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Conclusions of a strategic
workshop - Brussels,
25-26 November 2010

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SHARING KNOWLEDGE: OPEN ACCESS AND PRESERVATION IN EUROPE

Conclusions of a strategic workshop

Brussels, 25-26 November 2010

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EXECUTIVE SUMMARY

A Workshop was held in Brussels on 25-26 November 2010, attended by around 20 invited national experts from EU Member States, with the aims of: getting an understanding of Member States' implementation of the 2007 Council Conclusions on scientific information in the digital age; sharing experiences and know-how regarding successful implementations and best practices; and creating a common vision of what can be done next in terms of policy and action at Member State and at European levels.

This report documents the proceedings, sets them in the context of developments so far on Open Access and preservation at an international level and makes a set of recommendations for future EC action.

One issue addressed was why Open Access and preservation are important. The experts listed both high-level, principle-based reasons and more pragmatic ones. The former category included the moral argument that the results of publicly-funded research should be publicly available, that Open Access enables research findings to be shared with the wider public, helping to create a knowledge society across Europe composed of better-informed citizens, and that Open Access enhances knowledge transfer to sectors that can directly use that knowledge to produce better goods and services. The more practice-focused reasons were that Open Access improves research efficiency, and enables re-use of research outputs, provides the basis for better research monitoring and evaluation. Preservation of research outputs ensures that the cultural heritage of Europe is protected and curated for future generations and that scientific outputs are kept in formats that ensure they are permanently usable and accessible.

Participants reported on progress on Open Access and preservation in the individual Member States. At institutional level there have been projects on Open Access in individual universities, progress on the development of CRIS (Current Research Information Systems), and some progress on policy discussion. At national level Open Access has been incorporated into national strategy for science and research in some countries. At infrastructural level, national archives for Open Access content – or national harvesting systems, presenting Open Access material through national portals – have been set up in some Member States.

Bottlenecks have primarily been: lack of awareness and understanding of Open Access amongst researchers and policymakers; limited policy development; issues around copyright (authors often believe that making their work Open Access infringes copyright and in some Member States copyright law impedes Open Access); misconceptions among authors about quality control, which they believe erroneously to be absent for the Open Access literature; and the financial cost of implementation of Open Access.

Key success factors in overcoming these bottlenecks have been: good policy development at institutional and national level; well-designed advocacy and culture-change work at author and policymaker levels; infrastructural developments; adequate funding for infrastructural and advocacy work; and the development of effective collaborative approaches involving various stakeholders who share the mission.

The results and impacts of overcoming the bottlenecks and barriers are: policy implementation at institutional and national level; culture change in terms of achieving

good self-archiving levels ('Green' Open Access) and raising awareness; and the development of infrastructures that support Open Access and preservation, such as national harvesting systems and national preservation arrangements.

Participants agreed a list of priorities for concrete actions that can be taken as a result of the Workshop. These were:

- Stakeholder engagement / involvement (advocacy). Suggested action points in this area were: creation of new metrics for Open Access content; development of indicators to demonstrate the benefits of Open Access; further awareness-raising activities; development of incentives for authors and publishers to increase the amount of Open Access content; encouraging the sharing of good practices
- Top-level engagement and support (policy development). Suggested action points under this heading were: making the 'Green' route to Open Access (through repositories) mandatory; development of policies at government, funder, and institutional level across Europe; exploration of copyright laws in EU states with a view to recommending modification or creating a new law pertaining to academic research outputs
- Collaborations and partnerships. Suggested action points for this area were: coordination activities to support advocacy and other supporting actions for Open Access; identify existing initiatives and build upon them; encourage the sharing of good practices
- Implementation and manifestations (infrastructures). Suggested action points for this topic were: development of standards for all aspects of Open Access; funding for infrastructural developments; investment in e-research infrastructures in Europe, especially those that support the development of the Open Data agenda; invest more effort in development of technologies and enablers of Open Data; develop technical infrastructure to support preservation of research outputs; fund work on data and metadata curation for the long-term; development of tools to support deposit and curation of content in Open Access collections; investigation of new business models applicable to Open Access

These outcomes are discussed (by the Rapporteur) in this report in the light of contextual background information and developments. A series of recommendations are then made as follows:

Recommendation 1: Build on what was achieved by the Workshop to strengthen the nascent network and enable and encourage further interactions and collaborations (coordination)

Recommendation 2: Encourage and support initiatives that aim to develop advocacy programmes across the Union

Recommendation 3: Fund the development of indicators that better assess scientific progress and measure the benefit to stakeholder communities across society

Recommendation 4: Enable coordination of policy at European level

Recommendation 5: Encourage and support initiatives that aim to increase awareness and understanding of the issues around Open Access and preservation at policymaker levels

Recommendation 6: Inform and encourage authors and institutions (and funders where appropriate) to retain the rights that are necessary to provide Open Access and enable adequate preservation of scientific outputs

Recommendation 7: Enable a shared understanding across all stakeholders (researchers, institutions, funders, libraries and publishers) of the legal terminology and concepts involved

Recommendation 8: Build upon the investment in OpenAIRE by further enabling coordinated developments that join up emerging infrastructures to maximum effect

Recommendation 9: Provide European-level guidance and leadership to MS on the principle of the long-term necessity and benefit of access to and preservation of scientific information

Recommendation 10: Examine the long-term prospects for the infrastructural basis for Open Access so far developed in Europe. Assess this in the context of creating a coordinated, viable, sustainable system that will enable the creation of the Innovation Union over the next 15 years

Section ONE: The workshop

1.1 The background to the Workshop

The Workshop was convened to explore the state of play and progress within Member States (MS) with respect to Open Access to, and preservation of, scientific research outputs. Both have been on the Commission's agenda for some years, beginning with the study into scientific publishing carried out on behalf of the Commission and published in 2006 (see below for more detail).

The two things – Open Access and preservation – are separate but related issues. Open Access is about free-of-charge accessibility of outputs (research texts and data) without delay as soon as they are ready for publication: preservation concerns ensuring the long-term storage, care and continuing free accessibility of these outputs. The present policy situation on these two things, both at European and at Member State level, has arisen out of a number of initiatives and steps, some coordinated and some not, since the beginning of the millennium. This context is laid out more fully in Appendix 1.

1.2 Aims and objectives

The high-level aims of the Workshop were:

- to get an understanding of Member States' implementation of the 2007 Council Conclusions on scientific information in the digital age
- to share experiences and know-how regarding successful implementations and best practices
- to create a common vision of what can be done next in terms of policy and action at Member State and at European levels
- to sustain Member State involvement and commitment
- to identify areas in which European-level (EC-level) action makes sense and would be welcome.

The Commission would like to develop *concrete policy recommendations* on how to move forward at Member State and European level on access and preservation issues and the Workshop was convened to inform the development of that policy.

1.3 Representation at the Workshop

Representation was as below.

- i) Experts from Member States:
Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Greece, Iceland, Ireland, Italy, Latvia, Lithuania, Netherlands, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, United Kingdom
- ii) The European Commission
 - Jean-Michel Baer
 - Jean-François Dechamp

- Francesco Fusaro
- Gilles Laroche
- Matthieu Kleinschmager
- Alexis-Michel Mugabushaka
- Theodore Papazoglou
- Juan Pelegrin
- Carlos Morais Pires
- Celina Ramjoué
- Lorenza Saracco
- Jarkko Siren
- Ecaterina Stamate

iii) Rapporteur: **Alma Swan**, Enabling Open Scholarship and Key Perspectives Ltd

1.4 Format of the Workshop

The Workshop employed a variety of techniques to ensure delegate participation. These fell under an overall approach called the *Art of Hosting and Convening Meaningful Conversations* (www.artofhosting.org). The specific techniques employed at this event are described in Appendix 2.

1.5 Why national experts attended the Workshop

There were five main reasons given by the national experts for attending the Workshop. They were:

- To learn about developing policies on Open Access and Preservation, and how to implement them
- To share experiences of trying to promote Open Access, including on policy development and implementation
- To explore the possibility of collaborating with others to achieve Open Access
- To obtain information that will help to guide Open Access development in their home state
- To encourage and help guide action at European level

There were some other, less common reasons given, such as being interested in Open Data, exploring business models for Open Access, and developing infrastructures for preservation. In general, though, participants had come to learn from and share experiences and with the hope that the event might help catalyse partnership and networking activities and move developments along at European level.

1.6 The overall vision: why Open Access and preservation are important

Through World Café conversations the national experts gave their personal views as to why Open Access and Preservation of scientific information are important. The reasons were collected at the end of the session and related reasons were grouped together. Overall, they fell into two categories.

