Science Europe Contribution to the Public Consultation on the European Research Area Framework

Executive Summary

The national research funding and performing organisations in Europe must be the backbone of the European Research Area. The diversity of national research organisations, their understanding of, and responsiveness to their national research capacities, and their potential to innovate in pursuit of scientific excellence is a great strength for Europe as a whole. The level of cooperation and collaboration among national research organisations has accelerated over recent years, and the establishment of Science Europe with 50 member organisations signals that this level of cooperation will increase significantly in the future.

Science Europe welcomes the high priority which the European Commission has placed on research and innovation in its overall strategic plans, and acknowledges the strong desire to achieve concrete steps to establish a European Research Area by 2014. In the key areas identified in the consultation, substantial work has been carried out by national research organisations at both the national and transnational level. The challenge ahead is to build on this work to ensure the broader adoption of effective policies for research and to enhance further the capacity of national organisations to work together to support excellence throughout Europe. The main issues are:

1. On **Research Careers and Mobility**, good practice to promote research careers is well established in many counties in Europe. Further progress requires the continuation and enhancement of multi-national fora to promote the extension of this good practice across Europe, including the collection of further data. Additional funding from the Commission to enable national organisations to further develop policy and programmes to support career development may be beneficial here. Science Europe will work with its members to strengthen the portability of grants, but policy on mobility must be framed as one pathway to scientific excellence, not an end it itself. Science Europe would welcome measures to improve the portability of pensions and social security benefits for researchers across Europe.
2. On **Cross-border Collaboration**, the range of mechanisms to support cross-border collaboration at the European level should be simplified. At the national level, Science Europe will work to strengthen mechanisms such as Money follows Cooperation Line and Lead Agency agreements to improve the opportunities for researchers to collaborate across Europe. Science Europe would welcome the opportunity to discuss further the role which the Commission might play in supporting these efforts, financially or otherwise.
3. On **Research Infrastructures**, the use of structural funds for the creation and operation of infrastructure should be enhanced. Science Europe supports, and will work towards, the development and dissemination of good practices to ensure that research infrastructures are effectively managed to bring the widest possible benefit to Europe's researchers and wider society and economy.
4. On **Dissemination, Transfer and Use of Research Results, including Open Access,** Science Europe supports the ambition to make the results of scientific research accessible to all, and will take concrete steps to strengthen the approaches to Open Access among its members. Science Europe supports the "Commission's recommendation (C(2008)1329) on

the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations" as an effective tool to achieve progress and voluntary harmonisation by means of promotion of best practice. Science Europe will work with its members so that researchers are encouraged to commercialise their IP, ensuring access to shared resources such as tool kits for preparation of agreements. However, it is crucial that the interactions between science and the wider economy and society are not construed merely in terms of knowledge transfer, but consider the broader role research plays in our developed societies.

5. On the **International Dimension,** researchers should be free to choose the most appropriate partnerships and the most effective way of achieving this is to consider international collaboration as part of the delivery mechanism of existing initiatives, not as a separate activity. Collaboration with 'third countries' should be developed with full participation of relevant actors from member state and associated country research organisations; the Commission should recognise individual sovereignty in these actions but again may consider opportunities to allow Horizon 2020 funds to incentivise broader European participation in such initiatives.

As noted, across many of these issues there is scope for the European Commission to support national research organisations in acting to realize ERA through financial incentives/top-up funding. However it is critical that any such mechanisms are designed in close collaboration with national organisations, to ensure that support is directed towards policies and programmes which most effectively realize ERA, not those which are more compatible with particular Commission administrative procedures. Simplification is critical.

Science Europe, as the recognised collective voice of national research funding and performing organisations, looks forward to working closely with the Commission in building ERA, and is eager to discuss specific formal arrangements to ensure this can be taken forward effectively.

