer review resources, such as quality-controlled shared databases of reviewers.

The Lead Agency scheme, currently implemented by the German, Austrian and Swiss Research Councils in the context of the 'D-A-CH' association, utilises the alternative approach of mutually recognising the evaluation of joint projects carried out by the institution from which the highest share of funding is expected (the only one to which, according to the D-A-CH rules, the proposal is actually submitted).

1.3 Open Issues

The definition of an agreed set of evaluation criteria, among which the assessment of *Excellence in Research* should be regarded as the central pillar, is the basis for any scientific Peer Review system. It must be however recognised that divergence of approaches concerning a number of ancillary elements, including the possible use of additional non-scientific criteria, would require attention if consistency of evaluation results is to be achieved.

1.3.1 Selection of Expert Evaluators

High level of expertise among the peer reviewers is certainly a must, however quality evaluations come from diverse panels of experts, which might include a mixture of backgrounds and, if relevant, different scientific and technological viewpoints. Criteria for selecting experts are therefore not always straightforward and they will usually have to be tailored to the type of call. Where necessary, experts without formal academic qualifications may be needed, for example to judge applied research with a more immediate commercial potential.

[1] Conclusions of a EuroHORCs-ESF task force, chaired by Matthias Kleiner (DFG President).

The idea of drawing up a common database of "certified" experts needs to be treated carefully. In fact what might appear initially simple and attractive to implement, raises a number of problems (how and by whom the certification is made; how discipline boundaries are defined; how possible reputational consequences for experts who are deemed unsuitable for the database should be dealt with).

An allied issue is that of incentives for peer reviewers. Some agencies pay their experts, while others do not. Given the limited availability of highly qualified experts, and multiple demands from different agencies, the 'market' for peer reviewers needs to be analysed, including the possible identification of non-financial incentives.

1.3.2 Process Transparency

There are usually limits to transparency: for example, while it is common practice to publish the names of the experts, this is normally done in a way that does not link individual experts to specific proposals. There may be however circumstances where the disclosure of such a link would be appropriate, as in the case of standing panels. This may also promote a sense of accountability among the experts and limit the risk that undisclosed conflicts of interest might otherwise represent.

1.3.3 Fairness and Impartiality

There needs to be some common guidelines on what constitutes a C*onflict of Interest*, possibly distinguishing between what would represent 'disqualifying' and 'potential' conflict conditions, as done in the case of the rules applicable to FP7 evaluations. The cases, if any, in which C*onflict of Interest* conditions might be occasionally relaxed, should be also well specified.

A suitable language regime should be established: this in most cases might boil down to the question of allowing proposals to be submitted in a language different from English. However, in case of a positive answer, further restrictions (i.e. allowing only 2 or 3 additional languages) might appear arbitrary and the practical implications of applying an open linguistic approach should be carefully considered.

A further aspect to be considered is the way to deal with possible complaints over the peer review process, giving either no possibility of appeal, or setting-up a formal *redress procedure*.

1.3.4 Ethical Dimension

While some *ethical issues* can be left as a matter for national regulation (for example, authorizations of clinical trials), others (e.g. use of human embryonic stem cells) are highly sensitive and potentially controversial. Agreement on they way these questions should be tackled should be reached *before* undertaking a common research programme.

1.4 Recommended Guidelines

The Peer Review process should conform to a list of core principles:

- **Relevance** – Proposals are eligible when the objectives of the specific JPI are met. The socio-economic impact and innovation potential should be also taken duly into account.

- **Excellence** - The evaluation should aim at assessing the scientific excellence of the proposals. Provisions should be made towards evaluating multi-disciplinary proposals, to ensure that they are not penalised with respect to those aligned within traditional disciplinary boundaries.

- **Impartiality** - All proposals submitted to a call should be treated equally, i.e. evaluated impartially on their merits, irrespective of their origin or the identity of the applicants.

- **Transparency** - Funding decisions must be based on clearly described rules and procedures, adequately publicised. Applicants should receive a circumstantiated feedback on the outcome of the evaluation of their proposals.

- **Quality** – Proposal evaluation should be consistent and conform to high quality standard, similar to those achieved in other similar European or international processes.

- **Confidentiality** – In principle, all proposals and related data, knowledge and documents should be treated in confidence, according to established best practices.

- **Ethics and Integrity** - Any proposal found to contravene fundamental ethical or integrity principles may be excluded, at any stage.

1.4.1 Setting up Calls for Proposals

Calls should be publicised well in advance and include: a timetable; budgetary information; clear guidelines for applicants; reference to evaluation criteria and methods applied in the funding decision.

The entire call publication and proposal selection cycle should aim at simplicity and effectiveness. The evaluation mechanism should be appropriate to the nature and size of the call. Proposal assessment, award and issuing of grant should be as rapid and efficient as possible **(e.g. time-to-contract)**, while ensuring the quality of the process and the respect of the legal framework.

Practical considerations and the will to ensure quality of peer review induce to suggest that the main text of all proposals submitted should be in English. Summaries in other languages might be accepted, if so required by national regulations or relevant for the discipline or proposal peculiarity.

1.4.2 Evaluation Panels

Members of the evaluation panels conducting the peer review must be recognised experts, impartially chosen taking good care of avoiding any bias or conflicts of interest

Panel composition should take into account appropriate coverage of the relevant scientific and technological domains, including interdisciplinary and socio-economic aspects. It should be also, as far as possible, balanced in terms of gender, age, affiliation and nationality, including representatives from the civil society. The use of a common and certified expert database, which might be derived from the consolidation of existing ones, could be considered.

All participants in a peer review panel must adhere to a Code of Conduct, which should include provisions regarding confidentiality, declaration of conflict of interest, ethical issues, as well as the sanctions to be applied in case of breach of the Code. Whether expert evaluators are being remunerated or not should be planned and communicated in advance.[1]

The activity of evaluation panels might span beyond a single call: it is however recommended that membership should rotate periodically.

Names of panel members having taken part in an evaluation exercise should be published after the completion of the assessment work, avoiding to associate individual names to specific proposals.

Evaluations should adhere to a two stage process. On site evaluations should be combined with remote evaluations, allowing for savings in time and money.

1.4.3 Assessment and Selection Criteria

Assessment criteria should be clearly worded and defined, limited in number and logically related to the objectives of the call. The applicable marking scale, including the thresholds between fundable and non-fundable proposals, should be published with the call.

Selection and funding decision should be, in principle, based on the ranking provided by the peer review experts, taking into account the budget available for each of the individual topics that might be listed in the call.

1.4.4 Controls

Suitable controls should be put in place to avoid errors and ensure the fairness of the evaluation process. The outcome of such controls should be used also to improve future evaluations.

[1] EU-Framework Programme 7 levels of payment for experts for project proposal evaluation could serve as a reference.

It is recommended that a fast redress mechanism should be established in case of a procedural mistake occurring despite the controls put in place.

1.4.5 Toolboxes

Reference on the practical aspect of call publication and proposal evaluation could be suitably derived from existing experiences in peer-review system taking place both at national level and in a multi-national context (ERA-NET community, EU FP7/ERC or ESF).

The "Toolboxes" developed in those contexts provide, inter-alia, examples of: evaluation governance structure, instructions/guidelines for applicants and reviewers; eligibility/evaluation/selection criteria; rating system; code of conduct; redress/rebuttal procedures; proposal & consortium agreement templates.

2. Forward Looking Activities

2.1 Objective

Forward Looking Activities (FLAs) cover a broad range of activities that aim at inspiring future oriented strategic decision making, providing fresh insights of current trends and possible disruptive events, building shared visions of the future challenges. FLAs are a useful means to create common understanding and form basis for joint perspectives and visions.

In the context of Joint Programming, FLAs contribute to:

- The early identification of existing and emerging grand societal challenges that could have far reaching scientific and technological implications.

- Analyse the changes in global research and innovation systems and the socio-economic context in which they operate.

- Building genuine stakeholder commitment to action.

- Translate an already identified grand challenge into an operational reality.

Coordinating FLAs at European level could be an efficient and cost effective tool for identifying the long term challenges and elaborating long term visions as well as assessing the impact that current trends and possible disruptive events could have on our society, exploring alternative scenarios and identifying possible solution and mitigating approaches.

As the Council Conclusions on Joint Programming of 2 December 2008 recognised, there is increasing need for a new and more strategic approach, which should be based on the joint identification of societal challenges of common interest. FLAs could play an important role in supporting joint strategic discussions by providing information for policy-makers.