First, there were the high-level, principle-based reasons:

- The moral argument, which is that the results of publicly-funded research should be publicly available
- Open Access enables research findings to be shared with the wider public, helping to create a knowledge society across Europe composed of better-informed citizens
- Open Access enhances knowledge transfer to sectors that can directly use that knowledge to produce better goods and services. Many constituencies outside the research community itself can make use of research results. These include small and medium-sized companies that do not have access to the research through company libraries, organisations of professional (legal practices, family doctor practices, etc), the education sector and so forth

Second there were more prosaic, practice-focused reasons:

- Open Access improves research efficiency by obviating the need for researchers to spend time seeking ways of accessing information, getting permission to use that information, finding out what permissions for re-use exist and so on. They also find it easier to avoid duplication of previous work if it is simple to find out what previous work has been done, and easier to avoid blind alleys if previous work has shown them to exist. All of this is made possible by having free and easy access to the whole literature rather than to just the subset of it available through the subscriptions purchased by any one university library
- Re-use of research outputs is improved by Open Access (whose definition includes the re-use of research outputs without restrictions imposed by conventional copyright practice). Open Access articles can be harvested by machines into new, useful collections, can be mined for meaning or facts by text-mining computer technologies which then create new knowledge, and can be used for teaching and allied purposes which normally fall foul of copyright restrictions
- Open Access enables better research monitoring and evaluation. Instead of a system where only a proportion of journals are tracked for citations to the papers they publish, and a researcher's worth is measured by the 'quality' of the journal in which they publish, Open Access enables citations and other measures of impact from across the whole research literature to be tracked to the individual article or researcher rather than the journal. Each institution's Open Access repository (digital collection of research outputs) also enables research managers at that institution to assess and study research progress locally and compare that to competitor institutions
- The development of technologies to link Open Access repositories and Current Research Information Systems (CRIS) in research institutions builds upon the

advantages mentioned in the previous point. Until now, institutional managers have not been able to say how many papers have been published from their institution, where they have been published, who authored them, what projects those authors worked on, what research grants those projects have benefited from, what equipment has been purchased from those grants, and so on. Now all this information can be collected, collated and linked up in meaningful ways to produce a complete management information system for any research-based institution

- Preservation of research outputs ensures that the cultural heritage of Europe is protected and curated for future generations; that scientific outputs are kept in formats that ensure they are permanently usable and accessible

1.7 Progress in the Member States

National experts reported on developments in Member States since the Council Conclusions were issued late in 2007. They did this by working in World Café format. One person described their experiences while the others at the table listened, helped the speaker to bring out the key issues of that experience, and recorded them on paper. Each delegate in turn described their experiences in this way. The key issues were recorded finally on small pieces of paper and the national experts arranged these into groups of related issues under the four main heading questions, which were:

- What are the Open Access-related experiences of your Member State?
- What problems or bottlenecks were encountered?
- What were the key success factors in overcoming these bottlenecks and problems?
- What were the results, impacts and benefits?

1.7.1. Open Access-related experiences of Member States

Some MS have made considerable progress on Open Access, while others are slower to initiate developments. The developments that were reported were:

1.7.1.1. At institutional level: there have been projects instigated on Open Access in individual universities, progress on the development of CRIS (Current Research Information Systems; see section 2.4, penultimate bullet point), and some progress on policy discussion.

1.7.1.2. At national level: the argument for Open Access has successfully been taken to government level in some MS and in some cases have been incorporated into national strategy for science and research. Open Data policy has also been implemented in one case. At infrastructural level, national archives for Open Access content have been set up (for example, the national Open Access repository for theses in Greece), a national CRIS has collected 10% of publications in Denmark, and a national Open Data repository and a national portal for Open Access journals has been established. The most far-reaching development has occurred in Portugal, with the establishment of the [RCAAP \(Repositório Científico de Acesso Aberto de Portugal\)](#) which harvests Open Access content from Portuguese university repositories and presents them through a national interface. This is paralleled at disciplinary level by [UKPMC \(UK PubMed Central\)](#) which collects

biomedical research outputs from UK institutions and presents them through an Open Access portal.

1.7.2. Problems or bottlenecks encountered

Two main bottlenecks that were mentioned by many MS representatives – lack of awareness about Open Access on the part of researchers and policymakers, and lack of policy. Lack of financial support was also raised as a barrier to achieving Open Access and proper provision for preservation of research findings. Some other issues were also raised and all are reported below.

1.7.2.1. Lack of awareness and understanding amongst researchers: This is not confined to European researchers. Surveys have repeatedly shown that researchers are still not properly aware of the concept and that, even if they have some knowledge of Open Access, there is usually some lack of understanding of the issues. In particular, the issues of quality control, the role of repositories and the matter of copyright are especially prominent as factors about which researchers are confused and uninformed (see below for more on these bottlenecks). Some researchers even appear to be resistant to the idea of openness itself, though this resistance is more usually applicable to research data than to research publications. The result is demonstrable resistance to the idea of Open Access, misunderstandings and baseless prejudice against it within parts of the research community.

1.7.2.2. Lack of awareness and understanding amongst policymakers: Policymakers are, with notable exceptions, even more unaware than researchers about Open Access and can often be uninformed about the issues around scientific communication in general. Lack of awareness and understanding is at the root of the general lack of policy development at MS level (and at institutional level). National experts reported difficulty in getting interest and attention from policymakers on Open Access and related issues.

1.7.2.3. Lack of policy: Some MS do have high-level policies on Open Access and preservation. The Netherlands, for example, has a system in place nationally for preserving research outputs in the custodianship of the Royal Library (KB). Most MS do not have such a system, though in some cases it is in development (for example, the British Library is working on an ambitious plan for preservation of the nation's scientific and cultural heritage).

There is a policy that covers 20% of Framework Programme 7 (FP7)-funded research outputs and some MS have policies in place at national research funder level (some examples are: the Austrian Research Council, the Swedish Research Council, the seven UK Research Councils), and there is an Open Access policy from the European Research Council. In the main, though, there is little in the way of policy development at MS level, and not much more at institutional level¹. This is a hindrance to the advance of Open Access because policies serve not only to support an implementation programme, but also to inform researchers about Open Access. They are excellent advocacy tools.

¹ See list of extant policies at ROARMAP (Registry of Open Access Repository Material Archiving Policies) <http://www.eprints.org/openaccess/policysignup/>

1.7.2.4. Copyright: Researchers who are not properly informed about Open Access believe (erroneously) they will be infringing copyright if they self-archive their work in repositories and do not believe that Open Access is compatible at all with scientific publishing. National experts from some MS (for example, Germany) reported that their own national copyright laws do not permit Open Access by self-archiving.

1.7.2.5. Financial cost of implementation: There was agreement amongst a number of participants reported that the cost of implementing Open Access and good preservation practices in their MS was inhibiting the advance of these things.

1.7.2.6. Quality control: Many researchers – and some policymakers – who are not properly informed believe that Open Access is about publishing material without peer review. This is an erroneous belief (as Open Access journals implement peer review as do their subscription counterparts, and repositories collect the author’s final version of articles, after peer-review) but it remains quite prevalent. Authors therefore frequently and incorrectly believe that Open Access content equates with lower status than content published in the ‘traditional’ way.

1.7.3. The key success factors in overcoming these bottlenecks and problems

By far the most-mentioned key success factor was getting a policy on Open Access in place. It forces change in a way that advocacy and example do not. Yet advocacy has its place, and engagement of key stakeholders through advocacy has proved to be a very effective route to researcher involvement and policymaking progress, especially where the existing culture and practices can be used to support Open Access. Other success factors reported were infrastructural developments, securing appropriate funding and collaborative approaches.

1.7.3.1. Open Access policies

Experts from MS where national-level or institutional-level policies have been adopted reported that they are successful in increasing the amount of material openly available and in raising awareness of Open Access amongst authors. Policies usually explain the case for Open Access and are supported by clear guidance to researchers on how to provide Open Access to their work.

1.7.3.2. Advocacy and cultural change work

Experts reported that involving key stakeholders (authors, institutional managers, national research policymakers) has been critically important in advancing Open Access. Successful advocacy has included education and information campaigns, using bibliometric indicators to make the case for Open Access, promoting the visibility and usability of Open Access material and explaining the reach (and subsequent impact) it can have outside of the ‘normal’ research community audience.

1.7.3.3. Infrastructural aspects of implementation

Well-designed infrastructural developments can enhance Open Access. Some national experts reported that integrating repositories on local and national bases had helped Open Access in their MS. Portugal is a good example of this, with the building of a national harvester triggering activity in a bottom-up fashion at institutional repository level.

1.7.3.4. Funding

Funding earmarked for Open Access and preservation developments can be important. Both infrastructure and advocacy require some financial support.

1.7.3.5. Collaborative approaches

The partnership created by the FP7 project OpenAIRE was mentioned as a contributory factor in enhancing Open Access in one delegate's case.

1.7.4. The results, impacts and benefits

The results, impacts and benefits reported by national experts fell into four main categories – policy development, culture change, establishment of infrastructure and the amassing of a corpus of Open Access content. It was notable, however, that far fewer national experts reported anything in this session than for the bottlenecks and key success factors.