Introduction

Europe's greatest competitive advantage in pursuing research will stem from the capacity of the EU's member states and associated countries to collaborate effectively when it is in their collective interest to do so, but also to pursue their own national strategies and policies where appropriate. The diversity of national research organisations, their understanding of, and responsiveness to their national research capacities, and their potential to innovate in pursuit of scientific excellence, should be acknowledged. But they gain much from collaboration which can be facilitated by coordinating action at the European level in pursuit of the European Research Area. It is therefore essential that suitably unbureaucratic and flexible collaborative mechanisms are in place to allow the most excellent partnerships to flourish.

The ERA Framework consultation has the ambition to understand what specific measures are required to create a framework under the Lisbon treaty that supports the 'completion' of the European Research Area by 2014. In order for this to occur we need first to understand what this means in practice, how much we have already achieved and what there is left still to do.

What will the European Research Area look like?

From the viewpoint of Science Europe the completion of the ERA will be possible once there are fully functioning mechanisms in place that have the capacity to allow free movement of researchers and knowledge within ERA. These mechanisms should enable the identification of the most excellent partnerships on one hand and should stimulate the creation of exciting new collaborations on the other. Ideally there should be no restrictions to the ability of researchers in the member states and associated countries to collaborate so that the most excellent minds are able to work together to advance knowledge and to address the challenges that face European society and economy. This collaboration should also be set in a global context, understanding the value of working in partnership with research communities around the world.

In this context, Science Europe offers its vision of what the ERA should become. It contains the following elements:

- Achieving scientific excellence must be the fundamental aim of national and EC funding, and Europe should make a collective effort to identify excellence throughout the countries of Europe and help to develop excellent capability where it does not exist
- Europe should comprise a single open market for the circulation of researchers. Researchers should be able to develop their careers by taking positions in research institutions in any country in the ERA as easily as within their own country, thus enhancing opportunities both for researchers to pursue their interests and for institutions to attract the best talent
- Researchers should be able to collaborate on research projects with their colleagues of choice in other European countries more easily than is currently the case
- The European Commission, national governments and national research organisations, both funders and performers, should possess effective mechanisms to effectively coordinate research strategies to achieve the necessary scientific 'critical mass' to address national, European and global level scientific challenges
- The European Commission, national governments and national research organisations should create appropriate platforms for the development, maintenance and use of both large and medium scale research infrastructures
- Europe should have the ability to present a unified voice in policy interactions with the wider world, establishing and promoting internationally a common position on issues such as research integrity, peer review, open access, etc.
- Europe should act collectively where appropriate to communicate the insights and benefits of scientific research to the wider economy and society

In essence, Science Europe envisions an ERA that is able to act flexibly and effectively at whatever scale is most appropriate to the challenge in hand. This means being able to instigate pan-European responses to address grand challenges where is required, but also that we should continue to work in more focused collaborations where there is an alignment of strategic interests. The ability or capacity of national organisations to pursue individual strategic priorities and respond to the needs of their individual national research communities and other stakeholders should be an integral part in our determination to implement the ERA.

Science Europe argues in this position paper that while scientific barriers to such collaboration are few there remain a range of technical and legal barriers which could be tackled with carefully designed instruments at EU and national level. In fact, many barriers have already been overcome by the implementation of creative instruments developed nationally and trans-nationally through successive European frameworks, and we now have the opportunity to build on these to address the remaining hurdles.

In general terms, the process of realising the ERA can be understood as a coordinated approach involving five main mechanisms:

- The identification of **good practices** and appropriate policies to realise the ERA
- **Voluntary commitment** by Europe's national research organisations should be the principle mechanism to achieve the ambitions of ERA. The establishment of Science Europe enables more rapid progress towards the realisation of the ERA Roadmap developed in 2009 by EUROHORCs and ESF
- Given that the ERA Framework consultation has potential implications for **legislation** at the European level, the subsidiarity principle is very important and should govern the further development of the ERA
- **Incentives**, in the form of additional funding for research and/or administration from the European Commission to national research organisations to implement policies and programmes that increase the inclusiveness of ERA, may be useful in some circumstances
- Research funders (at the national or EU level) have the ability to impose **conditions** on research funding to ensure research institutions comply with policies which support ERA (for example, regarding open access or career development). However, as the current capacity to implement such policies varies across countries and regions, and some may view conditions as introducing criteria other than scientific excellence into decision-making, it must be the decision of national research organisations to determine when it is appropriate to introduce such conditions

Science Europe welcomes the high priority which the European Commission has placed on research and innovation in its overall strategic plans, and acknowledges the strong desire to achieve concrete steps to establish a European Research Area by 2014. Of course, research, and the development of research policy, is an ongoing process, which will continue to evolve well beyond 2014.