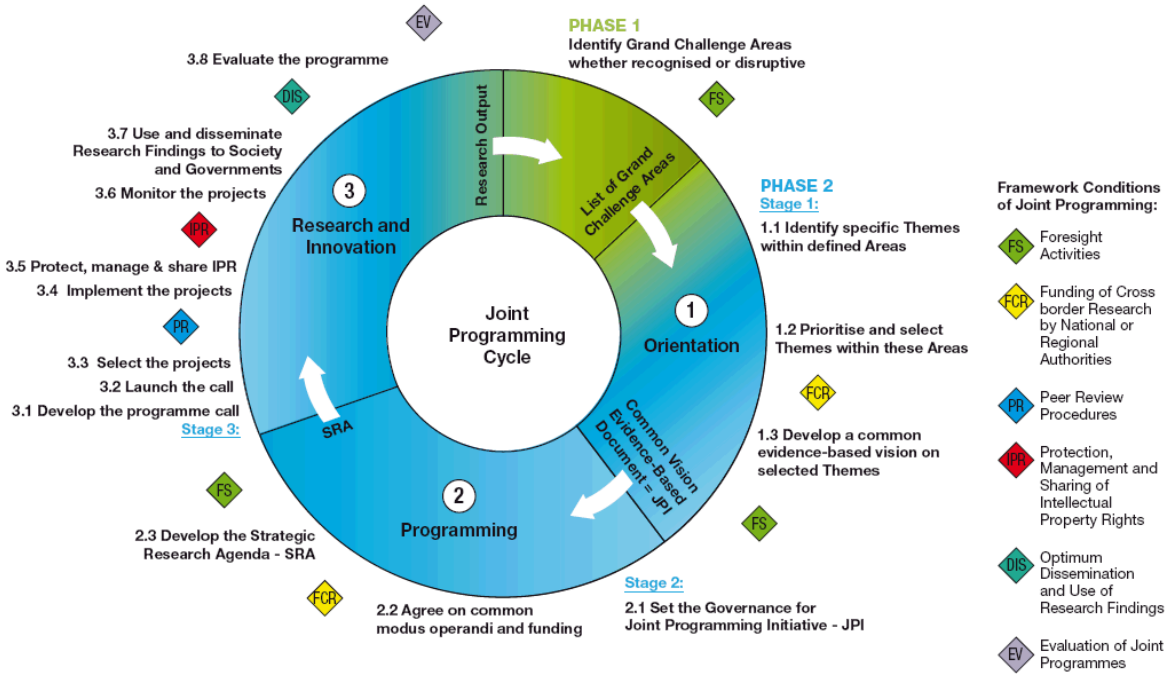

Figure 1: Phases of the Joint Programming Cycle (picture source: ESF)

In the Joint Programming process, and with reference to its *Phases* illustrated in the picture above, Forward Looking Activities[1] have two, equally important roles:

- In Phase 1 – Helping Member States and the High Level Group on Joint Programming (GPC) in identifying grand societal challenges to be addressed by joint research and development activities. In this context they could also contribute to the development of shared perspectives and visions, providing evidence-based suggestions for societal challenges and engaging major European stakeholders and interacting with the relevant international partners.

- In Phase 2 – Translating a societal challenge into an operational reality. This would help in the definition of Strategic Research Agendas, as well as their updating during the JPI lifespan, with the aim of keeping the vision focused on the objective to achieve tangible results within a reasonable time boundary, as the assigned mandate to answer "a grand societal challenge" demands. The process should engage relevant stakeholders.

2.2 State of Play

At European level, the use of Forward Looking Activities as basis for joint strategic development is one of the key elements underpinning the EuroHORCs-ESF document on the progress of ERA[2], with a stated commitment towards actions for further improving the current ESF Forward Looks, both in terms of quality and impact, in view also of making them a viable tool to be used in the context of future Joint Programming Initiatives.

[1] References to "Foresight" present in the Council Conclusions on Joint Programming of December 2008 should be understood to cover the broader range of "Forward Looking Activities".

[2] Action 3 of the "Vision on a Globally Competitive ERA and Road Map for Actions"

The European Commission has been stimulating FLAs across successive Framework Programmes. In FP6, it established a group of national foresight correspondents and supported the FORSOCIETY ERA-NET (concluded in 2008). The Commission has also funded the European Foresight Monitoring Network (EFMN) for the monitoring and mapping of ongoing and new foresight activities in the EU and the world. A new project, the *European Foresight Platform*, will continue this monitoring activity under FP7[1], integrating also the work carried out under the FOR-LEARN initiative[2], which was supported by the EC Joint Research Centre (JRC) and aimed at sharing foresight methodologies and best practices.

In addition to its involvement in FOR-LEARN, the IPTS (Institute for Prospective Technological Studies) of the JRC has also an established reputation in carrying out autonomous Foresight exercises in different areas.

Under FP7, within the Socio-economic Sciences and Humanities Programme (SSH), the EC funds also a series of "horizontal" collaborative foresight projects and, in cooperation with the Bureau of European Policy Advisers (BEPA), a number of broad foresight activities and expert groups aiming at providing policy makers (at regional, national and Community level) with the knowledge for an early identification of long term challenges and areas of common interest. Among them:

- SESTI, on methods for the early identification of emerging issues (horizon scanning).
- FARHORIZON, a pilot foresight to align strategic and applied research with longer-term policy needs in Europe.
- IKNOW, on the mapping of "wild cards" and "weak signals" relevant to the future of the ERA.
- CIVISTI, on incorporating citizens views in research policy-making.
- AUGUR, on Europe and the world in 2025.
- MEDPRO, on the future challenges in the Mediterranean area.
- SANDERA, concerning the priorities in the security research domain.
- INFU, dealing with future innovation models.

[1] http://www.foresight-network.eu
[2] http://forlearn.jrc.ec.europa.eu

In its recent Communication "Europe 2020 Flagship Initiative Innovation Union"[1] the Commission notes that in order to improve the evidence base of policies it will create a "European Forum on Forward Looking Activities", bringing together existing studies and data and involving public and private stakeholders.

With EC support, the Standing Committee on Agricultural Research (SCAR) launched in 2006 a foresight process aiming at identifying possible scenarios for European agriculture in a 20-year-perspective and establishing priority research needs in the agricultural domain. This work has already led to a JPI proposal called "Agriculture, Food Security and Climate Change".

Moreover, several other EC funded projects dealing with the so-called "post carbon society" and the link between energy, environment, transport and land-use have a strong FLA component (cf. PACT, GILDED, PASHMINA). European Technology Platforms and ERA-NETs have sometimes used FLAs to develop their research priorities.

The Science and Technology Options Assessment (STOA) panel of the European Parliament performs studies to increase understanding of scientific and technological innovations and of their possible impact.

Foresight methodologies have been the subject of a dedicated COST Action[2], aimed at promoting a systematic approach as pre-requisite for maximising the benefit.

At national level, several Member States have organised FLAs to define their research priorities (CZ, DE, DK, FI, FR, HU, LT, SE, UK etc). European coordination actions often start by gathering the results of national foresights. The private sector (notably large multinationals and European Technology Platforms) conducts also strategic foresight exercises.

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1 http://ec.europa.eu/research/innovation-union/pdf/innovation-union-communication_en.pdf (SEC(2010) 1161, COM (2010) 546 final, 6.10. 2010), p. 12

2 COST Action 22 (COST A22), "Foresight Methodologies - new ways to explore the future",

2.3 Open Issues

2.3.1 Implementation Level

Forward Looking Activities are often scattered and conducted independently, at sector or programme level, with variable time-frames and having in mind different contexts (regional, national or supra-national). Consequently, the results appear heterogeneous, difficult to compare or aggregate and are therefore not fully exploited.

The EU decision-making processes would benefit from a systematic, well organised and distributed system of forward looking activities, conceived as a continuous process rather than on ad-hoc basis. Such an activity may address the diverse needs in a systematic, flexible and timely manner.

2.3.2 Organisation & Governance

The design and management of European-wide FLAs face major vertical (regional/national/European) and horizontal (interdisciplinary) challenges.

For each FLA exercise, it is critical to have a clear picture of the roles and responsibilities of the parties involved: the initiator, the clients, the providers of resources.

The establishment of appropriate standards and the systematic collection of data-sets to be used as input have to be coordinated, organised and paid for. It has to be decided which entities, at the various levels, should be charged and responsible for providing those services.

2.3.3 Methods

Typically, different methods or sets of methods are employed at different stages of an FLA process. Finding the appropriate sequence and combination of methods is often one of the most critical design steps. The methodological framework needs to evolve and might be re-defined throughout the process, depending on the approach chosen, and the availability of appropriate information.

Since FLAs will be used as basis for a decision making process, it is of fundamental importance to have indications about the level of accuracy that might be expected.