1.7.4.1. Policy development

Two national experts reported national policies on Open Access for theses and one reported the successful coordination of Open Access policies within their country.

1.7.4.2. Culture change

Examples of culture change given were: instigating an Open Access awareness course, determining through a study that 55% of journal articles published by Danish researchers are published in 'Green' journals (that is, the publisher allows them to be archived in Open Access repositories); and achieving some success in changing the behaviour and attitudes of researchers towards Open Access.

1.7.4.3. Infrastructure

Infrastructure developments were about establishing national repository systems, including the national harvesting repositories in Ireland and Portugal.

1.8 Suggestions for concrete actions

The second day of the Workshop began with a Pro Action Café session to reflect upon what had happened thus far and for individuals to identify particular topics that they considered worthy of exploring to promote Open Access and preservation in Europe. Eight topics were offered:

- Preservation of scientific information and experimental data
- How Open Access can make knowledge more connected and accessible
- Publisher relations and negotiations
- Measuring Open Access outputs and creating evidence of the benefits of Open Access
- National policies on Open Access
- Making repositories user/researcher-friendly
- Open access impact indicators as a replacement for existing research bibliometric systems
- Linking European and national levels

Participants used the World Café format to discuss these topics. Topic leaders remained at a table and three other people joined the discussion for a period, moving on to other tables at the end of each period. The topic leader made notes of the key insights arising in these discussions and produced a short overview detailing the main points that arose, which they presented to the whole group. A summary of these main points for each topic follows:

1.8.1. Preservation of scientific information and experimental data

Technical bottlenecks should not be allowed to hinder preservation and preservation solutions should be based on open source software

- Optimal preservation solutions will vary according to research discipline
- There needs to be a European dimension (European Storage Infrastructure) to link national repository infrastructures
- A Federation of Preservation should be established on a European scale to enable national archives to work together in common aim, with mirror sites established to ensure safe custody of data

Box 1:

Next steps on preservation of scientific information and experimental data include:

- Setting up working parties with researchers and users of experimental data in different disciplines to define standards
- Exploration of the issues involved in migration of data over time from one format to another
- Development of guidelines on what data to preserve, for how long, where and how

1.8.2. How Open Access can make knowledge more connected and accessible

There are both cultural and scientific/technical issues at stake here. Cultural aspects include legal practice and incentives for both authors and publishers to change their own practices and norms to embrace Open Access. Scientific/technical issues include metadata standards, technologies for extraction and automatic creation of metadata, better search capabilities (using, for example, natural language querying), and the establishment of infrastructure for representing and preserving large volumes of research data.

Box 2:

Next steps on how Open Access can make knowledge more connected and accessible:

- Develop incentives for researchers to make their work Open Access
- Investigate standards for good, clean metadata (including linking to other datasets)
- Clarify legal issues related to linking, sharing and re-using Open Access content
- Educate all constituencies about the new paradigms of research communication

1.8.3. Publisher relations and negotiations

There should be transparency over price negotiations with publishers, with information posted on the Web. The discussion concluded that some publishers are innovative and forward-looking, and these could be nurtured and encouraged and promoted wherever possible. Alternative, viable and sustainable publishing business models that allow Open Access can be developed, and these should be explored, especially with learned societies. There was a suggestion for a common European approach in negotiating with publishers.

Box 3:

Next steps on publisher relations and negotiations include:

- Creating a website documenting the state of play for each publisher with respect to Open Access. This needs to be kept up to date
- A study should collect information on new business models for publishers
- The Commission should organise a workshop on relations and dealings with publishers
- There should be national and European-level projects in association with innovative publishers in order to promote these publishers and their work
- Work should begin with learned society publishers
- DG Competition should examine whether the academic publishing industry is actually a monopoly situation
- A lobby is needed to promote Open Access
- A common European approach is needed in negotiations with publishers, rather than the fragmented institutional or national approaches of the present

1.8.4. Measuring Open Access outputs and collecting evidence of the benefits of Open Access

The traditional academic measure of impact has been the citation of a piece of work, but there are many users of research that don't cite it, such as professionals, practitioners and business users. New, additional metrics are needed to measure and reflect the bigger worth and utility of research. Measures that could be important are:

For researchers: media coverage and usage metrics

For institutions: economic efficiencies of Open Access, usage metrics, media coverage, enhancement of interdisciplinary research by Open Access

For governments and national research funders: usage metrics, media coverage, compliance with policies, enhancement of interdisciplinary research by Open Access, cost per citation, cost per use

For society at large: public surveys, citizen education, quality of media reporting

Box 4:

Next steps on Measuring Open Access outputs and creating evidence of the benefits of Open Access include:

- Exploration of the scope of indicators that could be useful to different constituencies
- Scoping study to provide an outline of what work is necessary to develop them

1.8.5. National policies on Open Access

There was no agreed decision about whether national policies are needed or not. Some people argued that a bottom-up approach is most effective, but others hold that a national policy is essential so that a top-down influence helps the bottom-up initiatives.

The advantage of a national approach is that national authorities are usually needed for involvement with legal issues, copyright and in negotiations with publishers. With respect to preservation, a national-level approach is highly desirable to preserve cultural heritage and to put in place proper systems for preserving scientific research material in the long term.

Box 5:

Next steps on National policies on Open Access include:

- Consideration of whether the Commission should issue guidelines on development of national policies: these would cover best practice, practical issues, sample contracts

1.8.6. Making repositories user/researcher-friendly

At issue is the fact that most repositories are half-empty and often have poor quality metadata. National CRISs are being built with OAI compliance, which should add value to these systems.

Box 6:

Next steps on making repositories user/researcher-friendly include:

- Create a more efficient business model for linking repositories and CRISs Europe-wide
- Set standards on platforms and interoperability, with the need for researchers to deposit their articles only once

1.8.7. Open Access impact indicators as a replacement for existing research bibliometric systems

The most-used bibliometric indicator systems (e.g. Web of Science, Scopus) are commercial, paid-for services that are not available to all and which create data only for a proportion of the world's research literature. New citation services working on Open Access content would encourage researchers to make their work Open Access and convince administrators that Open Access can be useful in research assessment and monitoring.

Box 7:

Next steps on Open Access impact indicators as a replacement for existing research bibliometric systems include:

- Look at the technical challenges this suggestion presents
- Explore the possibility of digital object identifiers (DOIs) being used for all digital objects, including datasets and components of complex objects

1.8.8. Linking European and national levels

There are defined relationships between the Commission, the Council and MS, including possible responses of MS to Commission guidelines. Do MS need guidance on Open Access and preservation? At the least there is a need to change thinking at MS level.

Box 8:

Next steps on linking European and national levels include:

- The Commission could coordinate, guide and name-and-shame in order to create a common understanding and drive progress
- The Commission should develop a formal Open Access plan
- On a practical level, the Commission should impose Open Access as a criterion for FP proposals

1.9 Priorities for the recommended actions

The final session of the Workshop focused on one question: ***What elements should be part of an action plan for Open Access and preservation in Europe?*** The national experts suggested action areas and these were collected on a mind map.

National experts were then given five votes to cast for the action areas they considered of greatest priority. The outcome is shown in Table 1.

Table 1: Assignment of priority by national experts for action points developed in discussion

Action point	Votes cast in favour
Development of standards for all aspects of Open Access	13
Funding for infrastructural developments	12
Creation of new metrics for Open Access content (usage measures, success stories, media impact, citation impact, etc)	9
Making the 'Green' route to open Access (through repositories) mandatory	8
Exploration of copyright laws in EU states with a view to recommending modification or creating a new law on academic research outputs (which are not the same as music and other creative outputs) to support or permit Open Access	8
Revisit agreements with publishers to achieve price transparency, re-negotiate Big Deals and improve the proportion of publishers that allow 'Green' self-archiving in repositories	8
Investment in e-research infrastructures in Europe, especially those that support the development of the Open Data agenda	8
Invest more effort in development of technologies and enablers of Open Data	6
Support for coordination activities to support advocacy and other supporting actions for Open Access	5
Investigation of new business models applicable to Open Access (including using open source technologies and a focus on adding value)	5
Support further awareness-raising activities	5
Development of policies at government, funder, and institutional level across Europe	4
Develop technical infrastructure to support preservation of research outputs	3
Development of incentives for authors and publishers to increase the amount of Open Access content	2
Development of indicators to demonstrate the benefits of Open Access	1
Identification of existing initiatives and building upon them	1
Fund work on data and metadata curation for the long-term	1
Development of tools to support deposit and curation of content in Open Access collections	0
Encourage sharing of good practices	0

Section TWO:
Discussion of the outcomes

This section discusses the recommended action points of the Workshop in the context of what already exists or is being developed, and is developed here by the Rapporteur for the Workshop. The action points recommended by the Workshop national experts are grouped under a series of headings below for discussion. To draw things together, the action points have been grouped in a way that aligns with the *Key Success Factors* (see Section 1.7.3) that were distilled from the first day of the Workshop proceedings (these were: OA policies, advocacy and cultural change, infrastructure, funding and collaborative approaches). The action point headings were:

- Stakeholder engagement / involvement (advocacy)
- Top-level engagement and support (policy development)
- Collaborations and partnerships (coordination)
- Implementation and manifestations (infrastructure)

It is unsurprising that the development of policies and stakeholder engagement appeared as two key issues from discussions on the first day of the Workshop. Worldwide, these two issues are also at the forefront of Open Access advances and European nations would not be expected to be any different. There are nearing 200 mandatory Open Access policies covering journal articles and conference papers around the world, and a further 70+ covering master's and doctoral theses. EU member States account for the greater proportion of these policies, and it is correct to say that EU nations have led the way in this respect, for both funder and institutional mandates. Policies from the European Commission and the European Research Council have helped raise awareness in general, though monitoring and follow-up of these policies have still to take place so that their impact can be assessed.