Science Europe is a new organisation, founded in Berlin on the 21st October 2011, which represents the collective views of 50 European research funding and performing organisations. Our response builds on the work of the EUROHORCs/ESF Roadmap and includes discussion of the actions that Science Europe proposes to address the key issues for the creation of the ERA. Going forward, Science Europe will take an active role in disseminating and promoting good practice among all its members and in helping to implement the key recommendations.

We consider:

- Researchers' careers and mobility
- Cross-border operation of research actors
- Research infrastructures

- Dissemination, transfer and use of research results including through open access
- International dimension to ERA

1. Researchers' careers and mobility

- *Does the European system create, attract and retain sufficient numbers of leading researchers?*
- *Do these researchers have sufficient and continuous systemic support environment that a research career is an attractive option for the best and most highly qualified graduates?*

"Promoting research careers, by increasing attraction and retention supports not just the life blood of the future research endeavour funded by EUROHORCs Member Organisations but is also the life blood of industry and other sectors applying and using the results of research. The ESF Member Organisation Forum on Research Careers, which involves the EUROHORCs and ESF Member Organisations and other stakeholders, is identifying optimum conditions and actions that EUROHORCs and ESF Member Organisations can take to promote research careers in a European context."[1]

The conclusions of the ESF Member Organisation Forum in Research Careers[2] indicate that the development of policies and programmes to support research careers is well advanced among some members of Science Europe. However, we recognise that important issues still need to be addressed in many countries and the position is not static. Measures addressing research careers taxonomy, attractiveness, skills, gender balance, disability and mobility need to be introduced/harmonised at both the national and EU levels in order to support career development in the ERA.

It is important to bear in mind that researchers are developed by many years of education through national systems, starting at the primary level, and therefore national competence is a major factor in this area. Action taken at the graduate level can only have a limited effect; the seeds need to be sown at an earlier stage.

Establishing a widely understood **taxonomy** for research careers across Europe is important for facilitating a single market for research talent across Europe. Science Europe welcomes the fact that the document '*Towards a European Framework for Research Careers*' produced by the EC has taken account the concerns expressed by the MO Forum. It provides a clear reference point for research career structures in Europe and we commend the European Commission on its open approach to consultation on the careers framework. We are pleased that the EC intends to apply the framework to the EURAXESS jobs portal.

Attracting the best people into research careers can only be achieved if the research system is structured to produce a supportive environment with access to the highest quality international infrastructure. The ESF MO Forum identified the following specific measures to enhance the **attractiveness** of research careers to Europe's most talented individuals:

- Offering salaried positions or stipends supplemented by social security benefits
- Enabling early scientific independence through targeted funding schemes and career development programmes
- Achieving supranational agreement on entry conditions for similar programmes supporting different stages of research careers

[1] EUROHORCs and ESF vision on a Globally Competitive ERA and their Road Map for Actions (2008).

[2] In order to enhance research careers across Europe, the ESF MO Forum report *"Research Careers in Europe Landscape and Horizons"* sets recommendations in several areas requiring joint action. This was followed by the establishment of the European Alliance for Research Career Development, which will continue this work through 2012.

- Providing reliable career prospects through tenure track offers and transparent criteria for career progression
- Encouraging the interaction of peer groups of researchers at an early stage
- Supporting gender equality measures, e.g. flexible research career models especially for women with children

It is crucial to foster better researchers through encouraging continuous professional development for all researchers. To achieve this, Science Europe considers it important to do the following:

- Developing and adopting a pan-European professional development framework for researchers,
- Producing guidance for research organisations and funders on good practice in policy and practice in enhancing researcher skills,
- Raising awareness of the importance of continuous professional development for researchers at all career stages.