2.4 Recommended Guidelines

2.4.1 Involvement of Stakeholders and Decision-Makers

The practical value of Forward Looking Activities depends on the ways in which the resulting knowledge is transferred to ongoing and forthcoming actions: FLAs should deliver pragmatic indications and not just fuel academic debates, as it is too often the case. For this to happen, relevant stakeholders and decision-makers have to be engaged and involved in the forward looking process itself, and **not** only after the report has been published. This will increase the likelihood that results will be taken account and the necessary decisions will be made. A participative and inclusive approach is needed.

2.4.2 Pan-European FLAs

Pan-European FLAs should be able to harvest the results of relevant studies conducted in a national, regional, or international context and, by further analysing, synthesising and elaborating these inputs, develop European-level views. These views should then allow decision makers to adopt the best possible strategies for addressing the grand challenges we are facing and define the corresponding research needs.

Pan-European FLAs could be designed by combining two different approaches:

- *Evidence-based analysis:* where studies and data-sets (either existing or collected ad-hoc) are analysed and summarised to establish models and extrapolate future trends and scenarios.

- *Work with stakeholders:* where relevant stakeholders are actively involved in developing and assessing ideas and scenarios. In this context, agencies, institutions or "umbrella" organisations could be extremely useful for optimising and speeding up the process. This is a key factor, as for maximising the impact of FLAs, their conclusions and recommendations should be delivered to decision makers in a timely manner and in a suitable format.

2.4.3 Characteristics of FLAs Outcomes

In order to maximise their potential impact, FLAs should deliver results which are:

- **Contextualised:** i.e. rooted in a well identified context (European, national, regional, corporate).

- **Credible:** due to the robustness of the evidence and the reputation of those presenting and validating the results.

- **Diversified:** keeping in due account minority views and openly debating them versus more popular opinions.

- **Systematic:** therefore following an approach which can easily be replicated or modelled, allowing comparisons/benchmarking to take place.

- **Modular:** with this aspect being of particular importance for European-wide FLAs.

- **Far-sighted:** including, where applicable, an explicitly future oriented creative element[1].

[1] Ref. Georghiou, L. et. al: The Handbook of Technology Foresight, Concepts and Practice, PRIME Series on Research and Innovation Policy, 2008, S. 131-152.

2.4.4 Implementation Aspects of pan-European FLAs

In an effort to organise, summarise and analyse the results of existing FLAs and the underlying data, the EC is funding a network of experts under FP7: the *European Foresight Platform* project (EFP). The overall aim is to support pan-European FLAs by building a common repository of knowledge and best practices, facilitate the access to relevant information and provide a guide in the implementation of research programmes.

As mentioned under 2.2., the Commission will – in the context of the Europe 2020 Flagship Initiative Innovation Union - put in place a "European Forum on Forward Looking Activities (EFFLA)". The resources and reports made available by the above mentioned platform could be ideally exploited by this forum of stakeholders which should include decision makers, scientists, foresight experts, public and private organisations. EFFLA would be able to play an important role in synthesizing scenarios and formulating European-level recommendations. The GPC could be one of the clients of this forum and use its outcome as one additional source as basis for selecting themes of JPIs.

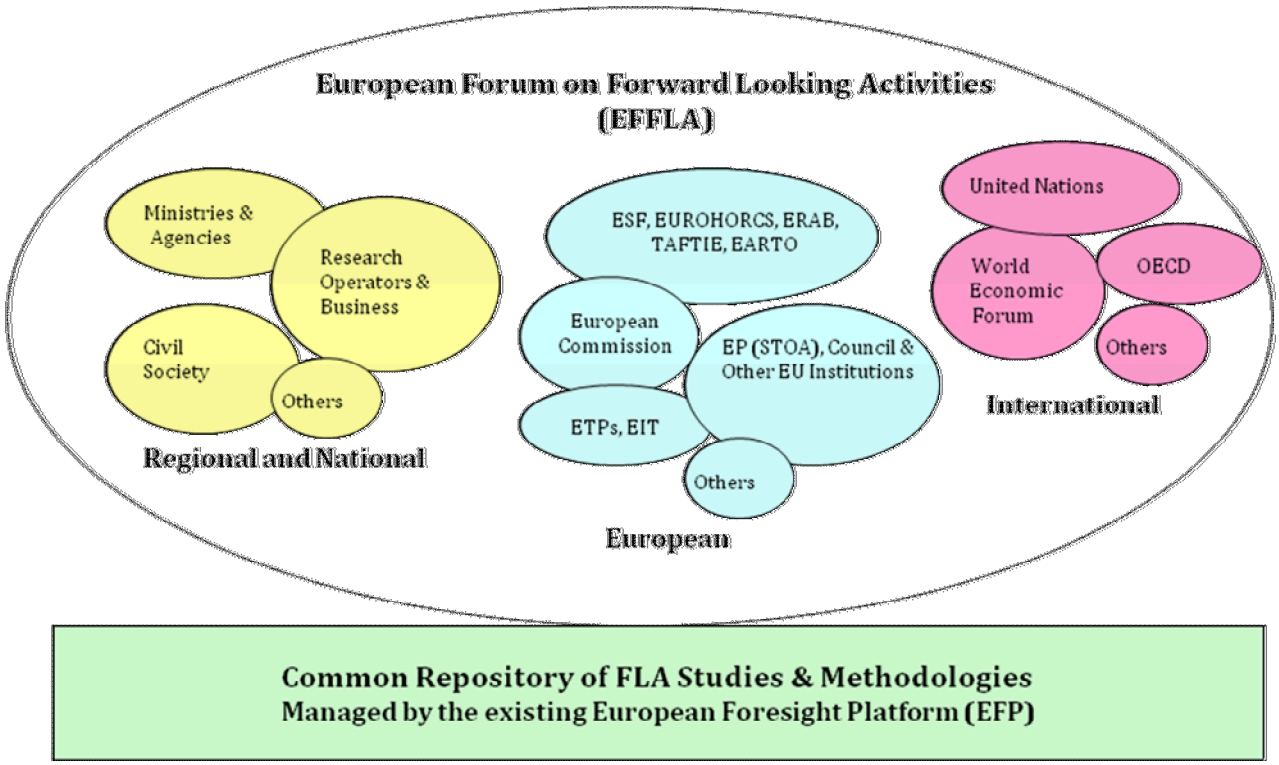

Figure 2: Actors in Pan-European Forward Looking Activities

2.4.5 FLAs in the context of Joint Programming

In the context of Joint Programming, FLAs might be used both when identifying grand societal challenges (Phase 1) as well as translating an already identified grand challenge into an operational reality (Phase 2). FLAs must systematically help to define scenarios, which decision makers could then use to underpin their choices.

In order to provide strategic orientation (*Phase 1*) and support the High Level Group on Joint Programming (GPC) in selecting possible topics for new initiatives, FLAs should focus on the identification and characterization of the challenges, with regard to their fundamental nature and the ways in which they might impact our society. In doing so, particular attention should be paid to the *disruptive challenges* which, despite a low probability of occurrence, might have extremely high impacts and consequences and are intrinsically more difficult to analyse. In this context, the work would require a holistic approach, involving generalists and visionary people next to experts and young scientists.

As a support for established initiatives (*Phase* 2), FLAs could help, if required, JPI Management Boards in defining the Strategic Research Agenda and keep it up to date, by providing recommendations on the available alternatives. In this second case, programme owners and decision makers should work together with specialists, potential users and concerned representatives of the civil society.

3. Evaluation of Joint Programmes

3.1 Objective

Programme evaluation deals with the judgment of interventions according to their (expected) results, impacts and needs they aim to satisfy. It should not represent an end in itself, but a means for effective evidence based policy making. In general, the importance of the evaluation, as part of the programming cycle, has been growing and, in case of cross-border collaborations, the sharing of information on a structural basis constitutes an important pre-requisite.

The evaluation, when conducted during a programming cycle, might determine an update of the governance, of the vision and/or the Strategic Research Agenda (SRA) within the relevant field. When conducted at the end of a programme, it should provide also a summary of all the lessons learnt that might be useful in planning future new initiatives.

With regard to Joint Programming, it is useful to distinguish between separate levels of evaluation: the first related to assessing the validity of the general policy concept; the second its implementation within individual Joint Programming Initiatives; the third in connection to individual projects conducted within a particular JPI. The time frame (sampling rate) for carrying out these levels of evaluation will likely be different, with *project-level* and *thematic* evaluation recurring more frequently and providing the basis for the *overall evaluation* of the Joint Programming concept.

3.2 State of Play

There is long-standing agreement on the importance of developing common approaches to ex post research evaluation, as shown by discussions internationally, at EU level and within the Member States.