This relatively high level of policy development does not mean that Open Access is achieved in the European Union, though. As the Workshop itself, the response to the CREST survey, and informal monitoring by Open Access community players have shown, there is still much to do. The proportion of global research outputs that are made Open Access hovers now around 20% (Björket *al*, 2010), up only 5% in the last five years. Possibly, the European Union figure is higher than this global average (it has never been measured), though it is extremely unlikely to be more than 25-35%. Mandatory policies do succeed in raising the percentage well, achieving over 50% in some cases (for example, University of Minho, the first European Union university with a mandatory Open Access policy, and the London-based Wellcome Trust, the first research funder with a mandatory policy).

Stakeholder engagement is an essential part of policy development, of course, and getting the attention of policymakers has been successfully achieved in, now, hundreds of cases. But there are thousands of universities and research institutes in the EU, and many hundreds of research funding agencies that have not so far engaged with the issue of Open Access. The European University Association's Recommendations on Open Access (2009) took the issue to nearly 800 research-based universities across Europe. Nonetheless, policies were not forthcoming as a result. At the institutional level, as well as at funder level, more needs to be done.

In infrastructural terms, the EU is doing well. Several countries have created coherent national networked repository infrastructures, sometimes with a national 'shop window'

fronting them. Infrastructure can mean softer things too, though. For example, The Netherlands has established a national author identifier scheme so that every researcher in Dutch universities now has a unique identity, enabling his or her work and outputs to be discriminated from that of others who might bear the same name². This is an important step forward in creating a really workable, usable research environment for the digital age. The development of a technology that allows deposit into multiple repositories with a single input has been developed in the UK³ and this eases the problem for authors wish, or are required as a result of being under more than one mandatory policy, to deposit their papers in multiple collections. They need only deposit in one place and the item is then copied into other locations by machine processes.

There are many other examples where European developments are leading the way for Open Access but at the same time the goal of having all European outputs from publicly-funded research remains elusive. The Workshop went on to debate and discuss what concrete actions the Commission might take to further this aim.

2.1 Stakeholder engagement / involvement (advocacy)

The action points falling under this heading are:

- Creation of new metrics for Open Access content (usage measures, success stories, media impact, citation impact, etc)
- Development of indicators to demonstrate the benefits of Open Access
- Support further awareness-raising activities
- Development of incentives for authors and publishers to increase the amount of Open Access content
- Encourage sharing of good practices

Research metrics

Some developments on the issue of metrics – which themselves act as an incentive for authors and publishers to embrace Open Access – are already underway. The development of new research metrics is the subject of a current FP7 Call and there is a project in process at the moment in the US and Canada to develop new metrics that apply to Open Access monographs and one on citation analysis. In addition, some players are, individually, introducing new impact measures that help to incentivise authors and readers. One example is PLoS ONE, published by the Public Library of Science, which has introduced a range of article-level metrics that give authors far more information about how their work is being used than is provided by any subscription-based journal.

A considerable number of projects and services have or are being planned to provide ways of assessing research through use of the Open Access corpus in repositories (see Box 9

² <http://www.surffoundation.nl/en/themas/openonderzoek/infrastructuur/Pages/digitalauthoridentifierdai.aspx>

³ SWORD (Simple Web-service Offering Repository Deposit) <http://swordapp.org/>

below) and new metrics for assessing the performance of repositories have also been proposed (Cassella, 2010).

Box 9:

Resources on research metrics

Overviews of research metrics developed so far:

- Open Access Scholarly Information Sourcebook: [Research metrics](#)
- New metrics for research outputs: [overview of the main issues](#). (2008)
- Usage reporting and metrics: [list of existing initiatives, studies, projects and developments](#) (from the [International Repository Infrastructures Project](#))
- Prestige and profiling metrics: [list of research and research profiling and assessment services](#) (from the [International Repository Infrastructures Project](#))

Indicators of Open Access benefits

Benefits from Open Access accrue potentially to a number of stakeholders. The research community is the obvious one, but outside this are the professional and practitioner communities whose work is also dependent upon the outcomes of the research carried out in publicly-funded universities and research institutes. The secondary and tertiary education communities, science media and members of the public at large ('other curious minds', as the Budapest Open Access Initiative put it⁴) are also potential beneficiaries. In all, access to the knowledge that is being created using public money can help to create a well-informed populace and build the Knowledge Society.

Early work to demonstrate the benefits of Open Access outside of the research community is going on in this area. Two studies have looked at levels of access to research information for SMEs (Ware, 2009; Swan, 2008) and found them less than satisfactory: at least two further studies are currently underway on the benefit of access to research outputs for SMEs and these will report in the first half of 2011.

Measurement of benefits from Open Access to other stakeholder communities is very important but is not yet being carried out. Nor have any good *indicators* of benefit to any stakeholder group yet been developed. The first step is to achieve a better understanding of the relevance and potential benefit of access to research outputs by the different stakeholder communities; the second step is to develop appropriate indicators (as many as possible), acknowledging that some of these may be measuring very long-term outcomes.

Open Access advocacy

Although much effort continues to go into Open Access advocacy work around the world, it is still the case that researchers and policymakers remain largely unaware of the concept and, even if they claim to be aware, they demonstrate high levels of ignorance and

⁴ <http://www.soros.org/openaccess/read.shtml>

misunderstanding⁵. Some of this may be due to incorrect information either innocently or wilfully provided to them, but mostly it is because proper OA advocacy efforts have not yet reached their target communities effectively. Even where a particular community has received high-profile information and guidance on the issue, awareness remains woefully low (Bardyn *et al*, 2010).

This issue was highlighted during the Workshop and is encapsulated in two of the action points at the head of this section. One of the valuable outcomes of the Workshop was the opportunity for national experts to share their experiences of advocacy and relate what has worked well and what not so well, identifying the problems and discussing ways to overcome them. Further events and initiatives would offer the chance to stimulate deeper integration between MS with respect to advocacy activities.

2.2 Top-level engagement and support (policy development)

The action points falling under this heading are:

- Making the ‘Green’ route to Open Access (through repositories) mandatory
- Development of policies at government, funder, and institutional level across Europe
- Exploration of copyright laws in EU states with a view to recommending modification or creating a new law on academic research outputs (which are not the same as music and other creative outputs) to support or permit Open Access

Mandatory policies on Open Access are the proven key to engendering high levels of Open Access content (Sale, 2006). Any other kind of policy, however persuasive, does not have the same effect, even when supported by intense advocacy and practical support. Mandatory policies, as well as having an obligatory element, serve as awareness-raising tools themselves, especially when implemented along with supporting information that reassures and encourages authors.

There is a lack of awareness about the changing face of scholarly communication on the part of policymakers themselves, however, especially at institutional level. Though the numbers of mandatory policies introduced in institutions has grown considerably over the last few years⁶, this has been achieved only by intense advocacy effort within institutions and by advocacy organisations. Governments and large research funding

⁵ A survey of members of UK learned societies by the Association of Learned and Professional Society Publishers (ALPSP) found that most said they knew what OA was and supported the idea of OA journals, while few knew what they were talking about. ‘[A]lthough 60% said that they read OA journals and 25% that they published in them, in both cases around one-third of the journals named were not OA.’ In addition “less than half knew what self-archiving was; 36% thought it was a good idea and 50% were unsure. Just under half said they used repositories of self-archived articles, but 13% of references were not in fact to self-archiving repositories. 29% said they self-archived their own articles, but 10% of references were not to publicly accessible sites of any kind.’ (From the SPARC Open Access Newsletter, January 2011, by Peter Suber: <http://www.earlham.edu/~peters/fos/newsletter/01-02-11.htm>)

⁶ <http://bit.ly/dyWWaA>

agencies similarly need to be made more aware of the issues and importance of opening up scholarship to achieve greater benefits for the wider society. This remains a major issue to be tackled, both at MS and at European level. European influence in the form of enabling some coordination activities could help, and there is a current FP7 Call out for projects in this area.