A portfolio of transferable **skills** will help to ensure the longer term employability of these researchers, making them fit to develop a rewarding career. Transferable skills and career development should be an integral part of postgraduate and post-doctoral training.
Balanced and equal participation of men and women in the science and innovation agenda should be achieved and other aspects of diversity should also be considered. This is another issue where much of the responsibility is at a national level with ERA countries, their institutions and educational systems and with society as a whole. A robust evidence base is needed, including numbers of women in research (different career stages), applying for and receiving funding to understand issues around working practices, career development, barriers to choice and drop out rates. Science Europe intends to play a role in collecting this evidence.

- *Are researchers in Europe free to work in any country in the EU? Does increased mobility present any disadvantages?*

The **mobility** of researchers is acknowledged as an important component of researcher careers, as it enables access to new scientific perspectives and methods. However, mobility must be always understood as a means to promote scientific excellence, not as an end in itself. As alluded to above, emphasis on mobility risks creating biases against the support of women's careers, but also may disadvantage disabled researchers and those with care responsibilities. With these considerations in mind, the following are recommended to enhance the benefits which mobility can bring:

- Continued monitoring and encouragement of the wider adoption and awareness of the Money Follows Researcher Scheme to enable the portability of grants, currently signed by 27 national organisations.
- Further enhancement of the complementary role of Research Performing Organisations to facilitate mobility by providing, among others, attractive state-of–the-art research facilities and inspiring international academic settings, as well as tailored career development opportunities through cross-border institutional collaboration.
- Enabling the portability of social security benefits and pensions across national boundaries to remove barriers to mobility in the EU.
- Exploration of alternative mechanisms to bring similar benefits as those brought by mobility to researchers, for whom physical relocation presents a barrier.
- National Research Funding Organisations and the European Commission should review the terms of their schemes supporting mobility, conferences and networking activity to ensure these address the needs of disabled researchers.
- Consideration of an alternative concept of mobility which offers not only stays abroad, but includes international working relations and the option of 'virtual' mobility and short-term mobility (e.g. several visits for shorter periods of one to two weeks).

Undertaking the work required to enhance researcher careers requires considerable administrative effort. In a climate of severe financial constraints for many national research funding and performing organisations, particularly with respect to administrative capacity, it may be beneficial for the **European Commission** to offer additional funding to national research organisations to carry out activities required to more effectively support researcher career development and improve gender balance and the attractiveness of research careers.

Preliminary survey results: Science Europe's survey of its member revealed strong support for the Money follows Researcher principle. Though only ten of the twenty-one organisations which responded to the survey were signed up to the Money follows Researcher agreement, all but one indicated that they saw this scheme as beneficial. Legal and administrative barriers were the most common reasons cited for organisations not participating in MfR.

The use of structural funds for the purposes of enhancing mechanisms for research careers and gender balance should be enhanced, and Science Europe would be keen to coordinate discussion between its members, national governments and the European Commission on the precise form of these mechanisms.

2. Cross-border operation of research actors

- To what degree (scale) and what end (ambition and outcomes) should the European research system be able to operate trans-nationally? What mechanisms should be put in place or used more effectively to facilitate this?

"Building on the EUROHORCs Money Follows Researcher scheme, the development of Money Follows Cooperation and further work on common administrative procedures, including single peer review, closer collaboration of research funding agencies for the common good of the scientific community will be enhanced."[1]

Research is inherently a global endeavour and citation evidence[3] shows that the best teams are used to operating in a flexible manner to build partnerships with their counterparts around the world. To facilitate this further, it is essential that national and European research systems are able to operate trans-nationally at all levels. In Europe the mechanisms for bilateral and multilateral partnerships are well established and Science Europe is committed to working to ensure that this toolkit for international collaboration is available for use as required throughout the system. This ambition was articulated in the Roadmap action to establish a **European Grant Union** and Science Europe will further the discussion on the various approaches among its member organisations, promoting their broader uptake as well as continuing the exchange of experiences and best practices.