ESF and EuroHORCs, in their strategy document for a competitive ERA, highlighted the need for such common approaches to the ex post evaluation of funding schemes and research programmes, stating that further work on impact measures and methodologies would be required to strengthen strategic decision making at both European and individual organisation level. To achieve this goal, they propose to build on the work of the ESF's Member Organizations Forum on Evaluation of Research Programmes currently gathering best practices and exchanging experiences.

On its side, the EC, which has been supporting a research evaluation network for more than ten years, bringing together all the major players in research evaluation from Member States and Associated Countries, has provided means for the sharing of best practices, evaluation techniques and recent evaluation results. Other initiatives include NETWATCH[1], an analytical framework for mapping, assessing and monitoring research collaboration as well as analysing the efficiency and impact of trans-national RTD programme cooperation (which complements the information available about national programmes in ERAWATCH).

In May 2009, the Council adopted Conclusions on the "Evaluation and Impact Assessment of European Research Framework Programmes"[2], inviting Member States to further strengthen their collaboration in this field.

The EUFORDIA 2009 (European Forum on Research and Development Impact Analysis) event, organised by the Czech EU Presidency, was a further initiative to set up a joint approach to Framework Programme evaluation. Although the initial efforts have been very positive, difficulties remain with coordinating and comparing the results of national studies implemented outside a common time frame.

At a rather more operational level, there has been however a very considerable merging of practices across the research evaluation domain. Europe has a relatively small but, nonetheless, very innovative and influential cadre of practitioners in the field of research evaluation. The impact of these companies and individuals has been significant on forging a strong common basis for research evaluation design and implementation.

With specific regard to Joint Programming, the relevant Council Conclusions assigned to ERAC-GPC the responsibility of reporting to Council every two years.

1 NETWATCH is managed by the EC JRC: http://netwatch.jrc.ec.europa.eu/nw/

2 Conclusions of the 2945th Competitiveness Council, 29 may 2009.

3.3 Open Issues

3.3.1 Pre-requisite for an Effective Evaluation

An essential pre-requisite for carrying out an appropriate programme evaluation, often overlooked, is represented by having a clear, logic and well laid-out hierarchy of the objectives the programme was meant to achieve. Therefore, the bases for programme evaluation are laid–down at the same time the programme is designed: ex-ante impact assessment exercises will undoubtedly help in this regard. Ultimately, a standardised approach to presenting the rationales and motivations for each of the foreseen interventions will greatly help at the time of assessing their effectiveness.

3.3.2 Identifying Meaningful Parameters

Evaluating a big, multidisciplinary programme geared towards addressing a grand societal challenge might represent a major difficulty in itself. There is the paramount risk of losing track of the multiple activities and their, hopefully synergic, interactions.

Traditional output indicators, such as the number of publications or patents, might only provide marginal information unless they could also assess the direct contribution of the work to addressing the problem(s) that the programme was meant to tackle. Crucial is therefore the identification of meaningful parameters to be monitored.

3.3.3 Evaluations Methods

Programme evaluation and impact studies typically use a mix of methodologies to allow for sufficient triangulations of the evaluation results. However, there is need to take into account the methodological limitations of this set of tools, particularly in the light of the intrinsic characteristics of research (such as the high risks and uncertainties), the time lag before an impact could occur, the problem of attributing effects to individual research projects.

3.3.4 Information Management

Defining the ways in which information is to be circulated within a JPI assumes a particular importance in relation to the size, multiplicity of actors and duration of the initiatives.

An integrated approach to project and programme management appears highly desirable and devising a streamlined and standardised reporting system a necessity. In this context, the systematic uploading of relevant project data into, for instance, a WEB-based tool might largely simplify the otherwise heavy and time-consuming reporting exercise, ensuring the timely distribution of information to all intended recipients.

3.3.5 Shortage of Qualified Evaluators

It should be recognised that in Europe, and even worldwide, there is a shortage of experts fully qualified to carry out the evaluation of complex research programmes. This might be so severe to act as a constraint which, at times, might call into question the very independence of certain exercises. Also for this aspect, the solution might be eased by promoting standard methodologies, possibly developed within the social sciences family, and providing formal training for them.

3.4 Recommended Guidelines

3.4.1 Evaluation Levels

As previously mentioned, there are three nested levels that need to be considered in the ex-post evaluation of Joint Programming:

- Results of individual research projects
- Success of a specific Joint Programming Initiative in addressing its target challenge
- The Joint Programming concept, as an effective way for cross-border collaboration

Each level of evaluation should be clearly defined, in order for criteria to be developed at the right level. To avoid several reports done by different actors it should be clearly set out at the start who will be responsible for reporting about the evaluation results on different levels. While each level will need its own specific evaluation criteria some synergy between the different levels should also be ensured. Key performance indicators could be used to serve that purpose.

3.4.2 Ex-post Evaluation Needs

The ex-post evaluation of Joint Programming can build on a long tradition of evaluation of research and innovation programmes, which has been developed within individual Member States and the EC.

Some primary needs for an appropriate ex-post evaluation in the context of Joint Programming can be formulated as follows:

- Essential pre-requisite for carrying out an appropriate programme evaluation is represented by having a clear, logic and well laid-out hierarchy of the objectives the research programme was meant to achieve. Therefore, the bases for programme evaluation are laid–down at the same time the programme is designed: ex-ante impact assessment exercises will undoubtedly help in this regard. Thus evaluations should not only be scheduled at the end of the policy cycle, but become well connected with design activities and foresight efforts at the early stages of a new research policy initiative.

- Basic conceptual evaluation frameworks, connecting the objectives of a programme with the input-output variables and long term impacts are well established in many countries. They provide guidance regarding central questions such as relevance, effectiveness, efficiency, utility and sustainability of a public intervention.

- As it is necessary to conduct ex-post evaluations against the programme objectives, a detailed strategy for evaluation should be defined at the level of each JPI, to cater for the differences in their approach and goals.

- The ex-ante impact assessments, which do not necessarily lead to a quantification of expected impacts, but rather lay out the expected causalities of the programme, should form the basis of an evaluation strategy set out at the beginning of a new JPI. Ex ante impact assessments should lay the basis for yearly monitoring, periodic interim evaluation and ex-post evaluation needs. This includes: the planning of what information needs to be collected and by whom, what indicators are needed to assess whether progress has been made and goals have been achieved.

- Ex-post evaluation requires adequate funding and budget provisions needs to be made in advance. Particularly with Joint Programming activities with multiple government parties involved the allocation of the evaluation budget needs to be secured, preferably in advance.

- A method for selection of evaluators should be developed, taking into account that, in the case of Joint Programming, there could be scarcity of truly independent and competent evaluators with no conflict of interest.

- The ex-post evaluation should not represent an additional administrative burden for the researchers. Multiple reporting for participants within the Joint Programming Initiatives should be avoided. Monitoring and reporting need to be streamlined and synchronised with national requirements. Defining an appropriate evaluation strategy at the start of a JPI will help rationalising this aspect..

3.4.3 Specificities of Joint Programme evaluations

There are specific questions that programme-level evaluations will have to answer in the context of Joint Programming:

- Has a JPI addressed the socio-economic challenges it was targeted to, according to the criteria established at the time the programme was designed?

- What have been the overall European added value and leverage effect of a JPI?

- To what extent Joint Programming made public funding more efficient and effective, by better pooling of resources and avoiding undesirable duplication of research?

- Has Joint Programming led to a wider dissemination and exploitation of research results compared to other approaches?

- Has the implementation of the Joint Programming Initiative been done in an efficient way?

3.4.4. Periodicity, use and consequences of ex-post evaluations

The timing of evaluations (including ex-ante, mid-term and ex-post) is of essence to allow for an appropriate use of the results of the evaluations. Evaluations at an early (or mid-term) stage of the programme will mostly lead to procedural changes while lessons on effectiveness can mostly be expected in the long term.

Finally as the JPIs are owned by various participating states, a vision should be defined how the results of the evaluations will be used to ensure policy learning and a timely feed back into the policy cycle.

4. Funding of Cross-Border Research

4.1 Objective

The importance of promoting international cooperation in the scientific research domain, as means for improving R&D efficiency and effectiveness has long been recognized. Yet, while Member States and the Commission have set up many mechanisms to enable trans-national cooperation, it is estimated that 85% of civil public research in Europe is currently programmed and financed at national level.

The complexity and variety of terms and conditions of national public funding, as well as legal and political obstacles, are frequently quoted as important factors inhibiting an easier funding of cross-border research initiatives and mobility of researchers. At regard, it should be noted that the expression *'Funding of Cross-Border Research'* is not synonymous of *'Transfer of National Funds Across Borders'*.