Action is also urgently needed from the perspective of author (and funder and institutional) rights. Actions to enable Open Access and preservation require that authors have appropriate rights. One of the greatest barriers to achieving Open Access is author uncertainty over what they are allowed to do with respect to self-archiving. Clarification of the situation (for authors and policymakers) regarding rights would help enormously, particularly regarding what rights they need to retain to enable Open Access. At European level a most significant contribution could be made if it could be ensured that copyright law cannot be overridden by contract law. This would uphold exceptions for scholarly outputs and achieve a better balance between the interests of the parties concerned. The Workshop national experts discussed and called for a new European law in this area to standardise the situation across MS and clarify the issue once and for all.

2.3 Collaborations and partnerships (coordination)

The action points falling under this heading are:

- Revisit agreements with publishers to achieve price transparency, re-negotiate Big Deals and improve the proportion of publishers that allow 'Green' self-archiving in repositories
- Coordination activities to support advocacy and other supporting actions for Open Access
- Identify existing initiatives and build upon them
- Encourage sharing of good practices

Negotiating with publishers on pricing or deals is not related to Open Access so this point will not be discussed further here.

With respect to publisher permissions for Open Access provision through repositories, over 60% of journals allow 'Green' self-archiving of author postprints (after peer review) and a further 30% allow self-archiving of the author preprint (before peer review)⁷. Yet the overall proportion of the literature that is openly available is only around 20% and voluntary self-archiving rates are no more than about 15% (though the rate is hugely increased once a properly-implemented mandatory policy is in place). Improvement in self-archiving rate is not publisher permission-dependent, therefore, but instead requires changes in author behaviour, policy support and, importantly, clarification of the issues regarding rights (institutional, funder and author rights) with respect to scholarly information which differs a great deal from other types of creative output. This matter has been dealt with under policy development (Section 3.2) above.

⁷ EPrints RoMEO: Journal policies – summary statistics: <http://romeo.eprints.org/stats.php>

Aside from this point, coordination activity at European level has much potential benefit in the drive to achieve Open Access and preservation for scientific outputs. On the one hand, there is the development of registries that collect, organise and share information about technical issues or services can catalyse developments and help avoid duplication. These enhance Open Access and preservation and contribute to their development.

On the other hand, advocacy activities go on in every MS but lessons learned are often not shared, and there is clearly considerable duplication of effort that might benefit from some collaborative approaches, especially with respect to the collection and contribution of data to the evidence base. Coordination at repository level is now provided by COAR (Confederation of Open Access Repositories). There are, however, many national-level advocacy providers in Europe that work mainly in isolation. Future support for activities that aim to provide coordination and support for advocacy work across MS could be very beneficial for Open Access and for preservation initiatives.

Box 10:

Resources on collaborative and coordination activities

- Registries: [list of existing initiatives, studies, projects and developments](#) (from the [International Repository Infrastructures Project](#))
- Repository support organisations: [List of organisations and groups](#) (from the [International Repository Infrastructures Project](#))

2.4 Implementation and manifestations (infrastructure)

The action points falling under this heading are:

- Development of standards for all aspects of Open Access
- Funding for infrastructural developments
- Investment in e-research infrastructures in Europe, especially those that support the development of the Open Data agenda
- Invest more effort in development of technologies and enablers of Open Data
- Develop technical infrastructure to support preservation of research outputs
- Fund work on data and metadata curation for the long-term
- Development of tools to support deposit and curation of content in Open Access collections
- Investigation of new business models applicable to Open Access (including using open source technologies and a focus on adding value)

Standards and infrastructure

Standards enable interoperability and are essential for Open Access to be implemented effectively. There has already been progress in this area. [OAI-PMH](#) and the [Dublin Core](#) metadata standard underpin the interoperability of Open Access repositories. A set of

de facto standards with which Open Access journals must comply has been developed by OASPA.

Enabling infrastructures also encompass issues like persistent identifiers (for researchers, research outputs, institutions). A lot of work has already gone on in these areas (see Box 11 below).

With respect to e-research, Europe is well-advanced, thanks to the ambitious e-infrastructures programme in FP7 funding and coordinating the development of internationally-competitive infrastructures⁸. These have not necessarily been developed with the issue of Open Data to the fore, however, and additional thinking must be done to connect the provision of planned and existing infrastructures to the needs of the research community for freely accessible data.

While the original definition of Open Access referred to the scholarly *literature*, research has subsequently become more data-intensive and datasets (be they numerical, graphical, audio or video files, etc) are now the object of a drive for open accessibility, too – Open Data. There are already many policies from research funding agencies⁹ covering the accessibility of data created during work they have funded, and the number is expected to continue to grow. Policies support culture change and the development of good practices, but to maximise usefulness of Open Data, datasets must be findable, citable and available in the long term.

Some initiatives have been developing around these issues, such as mechanisms to enable the identification and citing of datasets (for example, DataCite), on rights of access to and re-use of data (for example, the Open Knowledge Foundation's guides) and on preservation of research data for the longer term at institutional and national level (for example, the Keeping Research Data Safe projects). So much work has been done on Open Data-related topics over the last 2-3 years that a reasonable overview is out of scope here: that in itself indicates that work to collate and distil information about developments and directions in this field would be useful.

Further work in the areas of infrastructure and standards will be necessary, but what may not be clear to all is the extent of achievements so far and how MS might use these to develop Open Access and preservation activities most effectively. Here, coordinating activities at European Union level could be beneficial. What is missing is the effective joining-up of a rather fragmented system: there are initiatives that aim to link data and journal articles, data and repositories, and repositories and journals. But these are being executed in piecemeal fashion with little or no coordination. This can mean duplication of effort or missed opportunities to exploit synergies. Data-driven and 'liquid' publication may be the best opportunities to make progress on this issue as they will require connections across infrastructural components of the system.

⁸ <http://cordis.europa.eu/fp7/ict/e-infrastructure/>

⁹ <http://www.sherpa.ac.uk/juliet/>

Preservation

Preservation is something that has largely fallen to national libraries or other similar national-level organisations to tackle, though there are significant players on an international scale, too. While some academic publishers have commendably taken steps to enter into arrangements with national libraries (e.g. Elsevier's e-archiving arrangement with the Royal Library in The Netherlands), these are few, and preservation is anyway a matter best confronted internationally. Some notable initiatives in the area of preservation include the [Digital Curation Centre](#) in the UK (which specialises in research data), [Digital Preservation Europe](#), the [National Digital Information and Infrastructure Preservation Program](#) (USA), and the [Internet Archive](#).

Preservation metadata is another area that has received considerable attention already (see preservation resources link in Box 11 for details). Standards have been developed for textual information at least, though more work will be needed in the case of data in some disciplines.

Research articles are currently preserved by publishers, libraries, e-journal archiving infrastructures such as [CLOCKSS](#) (Controlled LOCKSS) and repositories. Digital datasets are preserved by a myriad of players from the large international databanks through national data centres, disciplinary data collections, institutions and sub-institutional entities down to individual researchers or their groups. Some of this data preservation is well-organised and results in a trusted provision but this is not the case overall. The establishment of the [Open Planets Foundation](#) (which grew out of the [Planets project](#)) has gone a long way in taking a coordinating role and offering tools and methodologies for best practice with the development of a global view and approach to preservation of digital information. Such initiatives may have a role in helping universities to take responsibility for preserving research information in their own sphere.

The technical infrastructure for preservation of both research articles and data is being assembled, then, but there remain relatively low or unclear levels of trust. Long-term access also requires a shift in business models and cultural practices and, moreover, must be rooted in the norms of scholarly behaviour and the digital technologies that prevail: these change, and that change must be accommodated by preservation solutions.

Work remains to be done in this area, especially in the area of policy and legal frameworks, and in determining suitable business models (see below for this topic). Legal deposit and orphan works legislation are relevant here and need to be supported by further areas of exception if academic research is to be properly and fully preserved. Jurisdictional differences will need to be addressed in this context.

Deposit and curation of Open Access collections

There is no doubt that easing the process of deposit will help to overcome researchers' reluctance to self-archive their outputs. Entering metadata into a repository deposit system is time-consuming (though not as much as is believed by those who have never tried (Carr, Harnad & Swan, 2007)) and far less interesting than getting on with the research itself. Requiring researchers to deposit once is a burden they can just about bear

if they are convinced of the merits of doing so: requiring them to deposit the same item more than once is most unwise and can damage the cause of Open Access. A number of projects have addressed this issue of multiple deposit and some technologies have been developed that enable repository-to-repository exchange of content.

The earlier work in this area was mostly for preservation purposes, but more recent work has applied to deposit of new scholarly content. Examples are the development of the SWORD protocol¹⁰, enhancements of that¹¹, and technologies that can stream metadata from institutional repositories to appropriate disciplinary or subject-based repositories and *vice versa*¹². SONEX (Scholarly Output Notification And Exchange) is building on this work by identifying and analysing deposit use cases¹³.