Specific actions already considered include Money follows Cooperation Line, in which a single agency funds researchers in more than one country, and Lead Agency agreements, in which one agency makes funding decisions which are adhered to by another to fund international research. There are also a range of activities in which national agencies come together to coordinate funding in a particular area, including those supported by the Commission (ERA-nets, JPIs etc.) and others. No one model is clearly superior, but different models are appropriate for different circumstances.

There has been substantial engagement with these initiatives and Science Europe will analyse them to understand successes and challenges and consider whether broader utilization of such mechanisms will lead to a more open and less complex research funding system. At the same time we recognise that as funding organisations continue to strengthen relationships including beyond

[3] Elsevier. International comparative performance of the UK Research Base (2011)

Europe, and are operating with more limited administrative budgets, there are opportunities to strategically align funds without complex and burdensome bureaucratic mechanisms. Sharing information on strategic ambitions at an early stage through dedicated thematic and cross-disciplinary international fora will facilitate this approach.

Preliminary survey results: The initial results of Science Europe's survey of its members revealed strong support for both MfCL and Lead Agency procedures. Seventeen of twenty-one organisations described MfCL as very or somewhat beneficial, though only twelve of these currently allowed funding to be spent in other countries. The principle obstacles to Money Follows Cooperation are legal barriers (seven organisations). Other obstacles are financial and administrative (the additional workload to spend money across borders). Seven of twenty-one organisations that responded are engaged in Lead Agency cooperations with a variety of partners, with fourteen organisations reporting that they saw potential for Lead Agency to be applied more broadly across Europe. Similar peer review standards are by far the most important criteria for organisations seeking to develop Lead Agency collaborations.

Mechanisms for cross-border collaboration are by no means limited to funding organisations. RPOs demonstrate complementary activities and are using a multitude of tools, in particular, providing institutional collaboration schemes (LIAs of CNRS; International Max Planck Centers; HGF-INSERM Research Centers, joint labs etc.). Science Europe will coordinate respective activities among its RPO member organisations to enhance their potential for cross-border collaboration.

- Are there any specific barriers that you can identify and can these be overcome?

Supporting cross-border collaboration often has an administrative cost over and above national mechanisms and in a restricted funding landscape it is critical to preserve the budgets for research and avoid unnecessary expenditure on administration. The European Commission could potentially accelerate the adoption of mechanisms by providing additional co-ordination funding, as has already been seen in ERA-Nets and JPIs. Such incentive mechanisms must be designed carefully, in collaboration with national research funding and performing organisations, to ensure that they can function effectively. Some of Science Europe's members remain to be convinced that the involvement of the Commission in their cross-border activities could reduce, rather than increase, administrative complexity and cost.

The range of instruments across Europe is complex. Science Europe seeks to work collectively within its membership and in cooperation with the European Commission to enhance the effectiveness and, where appropriate, simplify the landscape of joint schemes**.** Mechanisms should include clear routes for thematic foci to emerge from both a top-down and bottom-up position. The use of structural funds and its simplification for the purposes of joining multilateral collaborations shall be enhanced with the aim of supporting and reinforcing cross-border cooperation.

Some of the initiatives mentioned above, including Money follows Cooperation Line and Money follows Researcher have encountered legal barriers in their implementation. Science Europe is currently carrying out a survey of instruments contributing to the European Grant Union and will aim to identify these barriers and consider how they may be overcome.

3. Research infrastructures

- *What is the route to optimal exploitation of existing research infrastructures of pan-European interest? Where are the barriers and how might they be overcome?*
- *What is the route to optimal development of next generation research infrastructures of pan-European interest?*

"Research excellence needs excellent research infrastructures which not only underpin research but also lead its development and create an attractive climate for world-class researchers. Operating at a level different from the EU Member States European Strategy Forum for Research Infrastructure, ESFRI, many EUROHORCs Member Organisations fund and operate research infrastructures of national and European importance. They will create a platform to discuss joint investments in networking of and access to medium-sized research infrastructures, as well as evaluation and benchmarking."[1]