For Joint Programming to be successful, funding authorities should adopt effective and viable mechanisms that could be applied uniformly across the largest possible number of countries.

4.2 State of Play

Funding of cross-border research is a delicate issue to handle and a considerable variety of different approaches have been proposed (money follows people, money follows research activity, real/virtual common pots, mutual opening of National Research Programmes).

In response to stakeholders' requests, the Commission is sustaining a mutual dialogue between Research Performers and Funding Agencies, in view of identifying a common set of sustainable and transparent funding conditions for Research Institutions. It is hoped that this work, started in 2010, could provide valuable input to reduce heterogeneity and contribute to the development of good funding practices in ERA.

In the following subchapters, two different schemes of money streams (*money follow people* and *money follow research acticity*), three different funding modes (*real, virtual* and *mixed mode common pots*) and opening of national research programs will be discussed.

4.2.1 Money follows people

As a part of their strategy towards an "European Research Grant Union"[1], the EuroHORCs member organisations have implemented the 'Money Follows Researchers' scheme, which enables researchers moving into a different country to take with them the remainder of a current grant, to be used within the new research institution according to the original terms and objectives.

In a similar way, the ERC grant scheme allows Principal Investigators, having received a Frontier Research grant, to transfer their funding from one host to another in the course of the project[2].

Under the European Partnership for Researchers, portability of individual grants awarded by national funding agencies or Community research programmes is also foreseen, although the conditions under which this portability could be realised are not specified.

[1] Action 4 of the "Vision on a Globally Competitive ERA and Road Map for Actions"
[2] ERC Grant Schemes Guide for Applicants (01 August 2007)

4.2.2 Money follows research activity

The 'Money Follows Co-operation Line' process is a further element envisaged by EuroHORCs as basis of their proposed Grant Union. At present, it is implemented by the so-called "D-A-CH" country association (collaboration of German, Austrian and Swiss Research Councils) With the 'Money Follows Co-operation Line' agreement, smaller parts of a project funded by one of the participating research councils can be carried out abroad (overhead costs are however excluded).

The Lead-Agency procedure[1] foresees that research councils accept the evaluation of international projects of one "lead agency" and fund the parts of the project that are being performed in their respective countries.

A Grant Union might ultimately allow research grants funded in one European country to be transferred to a different one, where it would be exchanged for a grant paid locally by the new host organisation, in a somehow similar manner to what appears to be implemented within the NordForsk[2] initiative.

The European Institute of Technology (EIT) should help also to promote the mobility of grants within the newly established Knowledge and Innovation Communities (KICs)[3].

4.2.3 Common pots

In this context, the following sub-categories can be distinguished:

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1 The core idea behind the Lead Agency procedure is that the partners of a tri/multi-national research project have to apply only to one funding organisation which is responsible for the whole administration, including international peer-review. Participating researchers are still financed by their national funding organisations, which base their funding decision on the evaluation carried out by the Lead Agency.

2 NordForsk is an independent organization, under the Nordic Council of Ministers, with responsibility for co-operation in research and research training in the Nordic countries, Baltic states and north-western Russia

3 REGULATION OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 11 March 2008 establishing the European Institute of Innovation and Technology – Recital 12. (EC) No 294/2008

➢ Real Common Pots, where countries pool their national contributions to a common and centrally administered call budget, which provides funding for successful proposals irrespective of the applicant's nationality and results in trans-national flows of funding (funding crosses borders). Besides the EU Framework Programme, examples can be found in the European Young Investigator Awards (EURYI) scheme, run by EuroHORCs and ESF with EC support, and in various research collaboration initiatives developed under the sponsorship of the Nordic Council of Ministers.

➢ Virtual Common Pots (in the past referred also as "National Contributions Model"), in which countries and regions pay for their own participants applying existing national rules, without requiring trans-national flows of funding. This mode is the one most commonly used in ERA-NETs and is also the main funding mechanism employed in the Lead Agency-scheme.

➢ Mixed-mode Common Pots, which is a blend of the above-described types, aiming to ensure that the selection of proposals could follow a joint ranking list while maintaining, to a large extent, the 'fair return' principle. In practice, part of the call budget is earmarked as "Real Common Pot" for compensating mismatches between national funding contributions and requested budgets for successful proposals. This funding mode appears common in ERA-NET Plus actions.

4.2.4 Mutual Opening of National Research Programmes

Funding of foreign researchers under national research programmes is not yet widely implemented although, on the basis of reciprocity, some Member States have opened up, at least in part, their activities. Some examples can be found in the German Federal Ministry of Education and Research (BMBF) guidelines on international co-operation or in the Dutch "voucher" system, which allows SMEs to spend research vouchers with either Dutch or foreign institutes.

4.3 Open Issues

4.3.1 Real Common Pots

Under the Real Common Pot model, countries pool together their contributions, and funding is thus allocated to the best research proposals identified by peer-review and independently of national considerations. If such scheme is managed in a truly independent fashion, it can be seen as a strong way to promote scientific excellence. A high degree of trust among the participants is however required, as well as a good deal of political commitment.

Real Common Pots can be complex, requiring an elaborate system to determine contributions, but with the possibility of compensatory balances to be incorporated over the longer term.

The use of Real Common Pots might influence also the scale of the networking. In fact, funding agencies often face difficulties in justifying expenditure of national resources outside own country borders. There are examples of members of national Parliaments raising the issue of "exporting taxpayers' money" and national Courts of Auditors voicing concerns about "losing control" of national public research funding. In most instances, problems more than to legal reasons are due to administrative barriers and lack of political will: at regard, the unclear perception of the potential benefits and the lack of strategic focus on international cooperation certainly do not help.

4.3.2 Virtual Common Pots (earmarked national budget or national contribution model)

In the case of a Virtual Common Pot, each country pays for the components of a trans-national research proposal which take place domestically, without the need, at least in principle, of establishing a common set of funding rules. The drawbacks, just as the advantages, relate to the dependence of the scheme on national structures, where consistency and coordination between participating national processes and structures could be less then ideal.

More generally, problems still occur whenever the absence of synchronisation of applicable rules, programming cycles and budgets hampers, as in the EUREKA case, efficient co-operation. This might apply, to a certain extent, also to ERA-NETs: in fact, although they follow a common and structured approach, their degree of integration varies.

4.3.3 Balanced or mixed-mode Common Pots

Combining the positive aspects of the two previous models, a balanced common pot (or *a la carte* mixed model) could inspire the most realistic way forward for JPIs, although it would require sufficient political commitment over the long term. In this case proposals could be funded strictly according to ranking, despite the possible limitation in national contributions thanks to a built-in compensatory mechanisms based on a common topping-up fund. ERA-NET plus use a similar approach. A method to avoid distorted exploitation of the system would be also required.

While a mixed-mode common pot might appear a reasonable solution and a flexible enough approach to suit most circumstances, there will still be the need to develop further the overarching principles guiding the precise composition of the mix for the particular circumstances of each JPI.

4.3.4 The European Grant Union

The possible adoption of a Grant Union mechanism in a wide European context is certainly an attractive objective. So far national funding agencies have typically proceeded to formalise mutual agreements only with those countries already involved in bilateral or multilateral projects.

In the case of the D-A-CH countries, where an attempt has been made of creating a more general collaboration framework, the approach followed seems suitable to operate properly only when the individual national systems are close enough in terms of proposal selection criteria and national success rate.

Instruments which provide for the mobility of funding, for either projects or researchers, have the clear general advantage of facilitating trans-national cooperation, while building on the established frameworks and associated conditions of the national source financing models. Disadvantages relate to imbalances between source and destination, such as salary differentials.

4.4 Recommended Guidelines

When considering the potential complexity and duration of Joint Programming Initiatives, as well as the number of participating countries, it appears evident that a long-term viable funding approach might depend more on sound pragmatism that on the adoption of a specific funding scheme, and will rely essentially on a few key elements:

- Flexibility, Coherence and Simplicity in defining and implementing conditions and associated measures.

- Commitment: both to the overall process and in securing the required level of funding.

- Trust between participants, which might be improved over time, but that will require from the onset a transparent, honest and respectful approach in all the dealings among the parties involved.

4.4.1 JPI Funding Strategy

The focus of any JPI should be to maximize the return, in terms of S&T development and innovation, of the investment Europe globally makes in the specific domain. In this context, it is likely that a closer pooling of resources could contribute to improve the cost/benefit ratio for each participant organisation. Individual JPIs should be however in condition to choose the funding tool (or combination of tools) considered more appropriate to reach their objectives, in relation to the needs and the particular conditions encountered.