Allied to deposit is the issue of higher-level collection and presentation of Open Access content. A new initiative in this regard is OpenAIRE, the repository built to collect the outputs from FP7 and future Framework Programme research programmes. OpenAIRE will collect content by harvesting from local repositories (in universities and research institutes), the optimal arrangement for a national or international showcase (Swan *et al*, 2005). This means that institutional collections benefit from the local deposit of material and harvesting for national or international services can then be carried out. National repositories have been built on this pattern in many EU states, including Ireland, Spain and the Netherlands.

Business models

In general, existing ('traditional') business models for access and preservation of scholarly content do not align well with the imperative for Open Access. It can be argued that realignment is essential in the interests of European research, commerce and society. Certainly the 'Innovation Union' cannot be achieved without true Open Access to scientific information. Where structures and practices are now in place to support Open Access and related principles, they are too frequently on the basis of projects or services that are reliant on short-term funding, with no sustainable business model to ensure long-term viability. New thinking is needed in this area, based on the principle that access and preservation are integral elements of the research process in which public interest is significant, and not an optional extra funded patchily and without coordinated planning.

¹⁰ <http://swordapp.org/> SWORD developed a standard deposit interface and the mechanism to deposit to multiple locations

¹¹ For example, EasyDeposit: <http://easydeposit.swordapp.org/>

¹² For example, Open-Access-Fachrepositorien: <http://www.ub.uni-konstanz.de/bibliothek/projekte/open-access-fachrepositorien.html>

¹³ <http://sonexworkgroup.blogspot.com/>

Box 11:***Resources on digital preservation***

- Persistent identifiers: list of existing initiatives, studies, projects and developments (from the International Repository Infrastructures Project)
- Author identifiers: list of existing initiatives, studies, projects and developments (from the International Repository Infrastructures Project)
- Institution identifiers: list of existing initiatives, studies, projects and developments (from the International Repository Infrastructures Project)
- Repository harvesting systems: list of existing initiatives, studies, projects and developments (from the International Repository Infrastructures Project)
- Preservation: list of existing initiatives, studies, projects and developments (from the International Repository Infrastructures Project)
- JISC's digital preservation programme: <http://www.jisc.ac.uk/preservation>

Section THREE: Recommendations

These recommendations have been developed by the Rapporteur from the discussions at the Workshop. The structure of this section primarily follows that of Section 2 (discussion of the outcomes of the Workshop) of the report, though there is not a separate section here for coordination activities. Instead, coordination activities are recommended under various headings below, since coordination approaches are cross-cutting in nature.

3.1 Advocacy

Coordination of advocacy efforts could support and improve the effectiveness of the current MS-level efforts. The Workshop was a good first step, bringing together national experts and EU officials to share, learn and develop networks. Improved advocacy in Europe could result from two things – coordination of existing efforts, and Union-wide advocacy on a planned basis with clear targets and goals.

Recommendation 1: Build on what was achieved by the Workshop to strengthen the nascent network and enable and encourage further interactions and collaborations (coordination)

Recommendation 2: Encourage and support initiatives that aim to develop advocacy programmes across the Union

Recommendation 3: Fund the development of indicators that better assess scientific progress and measure the benefit to stakeholder communities across society

3.2 Policy

Policy development is slow because policymakers are not sufficiently alert to the importance of Open Access. Where it happens it is in piecemeal fashion. All those with a legitimate interest in scientific information (universities, research institutions, research funding agencies, governments) have a responsibility to develop, fund and implement coordinated policies to enable Open Access and preservation.

Recommendation 4: Enable coordination of policy at European level

Recommendation 5: Encourage and support initiatives that aim to increase awareness and understanding of the issues around Open Access and preservation at policymaker levels

3.3 Rights

Appropriate rights are required to enable Open Access and preservation but the current situation is unclear or even prohibitive. Stakeholders need to be better appraised of the issues: European coordination on clarifying and agreeing the rights required would provide the most elegant solution.

Recommendation 6: Inform and encourage authors and institutions (and funders where appropriate) to retain the rights that are necessary to provide Open Access and enable adequate preservation of scientific outputs

Recommendation 7: Enable a shared understanding across all stakeholders (researchers, institutions, funders, libraries and publishers) of the legal terminology and concepts involved

3.4 Infrastructure

While many elements of the infrastructure needed for access to and preservation of scientific information are now in place, the overall picture remains fragmented. MS-level initiatives can be complemented and enhanced by European coordination, with the added advantage of potential savings in expenditure.

Recommendation 8: Build upon the investment in OpenAIRE by further enabling coordinated developments that join up emerging infrastructures to maximum effect

3.5 Business models

Currently, many of the components –the infrastructure in its widest sense, including services and technological developments – supporting and enabling Open Access (and, to a slightly lesser extent, preservation) are founded on short-term funding, project funding or on voluntary effort. Sustainability is critical and must be addressed.

Recommendation 9: Provide European-level guidance and leadership to MS on the principle of the long-term necessity and benefit of access to and preservation of scientific information

Recommendation 10: Examine the long-term prospects for the infrastructural basis for Open Access so far developed in Europe. Assess this in the context of creating a coordinated, viable, sustainable system that will enable the creation of the Innovation Union over the next 15 years

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Appendices

APPENDIX ONE: Workshop participants

National experts:

Goran	Bogdanovic	Ministry for Education and Research (SE)
Alexandra	Burgholz	EU Bureau of the German Federal Ministry of Education and Research (DE)
Marin	Dacos	Centre for Open Electronic Publishing - CLEO (FR)
Elena	Giglia	University of Turin (IT)
Iveta	Gudakovska	Library of the University of Latvia (LV)
Fridrika	Hardardottir	Ministry of Education, Science and Culture (IS)
Grete	Kladakis	Danish Agency for Science, Technology and Innovation (DK)
Izaskun	Lacunza Aguirrebengoa	Spanish Foundation for Science and Technology (ES)
Eric	Laureys	Federal Science Policy Office - BELSPO (BE)
Wieslaw	Majos	Ministry of Science and Higher Education (PL)
David	McAllister	Biotechnology and Biological Sciences Research Council (UK)
Marika	Meltsas	Archimedes Foundation/Estonian Libraries Network Consortium (EE)
Ana Christina	Neves	Ministry of Science, Technology and Higher Education (PT)
Vit	Novacek	DERI, National University of Ireland Galway (IE)
Louise	Perbal	Ministry of Education, Culture and Science (NL)
Žibutė	Petrauskienė	Vilnius University Library (LT)
Paraskevi	Sachini	National Hellenic Research Foundation (GR)
Peter	Seitz	Austrian Federal Ministry of Science and Research (AT)
Petra	Tramte	Ministry of Higher Education, Science and Technology (SI)
Anna	Vosečková	Czech Liaison Office for Research and Development – CZELO (CZ)
Mária	Žitňanská	Slovak Centre of Scientific and Technical Information (SK)

The European Commission

- Jean-Michel Baer, DG RTD, Advisor to the Director General
- Jean-François Dechamp, DG RTD Unit B6
- Francesco Fusaro, DG RTD Unit B6
- Gilles Laroche, DG RTD Unit B6, Head of Unit
- Matthieu Kleinschmager, DG HR, Unit B3
- Alexis-Michel Mugabushaka, European Research Council Executive Agency, A.1
- Theodore Papazoglou, European Research Council Executive Agency, A.1, Head of Unit
- Juan Pelegrin, DG INFSO, Unit E4
- Carlos Morais Pires, DG INFSO, Unit F3
- Celina Ramjoué, DG RTD Unit B6
- Lorenza Saracco, DG RTD, Unit B3
- Jarkko Siren, DG INFSO, Unit F3
- Ecaterina Stamate, DG RTD, Unit J4

Rapporteur: Alma Swan, Enabling Open Scholarship (EOS) and Key Perspectives Ltd

APPENDIX TWO: The format of the Workshop

The Workshop employed several methods for ensuring that participants were able to share and contribute fully in the proceedings:

Landscape: A visual representation of the Workshop was created and displayed on the wall for the duration of the event. This representation captured the flow of activities that was proposed for the event so that national experts could see how the event would develop over the two days.

World Café: World Café sessions involved national experts in small-group (four people) conversations around tables on which there was always plenty of paper and pens to record key insights and ideas (www.theworldcafe.com).

The Circle: national experts sat in a large circle with no obvious ‘head’ and with no ordering of seating. The Circle echoes ancient and traditional forms of human gathering for discussion and decision-making (www.artofhosting.org/thepractice/methods/circlepractise/)

Pro-Action Café: national experts gather in a circle and individuals volunteer to host small-group discussions on a particular topic. These volunteer ‘hosts’ each remain at one of the tables in the World Café, while other participants move from table to table, taking the opportunity to engage in discussions on a selection of topics. The hosts record the main issues arising in discussions at their own table, for later reporting to the whole group.