While most of the money for research infrastructures still comes from national sources, it is clear that these infrastructures play an increasing transnational role in terms of users and relevance for the European Research Area. Funding organisations responsible for the management of these facilities should be encouraged and incentivised to enlarge the scope of facilities in order to use them to their fullest capacity, including industrial collaboration where relevant. Particularly in times of limited funding for new infrastructure, it is of great importance for the ERA to further open up access to existing facilities and resources. The framework programmes (FP) have so far included some appropriate schemes with this explicit purpose, namely the integrating activities, and these deserve full support and extension in Horizon 2020. The sovereignty of these infrastructures should be recognised however, and while transnational access could be supported further by European schemes, national access remains a subject for the national research organisations who should lead discussions on appropriate access and funding models.

ESFRI plays an important and successful role in developing and updating roadmaps for pan-European RIs to be constructed or upgraded. Some 38 projects are currently identified in the 2010 Roadmap and many national roadmaps acknowledge and align to the ESFRI roadmap. A close collaboration with and recognition of ESFRI is therefore strongly recommended for any major national activities in implementing and operating RIs.

The use of structural funds for the construction of RIs is of increasing importance in many European countries but could be further enhanced. In doing so however, construction phases need to be accompanied by clear concepts for the operational phase to ensure that operation costs can be met and that the full benefits of the infrastructure can be realised within available budgets.

Medium size and distributed infrastructure should not be overlooked and there are many common issues to consider, irrespective of size. A common 'catalogue' of issues which each infrastructure should address with tailored policies could be developed that would cover access rules, appropriate maintenance and running costs, staff career development, intellectual property rights, professional management, users training, data analysis and storage, to name only a few topics.

Science Europe is convinced that fostering networks between research infrastructures is very important in developing ERA and promoting scientific excellence. This will increase the exchange of knowledge, expertise and staff, especially in case of the distributed facilities. Some key recommendations are listed below;

- National and European efforts need to be developed in a complementary way in order to be successful. While European support enables transnational sharing of resources, national funding can provide underpinning investment and provide for national access. The different sources of funding target the same research infrastructure in a mutually reinforcing way. Synergies between European and national actions are therefore considered as very important. Science Europe, in representing the national organisations' perspective, offers a platform for open dialogue with respect to issues relevant for research infrastructures of European interest.
- There is a need for appropriate access rules, appropriate maintenance and operation costs etc. Evaluation of research infrastructures is a topic requiring standards and harmonisation. The ERA stakeholders including the Commission are invited to contribute to the shaping of the

common standards needed and Science Europe is willing to offer expertise to take part in this process.

One of the examples of present co-operation in which Science Europe's member organisations are involved is an FP7 project MERIL, coordinated by the ESF. The mapping of relevant research infrastructures is considered valuable for both scientists and funding bodies. While the scientific community might use the data base for access and networking purposes, the funding bodies will gain detailed insights into the European landscape, their strengths and weaknesses, be it in terms of availability of resources or with a regional focus.

- It is anticipated that the majority of funding for European research infrastructures shall remain the responsibility of the respective national funding organisations. In order to provide the best possible opportunities for researchers for all EU Member States and Associated Countries, the Commission is invited to strongly encourage the use of structural funds for the building and long term operation of research infrastructures; appropriate mechanisms have to be found to guarantee not just the investment costs but also the funds for the operational phase.
- Management and training of scientists, as well as technology transfer at Pan-European research infrastructures is often of a very high quality. Emerging RIs can benefit from these experiences and appropriate measures to improve the management of research infrastructures are welcomed. Only well-managed research infrastructures will be in a position to provide professional support to the users including on issues like training or data analysis.