- The strict application of the "juste retour" principle should be avoided, but it must be also understood that any method for the funding of cross-border research collaborations, if aimed to be viable in the long term, might allow a net cross-border transfer of national funds only in limited proportions and under well identified conditions.

4.4.2 Valorising the Experience of other Cross-Border Research Initiatives

There is a great deal of experience matured in the funding of other cross-border research initiatives that should be duly valorised for the benefit of JPIs, both regarding the positive as well as the negative lessons that could be learnt.

One important aspect that emerges is that individual funding agencies tend to allocate money to cross-border collaborations according to methods and timescales that mimic what is commonly done at national level. The measure in which this could be tolerated for a JPI should be carefully assessed, taking into account that the difficulties could easily multiply with the size of the partnership, up to a point in which the result would be unworkable.

As a consequence, adequate measures should be put in place to compensate for any possible lack of synchronisms in the release of national contributions, which might otherwise jeopardise a smooth progress of the activities.

4.4.3 Financial Issues to be considered by JPI Management Boards

The following aspects deserve attention:

- In case of co-funded calls for proposals, a budget should be formally allocated by each of the funding partners before the actual publication takes place. It should be noted that the alternative approach of allocating the budget only after the proposal evaluation phase might result, at best, in a dramatic increase in the time-to-grant or, at worst, in having selected proposals to be left on hold indefinitely for lack of adequate financial coverage.

- JPI management boards should consider the creation of a "*reserve fund*", under their own control. This tool should not be confused with a "common pot", as ownership of the money would remain pro-rata with the contributing partners. It would however represent a useful financial buffer, in condition of being used in case of late release of national contributions or when the financial needs of a joint call exceeds the budget pre-allocated by a particular country. In practice, each funding partner could "borrow" from the *reserve fund,* paying a nominal interest fee when it exceeds its own quota. The adhesion to the fund would represent also a way in which commitment to the JPI could be demonstrated.

- The *terms and the conditions under which in kind contributions would be accepted* need to be established a-priori. This should include also an agreed method for valorising them.

- In case national funding schemes are used in the context of a JPI, participants should make nevertheless any possible effort towards rationalising the use of cost models and the homogeneity of reporting.

- The value for a JPI to accept possible international funding partners (i.e. from countries non-associated to the EU), as well as the corresponding financial and organisational implications, should be carefully assessed, case by case. The participation of international research organisations to individual projects should be, in any case, possible under conditions similar to those applicable in the EC Framework Programme.

4.4.4 Mobility of Researchers

Provisions should be made for allowing easy mobility of researchers within the countries partaking in a JPI. This should ideally include also harmonised rules for residency and, when necessary, the obtainment of work permits.

Portability of personal grant, issued by national funding agencies, should be ensured. As this might however generate unbalances, with some countries appearing more attractive to researchers than others, the situation should be periodically monitored, to establish the need of measures for stimulating reciprocity.

4.4.5 Funding Toolbox

Each JPI should be free to select the appropriate funding tools that best fit, depending on conditions and circumstances, while avoiding any unnecessary proliferation of approaches.

	Advantages	Disadvantages/Problems
Money follows Cooperation Line **Money follows researchers**	- Stimulate cross-border funding - Allow better exploitation of individual expertise	- National legislation or administrative rules might need modification - Salary differentials and imbalances
Virtual Common Pots	- Compatible with independent financial planning by funding bodies - Funding only within national border simplifies rules	- Some proposals approved to be funded may be declined - Potential conflict between the funding of *"Excellence"* and the available national contributions
Real Common Pots	- Proposal selection always follows the ranking list - Simpler selection procedure	- Difficult to set up - Cross-border funding might seem to clash with national interests - Need for an agreed system to determine contributions, eligible costs, overheads etc. - Possible exclusion of some players on the grounds of national legislation
Balanced Common Pots	- Proposal selection might follow ranking list, without the problems of a Real Common Pot - Topping-up money could be made available by EU - ERA-NET Plus experience	- Long term commitment required - Distorted exploitation of the system needs to be avoided

5. Optimum Dissemination and Use of Research Findings

5.1 Objective

It has been recognized for more than a decade that the basis for Europe's future competitiveness, new growth and job creation will mainly derive from research and innovation.

The Commission communication "Europe 2020: a strategy for smart, sustainable and inclusive growth" of March 2010 and, in particular, the therein proposed Flagship initiative “Innovation Union” specifically states that Europe needs improved framework conditions and access to finance for research and innovation so as to ensure that innovative ideas can be turned into products and services that create growth and jobs. Finally, to convince taxpayers that investment in R&D is worthwhile, optimum dissemination of research results, specifically targeted to various strata of the public opinion, is of utmost importance. The more so in the frame of the Joint Programming where the selected themes have been identified as *major societal challenges*.

As all research and innovation builds on earlier achievements, state-of-the-art knowledge is crucial for successful developments in any scientific discipline. An efficient system for broad dissemination of and access to research results is therefore essential to accelerate scientific progress, representing key enabling factors for the progress of European research.

Dissemination is one component in the process of transforming new knowledge into solutions to the challenges we face, fostering the development of new products, processes and services.

Open access, which refers to the practice of granting free access over the internet to research results, is a policy being adopted by a growing number of universities, research centres and funding agencies world-wide, including the European Commission. Open access is a way of improving the exploitation of research results and is particularly appropriate when public funds are involved.

5.2 State of Play

The WEB has changed the way science is communicated, allowing for much faster and wider dissemination of raw data and traditional outputs, such as articles in journals. Fast and reliable access to research results represents, in turn, an extremely important drive for a modern, knowledge-based economy.

The 2003 Berlin declaration[1] on Open Access in the Sciences and Humanities, signed by over 250 research institutions and universities across Europe, aims in particular to promote Internet as a functional instrument for a global scientific knowledge base.

The "OECD Principles and Guidelines on Access to Research data from Public Funding" were developed in 2004, under ministerial mandate, to define commonly agreed principles for facilitating cost-effective access to digital research data from public funding.

In November 2007, the "Council Conclusions on scientific information in the digital age: access, dissemination and preservation"[2] invited Member States to reinforce and coordinate relevant national strategies, and asked the Commission to monitor good practices and support co-ordination. Those aspects have been the focus of a dedicated session during the ERA conference "Working together to strengthen European research" which took place in Brussels on 21-23 October 2009.

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1 Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (22 October 2003)

2 Conclusions of the 2932nd Competitiveness Council, 22-23 November 2007

In FP7, costs for publishing, including open access publishing ("author pays" fees), are eligible for reimbursement during the whole duration of the grant agreement. In addition, building on the above mentioned Council Conclusions on scientific information in the digital age[1], the European Commission in 2008 launched the Open Access Pilot in FP7[2] aiming to provide researchers, the public and enterprises with improved online access to EU-funded research results. The pilot covers approximately 20% of the FP7 budget and will run until the end of FP7. In this context, grant recipients are required to deposit peer-reviewed research articles or final manuscripts resulting from their projects in an online repository. On a best-effort basis, open access to the concerned documents should be granted within either six or twelve months after the original publication, depending on the FP7 research area (the embargo period ensures a return on investment for scientific publishers).

The European Research Council similarly requires that all peer-reviewed publications deriving from its own funding (a further ~17% of the FP7 budget) should be deposited on publication into an appropriate repository and subsequently released for open access within six months from the original publication date.

Both the Open Access Pilot in FP7 and the ERC open access policy are supported and monitored through the Commission's DG INFSO project OpenAIRE[3].
EuroHORCs member organisations (which account among them for over 18 B€ research funding in Europe) also announced their intention to include mandatory open access requirements into all their calls for proposals and grant conditions, supporting the development of a related open access infrastructure[4]. To this end they envisage interacting with funding organisations, research institutions, universities, academies as well as with libraries and publishers.

1 COM(2007) 56 final; Council Conclusions 23 November 2007, 14865/07.
2 COMMISSION DECISION on the adoption and a modification of special clauses applicable to the model grant agreement adopted on 10 April 2007 in the context of the implementation of the Seventh Framework Programmes pilot in FP7. (20 August 2008) – C (2008) 4408.
3 http://www.openaire.eu
4 Action 9 of the "Vision on a Globally Competitive ERA and Road Map for Actions"

5.3 Open Issues

5.3.1 Dissemination and Open Access Policies

The open access principle is not at odds with the commercial exploitation and protection of intellectual property, as patent applications are typically made before a decision is made to publish.

In the case of public funded research, there is, however, the need to evaluate in which measure allowing patenting could influence the optimum use of the findings regarding, in particular, the long-term protection of public interest when considering the transfer of patents to the private sector for commercial exploitation.

One aspect concerns the form an open access policy should take. For example, in the case of the FP7 Pilot it is formulated as a legal clause[1], while in the case of the ERC Guidelines for Open Access[2], there is not (yet) a specific contractual provision.