Check-in, Check-out: used in this case systematically at the beginning and end of the days’ proceedings, this involves national experts sitting in a circle and responding to a key question that one of the leaders poses. The aim is to gather experiences/thoughts together and encourage some consolidation of thinking.

Collective mind map: a mind map is constructed in real time as participants offer reflections, suggestions and ideas. It was used in this Workshop at the very end, to collect suggestions for the most important issues. Participants then voted for the 5 issues most important in their view. This enabled the construction of an overall ranking of priorities for future concrete actions on Open Access and preservation.

APPENDIX THREE: Open Access – The european context

This section will provide a brief overview of the background to the workshop, specifically:

- The study on scientific information in the digital age, 2006 (European Commission, 2006)
- The conference resulting from the study, February 2007¹⁴
- The Council Conclusions, 2007 (Council of the European Union, 2007)
- The CREST (*Comité de la recherche scientifique et technique*; in English: Scientific and Technical Research Committee) survey of members in 2008
- The session on Open Access and preservation in the ERA conference on the future of science in Europe (2009)¹⁵

Does scientific publishing work well?

Because scientific publishing models derive from the print-on-paper age, the predominant business model is subscription-based. Most university libraries can afford subscriptions to only a proportion of these and lack of access remains a major impediment to the work of most researchers, even in research-intensive, developed countries¹⁶.

Interest in improving the sharing of scientific information grew markedly when, in 2004, the European Commission embarked upon an examination of the scientific publishing market in Europe. In 2006, the resultant '*Study on the economic and technical evolution of the scientific markets in Europe*' (European Commission, 2006) was published.

Subsequent debate on how to improve access and dissemination for scientific outputs engaged the research community and other stakeholders, including at a conference on the topic in February 2007. The research community made its voice heard at this time in the form of 18,500 signatures gathered in four weeks for a petition, organised by the Knowledge Exchange partnership, calling for the Commission to implement a recommendation from the Study that the Commission guarantee that results from publicly-funded research be made publicly-accessible shortly after publication¹⁷. Four years later, the petition continues to gather signatures [the number of signatories in early 2011 is around 28,000].

The outcome of the overall exercise was the adoption by the Commission of a *Communication on Scientific Information in the Digital Age: Access, Dissemination and Preservation*, a policy document announcing a series of measures that included experimenting with Open Access

¹⁴ European Commission press release: Scientific information in the digital age: Ensuring current and future access for research and innovation <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/07/190&format=HTML&aged=0&language=EN&guiLanguage=en>

¹⁵ http://ec.europa.eu/research/conferences/2009/era2009/index_en.htm

¹⁶ '...many researchers are encountering difficulties in getting access to the content they need and that this is having a significant impact on their research.' *Press Release: Overcoming barriers*, Research Information Network, London (2009). Available <http://www.rin.ac.uk/our-work/using-and-accessing-information-resources/overcoming-barriers-access-research-information>. See also the full report: http://www.rin.ac.uk/system/files/attachments/Sarah/Overcoming-barriers-report-Dec09_o.pdf

¹⁷ <http://www.ec-petition.eu/>

and funding e-infrastructures (European Commission, 2007). The Commission has since enacted some of the measures. There is a full list of Open Access-related activities on the Commission's website¹⁸. The measures include the funding of a series of projects, including Liquid Publications¹⁹, SOAP (Study of Open Access Publishing)²⁰; PEER (Publishing and the Ecology of European research)²¹; OAPEN²², NECOBELAC and others; a mandatory policy on providing Open Access for 20% of outputs from FP7-funded research and the funding of a European repository and e-infrastructure, OpenAIRE²³, to house these outputs. The European Research Council, which was launched in early 2007 with a €7.5 billion budget, has developed a policy on Open Access for research outputs from the work it funds.

The Commission has not been the only influential actor. EC developments were taking place against a backdrop of policy activity – bold approaches – on the part of research funders in the ERA and elsewhere. In 2006, six of the seven UK research councils, their counterpart in Austria, and Australia's two research councils all introduced mandatory policies on Open Access. During the following year, 14 more funders followed suit, eleven of them in ERA (including the newly-established European Research Council), one in Canada and two in the US including, notably, the National Institutes of Health, the world's largest research funding body.

More recently, further bodies have declared their support for, and reinforced the importance of, Open Access, including the European University Association (European University Association) and EuroHORCs (European Heads of Research Councils) and the European Science Foundation (EuroHORCs and European Science Foundation). There are now at least 257 mandatory Open Access policies in force from research funders (46 policies), universities and research institutes (108 policies) and individual departments, faculties or schools in research-based institutions (29 policies)²⁴. Mandatory policies covering doctoral and master's theses have also been introduced in some institutions (73 policies).

Economic issues

Alongside these Open Access-related developments, other players were connecting access to scientific information with economics. In Australia, John Houghton and his colleagues conducted a series of studies on the economics of scholarly communication and published results indicating that Open Access would provide both efficiency improvements and monetary savings in scholarly communication (Houghton *et al*, 2006; Houghton & Sheehan, 2006; Houghton & Sheehan, 2009). Houghton's recent study demonstrating the costs, benefits and economic advantages of Open Access on a national basis for the

¹⁸ http://ec.europa.eu/research/science-society/open_access

¹⁹ <http://project.liquidpub.org/>

²⁰ <http://project-soap.eu/>

²¹ <http://www.peerproject.eu/>

²² <http://www.oapen.org>

²³ <http://www.openaire.eu/>

²⁴ Registry of Open Access Repository Material Archiving Policies:
<http://www.eprints.org/openaccess/policysignup/>

UK (Houghton *et al*, 2009), has been extended to other EU countries (The Netherlands and Denmark) (Knowledge Exchange, 2009) and to individual institutions (Swan, 2010). In every case Open Access attained through Open Access journals ('OA publishing') or through Open Access repositories has been shown to be more cost effective than the current subscription-based, access-restriction system.

Meanwhile, in respect of knowledge-sharing between public research and industry, a desirable goal for the ERA (see next section), the EU's own *Community Innovation Survey* was showing that there is a 'weak link between innovative enterprises (mainly small- and medium sized enterprises, SMEs) and public research institutes/universities' and that 'innovative enterprises find cooperation partners more easily among suppliers or customers than in universities or public research institutes' (Parvan, 2007).

Two studies on accessibility of university research to SMEs have been conducted recently. In a study of 186 SMEs, Ware showed that while 71% of respondents in innovative companies find accessing articles fairly/very easy, two-thirds (66%) of respondents pay for access in the form of subscriptions or society memberships which is, of course, easy but costly. There is also the remainder, 'by definition, a minority (29%) for whom access was fairly or very difficult' (Ware, 2009). In a smaller study on the ease of access 23 SMEs to the 'grey' academic literature (unpublished reports, working papers, theses and dissertations), Swan reported that SMEs had problems discovering relevant grey literature, and in accessing published literature (for reasons of cost) (Swan, 2008).

The ERA Green Paper

Seven years after the creation of the ERA the Commission published a Green Paper (European Commission, 2007b) assessing progress made and stimulating discussion and debate about the future orientation of ERA. The Green Paper outlined six features needed by 'the scientific community, business and citizens' that ERA should have, one of them being '*effective knowledge-sharing, notably between public research and industry, as well as with the public at large*'. Also of relevance to knowledge-sharing is another of the features, '*opening the European Research Area to the world with special emphasis on*

*neighbouring countries and a strong commitment to addressing the global challenges with Europe's partners*²⁵.

Two of the questions that the Green Paper posed in order to stimulate knowledge-sharing were these:

- Is there a need for EU-level policies and practices to improve and ensure Open Access to and dissemination of raw data and peer-reviewed publications from publicly funded research results?
- What should constitute a European Framework for knowledge sharing between research institutions and industry based on identified good practice and models?

These are core questions that resurfaced in the Workshop. Headline findings from the responses to the Green Paper that showed that 68% of respondents think that raw data from publicly-funded research should be made more readily accessible, these and more suggesting that EU-level collections are the preferred location. Sixty-five percent of the total respondent population thinks that peer-reviewed publications resulting from publicly-funded research should be accessible without charge (included in this respondent group are publishers, 71% of whom disagree with this statement). And 65% of respondents (presumably mostly the same 65%) also believe that these publications should be available without charge as soon as they are published.

Council Conclusions

Late in 2007, the Council of the European Union adopted its *Conclusions on Scientific Information in the Digital Age: Access, Dissemination and Preservation* (Council of the European Union, 2007). This document called upon Member States to *reinforce national strategies and structures for access to and dissemination of scientific information*, and pledged to *enhance the co-ordination between Member States on access and dissemination policies and practices* and to *ensure the long term preservation of scientific information – including publications and data – and pay due attention to scientific information in national preservation strategies*.