4. Dissemination, transfer and use of research results, including Open Access

- *What are the benefits of wider circulation of scientific knowledge in the form of data and publications for the ERA? Are there any specific barriers to enhanced knowledge circulation?*

"The aim is a system of scientific publications in which free access to all (published) scientific information is guaranteed. This involves a move towards Full Open Access. Ultimately, this means replacing the present reader-paid publication system with an author- or institution-paid one."[1]

Science Europe supports this far-reaching goal. Many of Science Europe's members believe strongly that Open Access to the results of publicly funded research (scientific publications and research data as well) will have huge benefits for the research community, for industry, and for the public and thus helps building the ERA. Regarding these benefits, Science Europe urges the European Commission to support Open Access.[4] Science Europe also wishes to stress that Open Access is not only about accessibility, but also about the possibility to re-use scientific information in other contexts without financial, technical or legal barriers.

Science Europe advocates that Open Access shall apply in all areas of "Horizon 2020": Scientific publications resulting from projects of EU research funding should be made publicly and freely available on an Open Access basis. This will not only ensure that findings are communicated more quickly, but also facilitate an open exchange of scientific results, thereby increasing the benefits of the relevant investments for as large a circle as possible.

Science Europe expects that some redirection and reorganisation of the research budgets will pay for Open Access costs. A switch to publication charges would mostly change the modality of how these costs are paid, but according to initial estimates should not substantially change the total

[4] Repositories (Open Access 'Green Road') are likely to be the backbone of future scholarly communication via virtual research environments, and are also essential for long-term archiving. Open Access journals publishing (Open Access 'Golden Road') bring the welcome and often necessary advantage of providing scholarly prestige to the authors.

amount being paid. Nevertheless, the transition from subscriptions to publication charges will affect different stakeholders (research funders, research performing organisations, libraries) differently.

The collection of research data is a huge investment. Permanent access to such data, if quality controlled and in interoperable formats, will allow better use to be made of this investment because it allows other researchers to re-use them. There is a broad range of challenges related to the topics mentioned above and necessary changes need to be implemented globally.

- *What is the role of KT in the realisation of the ERA and how can it most effectively be implemented?*

Knowledge transfer is essential to facilitate translational research and exploitation of research outcomes. Unrestricted access and optimal re-usability of project outputs (publications and data) will increase the impact to be realised from funded research.

In a European context there is already a legal framework in place and the "Commission's recommendation (C(2008)1329) on the management of intellectual property in knowledge transfer activities and Code of Practice for universities and other public research organisations", which has been implemented by most member states, appears to be an effective tool to achieve progress and voluntary harmonisation by means of promotion of best practice rather that centralised European legislation. The recommendation offers a coherent framework for the management of IP in agreements between universities/RPOs and the private sector, promoting KT transfer between public and private sectors at a national, European and international level. It thus complements the open access strategy. KT will be optimised by increasing awareness of these issues across the EU and stimulating development and implementation of policies at a national level. It is up to researchers to expand their links with potential 'users' and encouragement to do this can be offered through grant contracts with national and European funders. Dissemination and communication of outcomes, including research data, should be considered at the outset, integrated throughout the lifetime of the project and financial incentives should be available to encourage this.

- *Are there specific issues particularly around public/private sector exchange of knowledge and broader strategic interaction?*

Researchers should be encouraged to commercialise their IP and funding and performing organisations have a role in this, ensuring access to shared resources such as tool kits for preparation of agreements.
One such example is the Lambert tool kit[5], which provides a set of model contracts (covering a range of typical IP scenarios), a decision guide and extensive educational resources to help users conduct effective negotiations in public-private sector collaborative research. However, regarding research data, commercialisation of IP must not lead to a situation where free of charge re-use of data by fellow researchers would be prohibited.

More broadly, it is crucial that the interactions between science and the wider economy and society are not construed merely in terms of knowledge transfer. Currently, the dominant view about science in society in many countries, especially in Europe, is based on the need for innovation in a competitive global economy, and this tends to become the common political discourse on research. It may evidently be agreed that innovation is important, but a restricted market-driven vision might hide important parts of the broader role research plays in our developed societies. As with many issues, the development of policies to foster the engagement between science and society varies between countries in Europe. Science Europe intends to take forward the agenda to enhance this

[5] More detailed information is available online: http://www.ipo.gov.uk/whyuse/research/lambert.htm

engagement across its member organisations, and looks forward to engaging with the Commission on this crucial topic.