For Joint Programming Initiatives, due consideration should be given to consistency with similar policies that might be already implemented independently at national level.
The terms of an open access policy should also apply after the grant agreement has expired. In the case of the Open Access Pilot in FP7, the obligation is to deposit the final peer-reviewed manuscripts (or final published articles) in a suitable repository. Besides a mandatory reporting at intermediate and final periods of all produced articles, no routine control of compliance is in place as follow-up is difficult and time-consuming.

[1] Special clause 39 of the Grant Agreement
http://ec.europa.eu/research/press/2008/pdf/annex_1_new_clauses.pdf

[2] http://erc.europa.eu/pdf/ScC_Guidelines_Open_Access_revised_Dec07_FINAL.pdf

5.3.2 Knowledge Transfer in Publicly Funded Research

The importance of knowledge transfer in boosting competitiveness and contributing to the effectiveness of public research is increasingly recognised by Member States and initiatives are being taken aiming at promoting collaboration between research institutions and businesses. There is however the need to identify, in each case, the optimum way to maximise the socio-economic impact of publicly funded research by choosing among the many available options (such as licensing, spin-off creation, partnering with private companies or investors, other public research institutions, innovations support services or agencies).

In this context, several Member States have taken initiatives to promote and facilitate knowledge transfer. However these initiatives are often designed with a national perspective, and fail to address the transnational dimension of knowledge transfer.

5.3.3 Lack of seed finance to close the innovation gap

In Europe, big obstacles to the rapid transformation of research findings into innovation is represented by the poor availability of seed finance, costly patent arrangements, market fragmentation, outdated regulations and procedures. National and regional research and innovation systems are still essentially disconnected and working along separate tracks with only a marginal European dimension: this is inefficient due to costly duplications and overlaps.

5.3.4 Need to develop an evidence-based policy making

Joint Programming is meant to tackle grand societal challenges and it is therefore crucial that its research results feed directly into the policy making process. There is a need for strengthening the dialogue between policy-makers and researchers in order to maximise the policy-making impact of research projects. Much more effort is needed to ensure that project results inform policy-making in

a meaningful way[1]. Projects in general, but specifically in Joint Programming, should thus place the policy-usefulness of their research findings to the forefront of their objectives and their work programmes.

5.4 Recommended Guidelines

5.4.1 Open Access Policy

- Publishing costs, related to scientific results obtained in the context of a JPI, should be considered eligible (as in the case of the FP7 Open Access pilot scheme).

- In case of common funding of research, the open dissemination and access policies among those of the participating funding bodies should prevail, unless such openness should be judged to represent a risk for EU global competiveness.

- Open access to research outputs developed in the context of a JPI is strongly recommended. In order to harmonise access policies, it is suggested that an 'embargo period' (i.e. a delay between the original publication and the time when the document is released for open access) between six and twelve months should be introduced depending on the research domain, in line with EuroHORCs recommendations and with modalities similar to those adopted in the FP7 pilot scheme.

[1] European Commission (2008) Scientific evidence for policy-making (EUR 22982 EN) Luxembourg: Office for Official Publications of the European Communities, 2008 (ISBN 978-92-79-06973-4)

- Authors are encouraged to retain their copyright or, in case of transfer of copyright to third parties, at least to retain the right to disseminate via open access.

- Access to underlying raw data or pre-elaborated data sets should be discussed on a case-by-case basis.

5.4.2 Dissemination and Take-up of Research Results

Dissemination and take-up of research results are critical issues to be addressed, so as to ensure transparency, promote good science, engage society and raise public awareness. This is especially important for publicly funded research, for which accountability to the taxpayers is necessary, and consequently Joint Programming Initiatives should put in place appropriate strategies to meet these needs.

JPIs should provide tangible proof that the work they conduct pays dividends in terms of enhanced quality of life for all, environmental sustainability, industrial competitiveness, employment opportunities, and academic excellence. At the same time, the communication of successes and the announcement of exploitable developments are of direct value to project participants.
Suitably framed messages should:

- Where appropriate, aid the search for financial backers, licensees or industrial implementers to exploit the results.

- Encourage talented students and scientists to join the partner institutes and enterprises.

- Draw the attention of national governments, regional authorities and other public and private funding sources to the needs and benefits of the research.

- Enhance the reputation of participants, at local, national and international level;

6. Protection, Management and Sharing of Intellectual Property Rights

6.1 Objective

In order for Joint Programming activities to contribute effectively to socio-economic growth, the results of the research activities must be exploited. This requires appropriate identification and protection of the Intellectual Property (IP) being generated and an effective Knowledge Transfer (KT).

Ownership and transfer of newly developed IP, as well as access to existing one should be properly managed and any arrangement would need to comply with relevant national and/or European legislation[1].

6.2 State of Play

As a follow-up to the ERA Green Paper, the European Commission issued in 2008 a Recommendation on the management of Intellectual Property in knowledge transfer activities and Code of Practice for universities and other public research organisations (IP Recommendation)[2], which offers principles for effective management of IPR and knowledge transfer in the context of collaborative and contract research.

[1] Community Framework for State Aid for Research and Development and Innovation (30 December 2006) – 2006/C 323/01.

[2] Commission Recommendation on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations. (10 April 2008) - C (2008) 1329

The EU Council endorsed the IP Recommendation in May 2008[1], inviting Member States to support it and, in partnership with the Commission, establish appropriate governance. To this aim, the CREST working group on Knowledge Transfer (KT) was created in January 2009 bringing together more than 30 representatives of Member States and Associated countries. This work is supported by an annual stakeholder forum under Commission "University-Business Dialogue" to discuss the implementation of Code of practice and the exchange of best practices.

In parallel, European stakeholders (the European University Association, the European Association of Research and Technology Organizations, the European Industrial Research Management Association and ProTon Europe) through "The Responsible Partnering Initiative", launched in 2004, have worked together to develop a voluntary code of conduct[2] for innovative companies and public research institutions to enable them to collaborate more effectively and at the same time contribute to the achievement of their respective missions in a sustainable way.

The FP7 Rules for Participation[3] contain provisions on Intellectual Property Rights (IPR), which are, in turn, the basis for the rules on dissemination and use contained in the FP7 model grant and consortium agreements.

Good IP management is considered also very important for the successful creation of the Knowledge and Innovation Communities, and extensive attention has been paid to this aspect[4].

The development of a single EU patent system which should simplify and reduce costs of IP protection in Europe is an ongoing effort of which the Member States have emphasised the importance.[5]

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1 Council Resolution on the management of intellectual property in knowledge transfer activities and on a Code of Practice for universities and other public research organisations (10323/08)

2 The Handbook "Joining Forces in a World of Open Innovation" http://www.responsible-partnering.org/

3 Regulation (EC) No 1906/2006 of the European Parliament and of the Council of 18 December 2006 laying down the rules for the participation of undertakings, research centres and universities in actions under the Seventh Framework Programme and for the dissemination of research results (2007-2013).

4 Study on IP guidelines for the European Institute of Innovation and Technology (DRAFT)

5 Conclusions of the 2929th Competitiveness Council, March 2009. (7383/09)

There are a number of useful predefined models for bilateral or multilateral research collaborations that can be used as a reference. For instance those provided by the FP7 IPR Helpdesk[1] on IP-related issues in EU projects or by the Lambert Tool kit[2], designed by the UK Intellectual Property Office (IPO) for universities and companies.

6.3 Open Issues

There are currently differences between IPR rules applicable at national level and, sometimes, between different funding agencies within a single state. In some cases, an FP7-like approach is adopted, with very detailed provisions specified at the level of Consortium Agreement; in other cases, only very short guidelines are supplied, leaving to the participants the development of a functional IP plan.

6.3.1 Different IP regimes in European countries

Among European countries, differences in IP regimes concern essentially the definition and/or the rules governing:

Ownership of results - While the current trend in Europe is towards ownership by research organisations, some MS (i.e. Italy, Sweden) still adhere to some form of "professor privilege system", which gives ownership of research results to university professors or researchers.

Co-ownership (licensing) - In most EU Member States, IP legislation defines a "default regime" in the absence of specific agreements between participants. Such default regimes differ substantially from country to country, in particular as regards the aspects of IP protection and exploitation.

Experimental use exceptions - Most MS have implemented an experimental use exception for patented inventions, allowing the use of a patented invention for non-commercial purposes as long as it does not harm the interests of the owners. These rules vary from MS to MS.