²⁵ Relevant statements contained in the Green paper in reference to the topic of Knowledge Sharing are: 'State-of-the-art knowledge is crucial for successful research in any scientific discipline. Reliable, affordable and permanent access to, and widespread dissemination of, scientific research results should therefore become defining principles for Europe's research landscape. The digital era has opened up numerous possibilities in this respect. Opportunities for progress can be seen, notably in the development of online libraries, repositories of scientific information and databases of publications and publicly funded research results. These should be integrated at European level and interlinked with similar databases in third countries. In particular, the system by which scientific information is published is **pivotal** for its validation and dissemination, and thus has a major impact on the excellence of European research. Europe should stimulate the development of a "continuum" of accessible and interlinked scientific information from raw data to publications, within and across different communities and countries.'

'Effective knowledge sharing [...] should consist of: open and easy access to the public knowledge base; a simple and harmonised regime for Intellectual Property Rights, including a cost-efficient patenting system and shared principles for knowledge transfer and cooperation between public research and industry; innovative communication channels to give the public at large access to scientific knowledge, the means to discuss research agendas and the curiosity to learn more about science.'

The European Commission itself was invited to monitor good practices and support Member State policy co-ordination. Specifically, it was invited to *implement the measures announced in the Communication on ‘scientific information in the digital age: access, dissemination and preservation’ and in particular to:*

- *experiment with Open Access to scientific publications resulting from projects funded by the EU Research Framework Programmes*
- *support experiments and infrastructures with a cross-border added-value for access to and preservation of scientific information*
- *contribute to improved policy co-ordination between Member States and to a constructive debate between stakeholders*

The Commission responded in part by including a session on Open Access and Preservation in the ERA conference ‘Working Together to Strengthen Science in Europe’ conference in October 2009²⁶. The session resulted in a set of conclusions and recommendations which identified three main issues: the need to provide research outputs (articles, books, datasets etc) in an openly accessible and easily re-usable way; the need to provide an integrated system of science communication – an ecosystem of infrastructures – that ensures the optimal functioning of the system; and the weak link between the basic research sector and innovative industries in ERA.

The CREST²⁷ questionnaire (Comité de la recherche scientifique et technique; in English: Scientific and Technical Research Committee)

A questionnaire was sent out to Member States via the Scientific and Technical Research Committee (CREST) in December 2008 and responses collected in the first part of 2009. Twenty-five responses were received from CREST members (EU Member States) and five from CREST observers. A selected few of the summarised findings from the responses indicate the general state of affairs reported:

- With respect to *national strategies on access and dissemination*, the Commission concludes that while **‘the growing number of national initiatives in this field shows a clear and encouraging move towards the development of policies in these areas ...there are very few of the nationally coordinated strategies or policies called for in the 2007 Council Conclusions’**.
- On *coordination activities on access and dissemination*, the Commission finds that **‘while existing declarations and initiatives form a solid basis to build on, explicit common national funding body principles, for example on Open Access, are still missing’**. Moreover, despite some advances, **‘transparency regarding big deals [between publishers and libraries] is still lacking’**. There is better news on repositories in Europe, though, with the finding that **‘significant coordination initiatives are underway regarding interoperability of repositories’**.

²⁶ http://ec.europa.eu/research/conferences/2009/era2009/index_en.htm

²⁷ renamed ERAC (European Research Area Committee) in 2010

Regarding long term preservation, ‘specific attention to the preservation of scientific information needs to be further developed within most existing national policies and legislative frameworks’.

In addition to these main summary points, the findings showed that strategies are largely at the level of funding bodies, universities or libraries rather than at true national level; that policies on sharing data are less well-developed than those on sharing articles; and that researchers remain largely unaware that Open Access is not necessarily in conflict with the copyright policies of scientific publishers.

European initiatives for the future

Europe 2020, the strategy for growth and jobs in Europe, encompasses seven flagship initiatives. Amongst them, the Digital Agenda aims to maximise the social and economic potential of ICT (Information & Communication Technologies). The Innovation Union focuses on innovation and how best to foster it. Open accessibility of research findings must play a role in both of these. The European Union Digital Agenda (EDA) aims to deliver sustainable economic and social benefits from a digital single market based on ultra fast broadband and interoperable applications. It focuses on seven main areas, of which research and innovation is one. In addition a Communication on Scientific Information will be issued by the end of 2011.

APPENDIX FOUR: Questionnaire on national open access and preservation policies

Part A - Respondent

1. General information

Country:

Organisation:

Name of respondent:

Contact data:

In what capacity do you work on open access and/or preservation issues?

Internet links to pages containing information on national policies and/or other useful information:

Part B - Strategies in your Member State

2. Policies in place for dissemination of and access to scientific information (including information on how these policies are financed)

Please describe, or update the situation as reported in 2009.

Please also answer the following (you may have to bring clarifications in the box above):

2.1 Generally speaking, the situation has (even slightly) improved since 2009:

Yes No

2.2 Your country experienced problems in the implementation of the 2007 Council Conclusions (e.g. legal barriers):

Yes No

2.3 Policies (or overall strategies) are in place:

Yes, at national level Yes, at regional level No

2.4 Laws or legal provisions encouraging or mandating OA are in place:

Yes, at national level Yes, at regional level No

2.5 Some funding bodies have OA policies:

Yes (please provide a list) No

2.6 Some universities and research centres have OA policies:

Yes (please provide a list) No

3. Policies and arrangements in place aiming to provide open access to peer-reviewed scientific journal articles resulting from public research funding

Please describe, or update the situation as reported in 2009.

Please also answer the following (you may have to bring clarifications in the box above):

3.1 There are special incentives in place to encourage researchers to provide OA to their publications:

Yes No

3.2 There are some agreements regarding open access between funding bodies and publishers:

Yes No

3.3 In the case of funding body policies on OA, research contracts or grant agreements include a specific reference to provide open access:

Yes (please provide phrasing) No

4. Policies and arrangements in place aiming to provide open access to other publicly funded research results (e.g. research data)

Please describe, or update the situation as reported in 2009.

5. Assess the situation regarding:

5.1 The way in which researchers exercise their copyright on scientific articles

Please describe, or update the situation as reported in 2009.

5.2 The level of investments in the dissemination of scientific information as compared to total investments in research

Please describe, or update the situation as reported in 2009.

Please also answer the following (you may have to bring clarifications in the box above):

5.2.1 The development (growth) of OA is measured:

Yes No

5.2.2 The impact of OA is measured (examples: citation count, impact on R&D budget, increased access by specific stakeholders, e.g. SMEs, uptake of research results leading to innovative findings)?

Yes No

5.3 The use of financial mechanisms to improve access (e.g. refunding VAT for digital journal subscriptions to libraries)

Please describe, or update the situation as reported in 2009.

6. Policies and activities with regard to repositories (“open archives”) of scientific information (including repository sustainability and interoperability)

Please describe, or update the situation as reported in 2009.

7. Activities bringing together main stakeholders in the debate of scientific information (e.g. scientists, funding bodies, libraries, scientific publishers)

Please describe, or update the situation as reported in 2009.

Part C – Co-ordination between Member States

8. Assess the situation regarding the way your Member State has been involved in exploring possibilities for co-ordination e.g.

8.1 Defining common national funding bodies principles on open access

Please describe, or update the situation as reported in 2009.

8.2 Improving transparency of the contractual terms of “big deals” financed with public money and assessing the possibilities to achieve economies of scale by demand aggregation

Please describe, or update the situation as reported in 2009.

8.3 Working towards the interoperability of repositories of scientific information in Member States

Please describe, or update the situation as reported in 2009.

8.4 (other)

Please describe, or update the situation as reported in 2009.

Please also answer the following (you may have to bring clarifications in the box above):

8.4.1 Your country - or organisations in your country - works in collaboration with others on topics related to access, dissemination and preservation:

Yes No

Part D – Long term preservation of scientific information (publication and data)

9. Structured approach to the long term preservation of scientific information (whether incorporated in national plans for digital preservation) in line with Commission Recommendation of 24 August 2006 and Council Conclusions of 13 November 2006 on online accessibility to cultural material and digital preservation)

Please describe, or update the situation as reported in 2009.

10. Specific characteristics of scientific information taken into account when setting up the legislative framework (including legal deposit) or practical set-up for digital preservation

Please describe, or update the situation as reported in 2009.

Part E – Role of the European Commission/European Union

11. Role that you see for the European Commission/European Union in terms of policies

Please describe, or update the situation as reported in 2009.

Part F – Additional comments

12. Any additional comment or suggestion that have not been covered by the questionnaire

European Commission

Sharing knowledge: open access and preservation in Europe

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A workshop was held in Brussels, attended by around 20 invited national experts from EU Member States, with the aims of: getting an understanding of Member States' implementation of the 2007 Council Conclusions on scientific information in the digital age, sharing experiences and know-how regarding successful implementations and best practices, and creating a common vision of what can be done next in terms of policy and action at Member State and at European levels. The report documents the proceedings, sets them in the context of developments so far on open access and preservation at an international level and makes a set of recommendations for future EC action.