5. International dimension

- *Is there a role for, and value in, co-ordination of member states at the EU level when collaborating beyond Europe?*
- *How can we ensure that European researchers develop a sufficient critical mass in specific research areas so that they are competitive in their multilateral international engagement?*

"European strengths should be embedded in global cooperative (and competitive) frames where different approaches are needed for industrialized regions (such as Australia, Japan and the USA), emerging regions (Asia) and developing regions. With full respect for the autonomy of national research organisations, there are possibilities for streamlining the collaboration with counterpart organisations in other parts of the world."[1]

International collaboration frequently strengthens the quality of research and leads to new insights, but it is not an end in itself. Researchers should be free to choose the most appropriate partnerships and the most effective way of achieving this is to consider international collaboration as part of the delivery mechanism of existing initiatives, not as a separate activity. As such it should be mainstreamed within other EU programmes where appropriate, while recognising that not all research requires this approach. The nature of the collaboration should depend on the type of project; it may be more appropriate for collaborative research involving non-European countries to address global challenges rather than close-to-market demonstration for example.

Key international partners should be fully engaged in discussions to ensure effective design of mutually acceptable policies and practices – early strategic engagement will result in greater commitment and maximum added value.

The European Commission should look at ways of internationalising the current Framework Programme and the upcoming Horizon 2020. Again, efforts should be made to embed an international approach in new and existing initiatives rather than developing standalone mechanisms. It may be appropriate to offer funding to strengthen networks of existing high quality clusters and to look at opportunities to extend these clusters.

Co-ordinated multilateral activity supported by national funding streams is the responsibility of individual member states and associated countries and their respective funding and performing organisations. These organisations have been working for many years in bilateral and multilateral (including other European) international partnerships and have built up considerable experience and strong relationships with international partners. In particular Science Europe would recommend against additional heavy administrative burden for international co-operation. Collaboration with 'third countries' should be developed with full participation of relevant actors from member state and associated country research organisations, recognising the depth of knowledge needed to ensure that due consideration is given to all issues; the Commission should recognise individual sovereignty in these actions but again may consider opportunities to allow Horizon 2020 funds to incentivise broader European participation in such initiatives. Building on the many strong and productive multilateral partnerships already in existence can also offer critical mass advantage for smaller member states.

Conclusions

At a national level, Europe includes many of the most efficient and effective systems for supporting research excellence anywhere in the world. The national research organisations must form the backbone of the European Research Area. The members of Science Europe agree that more can be done to enhance scientific cooperation across Europe and to ensure that scientific excellence emerges throughout Europe, and are clearly committed to this endeavour. Firm foundations for this work have already been laid by the actions of national organisations, the European Commission, and

other stakeholders. Science Europe and other stakeholder groupings across Europe should be closely engaged with the development of measures to 'complete' the ERA. This is one of the reasons for the decision to rationalise the European bodies with membership from funding and performing organisations. Science Europe is committed to retaining an open relationship with other key groupings such that there is full and open communication on key issues between different components that comprise the stakeholder community of the ERA. To this end, Science Europe will seek to coordinate a meeting platform that will be held annually and set up an organisation committee with representatives of these communities to monitor and develop the agenda of this platform. At the EC level there are existing initiatives such as ERA-watch, and reports from this could be developed in more detail to cover monitoring and evaluating progress of ERA initiatives.

An entity as complex and diverse as the European Research Area cannot be created in a top-down manner; it must evolve up from the national and, in some cases, regional level. It therefore follows that the EC should take a facilitating role and in many areas, the Commission can most effectively accelerate the evolution of ERA by supporting the efforts of national research organisations to enhance and intensify their cooperation in research activity and policy development. The creation of Science Europe provides an optimum platform for ongoing dialogue and cooperation between the national research organisations and the European Commission to realise their common ambitions for Europe’s researchers and wider public. As such Science Europe should be included in any formal arrangements set up to provide oversight over the progress on the realisation of ERA, as Science Europe can provide the expertise needed and act as a united voice of its research funding and research performing organisations.