1 http://www.ipr-helpdesk.org/Consortium_agreement-FP7.html
2 http://www.ipo.gov.uk/lambert

Prior user rights - Prior user rights are granted to a party that used an invention confidentially prior to its protection by IP: the party is allowed to continue using the invention (patented in the meantime by another party). This issue is addressed differently in EU Member States, with the exceptions of Cyprus and Lithuania where prior user rights are not foreseen. It is likely that prior user rights would not pose a real problem to Joint Programming activities, due to the limited impact it has on IP protection/ utilisation in terms of territory, duration and scope.

6.3.2 IP Issues originating from funding agencies

Funding bodies from different member states apply different rules regarding:

Definition of terms - As prerequisite, participants in a joint project should agree on the set of terms to be used in IP provisions of the consortium agreement.

Ownership of research results - is a key issue in research consortia. Foreground results are usually owned by the party(ies) carrying out the work leading to it. However, the parties are left sufficient autonomy in stating otherwise, allowing them to allocate ownership of foreground in a different way, on the basis of a contractual agreement reflecting the parties' respective interests, tasks and financial or other contributions to the project. When a party is better placed to exploit IP, the parties may agree to allocate the ownership of future IP assets to this party, pending an appropriate retribution of the party waiving its rights on the IP it developed.

Joint ownership - In collaborative R&D agreements, research results are usually generated by parties' collective efforts. Joint ownership is applied to jointly developed IP. Joint ownership may be problematic (e.g. difficulties in management, establishing rules for assigning and transferring ownership share).

IPR strategy - Protection and exploitation of IP - Timely protection of research results is needed in order to preserve the value of IPR. There is not a standard way to protect research results. There are cases where formal IPR protection is not the best suited option (publication for fundamental research lacking industrial applicability, public dissemination in the case of free and open source software, trade secret for products with short lifecycles, etc.).

Dissemination and confidentiality aspects - Research results will be used by parties in publications, dissertations or other academic works. Before including any data related to the foreground, background or confidential information of a participant in a publication, it should be ensured that this dissemination will not hinder its protection or its use.

Conditions for IPR licensing / transfer - The conditions for the granting of rights on research results to third parties should be a central aspect of any collaboration agreement. Issues to be addressed include: licence scope (commercial/non-commercial, exclusive/non-exclusive); granting of rights to non-EU parties; monitoring/reporting of exploitation of research results; financial conditions (conditions for free licensing); right of first refusal; obligations deriving from the transfer of ownership. The involvement of non-EU parties raises additional issues, notably in terms of safeguarding EU countries competitiveness and return on R&D investments.

Utilisation of the results / Joint commercialisation - Exploitation of research results can be direct, when this is undertaken by project participants, or indirect when IP is licensed to a third party or when the partners decide to set up a new legal entity to properly exploit research results. In general, each partner is responsible for the exploitation of the foreground it owns, having due care to the interests of the other partners. Commercialisation of a coherent set of results from a project is often more attractive to potential buyers of the results.

Access to foreground, background and side-ground (for research and commercial use*)* - Collaboration in R&D requires participants to share their relevant knowledge. Each party has its own background (IPRs, information, know-how, etc.) and may need to access the background knowledge owned by other parties in order to carry out its task within the collaborative framework, or to exploit the results achieved by the collaboration (foreground).

New parties joining - It can be important for consortium to allow access of new parties during the course of the project. Results and orientation of R&D activities are not always fully predictable; allowing access of new parties would allow new useful knowledge to be brought in a project if needed.

6.3.2 IP and human resources

Entitlement to claim rights on IP by employees and non-employees (researchers, students) should not hamper the activities of a JPI. Moreover, the mobility of researchers and students requires appropriate and harmonised provisions governing the relationship with the host organisations (access rights, obligation to disclose IP, confidentiality obligations, ownership of results, etc.).

6.4 Recommended Guidelines

In a context where Joint Programming involves pooling of money and intellectual resources, it will be necessary for the participating entities to agree on a set of IPR governing rules.

These rules could represent a "***default IP regime***" which, however, might be the object of further negotiations among the parties, depending on specific circumstances and needs. Any particular protection and exploitation strategy must be agreed before the research activities start.

Participants should agree on a common set of definitions for the terms used in contract clauses governing IPR. The FP7 IPR guidelines could represent a useful starting point.

The JPI management board may consider appointing a facilitator, or dedicated helpdesk, to assist parties in negotiating particular IP agreements and monitor compliance with the IP provisions.

6.4.1 Ownership of results and inventions

Ownership of results and inventions generated in a JPI project should remain with the participants, whose employee(s) generated them. In case of a joint effort leading to results or inventions, ownership of such results should be shared proportionally to the contributions that were made.

Each participating organisation should reach an agreement with its personnel, establishing if the latter is entitled to claim rights to research results. At regard, a common approach is not essential, as long as the issue is addressed by each participant.

IP ownership policy should also cover non-employees (researchers, students), including provisions determining appropriate incentives for researchers to comply with the disclosure obligation.

6.4.2 Protection of IP

The participants in a JPI should reflect on the best strategy to protect IPR in view of the use of the foreground, both in further research and in the development of commercial products, processes or services.

Parties should carefully consider, case by case, whether filing for protection of foreground IP make economic sense. If some of them decide to waive their rights on jointly developed IP, a fair compensation should be foreseen.

In any circumstance, JPI rules should foresee an "Experimental Use Exception", granting compulsory user rights for internal research purposes to all the participants in a project. In this respect “Experimental Use” needs to be clearly defined at the outset, as it may have different meaning depending on the context: for example it may include “blue skies” research and commercially-directed contract research and development.

6.4.3 Access to background knowledge

An agreement should be reached among participants indicating the terms and conditions to utilise background of other parties. It is advisable to clearly indicate which component of the background each party intends to contribute for the implementation of the research and for the exploitation of the results. However, no participant can be obliged to grant access to its background knowledge.

Participants should identify the background they are willing to share before starting R&D activities. Two options are suggested: -a) identify in an annex to the consortium agreement the background they wish to share (positive list) or -b) indicate the background they intend to exclude (negative list). The terms and conditions of such access should reflect the purpose for which access to background knowledge is granted (project use/execution or commercial exploitation).

6.4.4 Sharing of foreground knowledge within JPIs

Participants in an individual project should decide also whether to allow access to the generated foreground knowledge by third parties participating in other projects in the context of the same JPI. Although this can occur only on a voluntary base, it is strongly recommended that provision for foreground sharing within a JPI (programme level) are included in order to maximise the benefits that could be derived

6.4.5 IP exploitation

Depending on the nature of the research and on the interests of the different parties, it is recommended that parties should decide in advance on either adopting a common exploitation strategy or leaving exploitation of foreground to the party best placed to commercialise it, with appropriate compensation mechanisms set in place for the other contributing parties.

In the preparatory phase, project participants should consider appointing a commercial lead, which should maintain focus on the commercial aspects, ensuring that these are considered throughout the duration of the project. The mandate should be agreed between participants and adjusted according to the common interest.

6.4.6 IP licensing

Licensing and transfer of IP must be based on market conditions and be in line with the State aid framework for research and innovation[1] (to avoid pricing that would represent a subsidy to the private party). Non-exclusivity is recommended, but with the possibility to decide otherwise, giving a clear reasoning for each specific case.

In case of co-ownership of results, each of the co-owners should be allowed to licence the IP to third parties in a non-exclusive way, pending prior notification to the other co-owners and recognising them a fair and reasonable compensation.

The parties should have clear principles regarding the sharing of financial returns from knowledge transfer revenues between the public research organisation, the department and the inventors.

6.4.7 IP provision in case of changes in the partnership composition

Suitable provisions should regulate IP access and rights in case changes in the partnership composition should occur during the course of a project. In line of principle, access of new partners in ongoing projects should be encouraged whenever this brings added value. Measures aiming at unreasonably restricting new parties' rights should be avoided. Equally, due care should be paid in safeguarding the interests of the original partners in the project.

[1] Community Framework for State Aid for Research and Development and Innovation (30 December 2006) – 2006/C 323/01.

6.4.8 IP provisions in relation to mobility of researchers

Mobility of researchers and students requires appropriate IP provisions to govern the relationship with the host organisations, in particular as regards access rights, obligation to disclose IP, confidentiality and ownership of the results. It is recommended that an ad-hoc agreement is signed between the host-organisation and the researcher (or student) concerned.

6.4.9 Confidentiality Aspects

Participants should not disclose confidential information to a third party without the agreement of the partner from whom the confidential material originates. The terms of the confidentiality obligations should be agreed at the beginning of the activity.

In identifying the confidential information, two different approaches could be considered: explicit identification of confidential material or "assumed confidence": in the latter case all information is considered confidential unless otherwise stated or previously known to the receiving party by another route or available in the public domain.

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