UK Open Access Implementation Group

The Potential Role for Intermediaries in Managing the Payment of Open Access Article Processing Charges (APCs)

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Executive Summary

This report examines the operational challenges that universities, funders and publishers face in the UK relating to the payment of article processing charges (APCs) – the charges levied by the publishers of open access and hybrid journals to meet the costs of the publication process. It then examines the feasibility of using intermediaries of various kinds to provide services to aggregate payments as between universities and publishers, along with other services relating to the processes involved in ensuring that an article is published on open access terms. The aim would be to improve the efficiency and effectiveness of the processes involved for funders, universities and publishers.

The study on which this report is based was limited in scope, but set in a broader strategic context. The recommendations of the Finch Report on how to expand access to published research findings have been followed by a significant shift in policy in the UK towards the support of open access publishing funded by APCs. The assumptions underlying the new policies are that they represent the most effective way to increase access to the UK's excellent research, with publications underpinned by high-quality and sustainable services for both authors and readers; and that they should support the development of an effective, transparent and growing market for 'Gold' open access publishing. The development of such a market, however, depends not only on efficient operational processes, but also on effective flows of information between the different agents and players. More generally, it is likely that as the transition to open access gathers pace, there will be a complex set of interactions between developments at strategic and operational levels.

We conclude as a result of our work that with a very few exceptions, the systems and processes currently associated with the payment of APCs are sub-optimal, and could present a significant barrier to the wider adoption of open access publishing. Our research also indicates, however, that there is no consensus on the potential value of the use of intermediaries as a means of addressing these problems, or whether it would indeed be beneficial to introduce intermediary services, or whether the benefits would outweigh the disadvantages or risks. Such concerns are exacerbated by lack of clarity as to how intermediary services might be organised, structured and managed.

Nevertheless, in the broader strategic context to which we have referred – where in the UK in particular funders, universities and publishers are all seeking to address a wide range of issues arising from the moves to increase the volume of open access publishing – there is a strong consensus that all parties need to sustain a dialogue and to work together to ensure that progress towards that end is as smooth as possible. For the actions of any one party are likely to have significant consequences and implications for others, and there will be a complex interplay between operational and strategic developments. In this context, dialogue between representatives of all the key players is essential in order to reduce friction and to avoid unintended consequences.

We therefore **recommend** that representatives of publishers, universities, RCUK, the Wellcome Trust and JISC should meet and use the analyses in this report to address the following issues and questions:

1. the key areas where greater standardisation is required to facilitate more efficient flows between authors, publishers, universities and funders of information relating to the payment of APCs, along with simpler workflows; and what kind of process could be initiated to develop the necessary standards;
2. whether to leave to the market the development, implementation and adoption of intermediary services for the payment of APCs;
3. whether, and if so how, to facilitate and stimulate such market initiatives; and/or
4. whether to adopt a more managed approach, and if so, to decide on key issues relating to the kinds of intermediaries; how they might be funded; the kinds of services that they might offer and on what terms; how they might be governed; and the transferability of services and relationships from a UK to an international context.

Introduction

This is the report of a brief study commissioned by the Wellcome Trust and JISC on behalf of the Open Access Implementation Group to examine the potential role for intermediaries in enhancing the arrangements for the payment of open access article processing charges (sometimes called article publishing charges) (APCs). Such intermediaries could aggregate payments as between universities and publishers, and provide other services relating to the processes involved in ensuring that an article is published on open access terms.

The issues that this report addresses may be set in the broader context of policy developments in the UK that are intended to promote and accelerate open access publishing of research findings. Those developments raise a number of strategic and policy issues for all the players in the scholarly communications landscape, especially universities and publishers. The focus of the report is on operational issues, but we recognise that such issues cannot and should not be treated in isolation from consideration of the broader questions of policy and strategy that will arise during the course of a transition towards open access.

The report represents the results of evidence gathered from desk research, a focus group, and interviews with a range of universities, publishers and intermediaries, as well as funders; and analysis of that evidence. We have also gathered and analysed written evidence as to systems and workflows provided by some of those who attended the focus groups, and to supplement interviews.

On the basis of the evidence we have gathered and analysed, we have developed an outline specification for the kinds of services that intermediaries might most usefully provide, including the criteria for those services and potential service providers. Beyond that, we outline a series of options for the development of intermediary services, taking account of the differing interests and perspectives of universities, funders and publishers. It is of critical importance that decisions on which of those options to pursue, and how, should be taken as part of the broader policy discussions to which we have referred, and that they should involve detailed discussion between representatives of all the interested parties.

Acknowledgements

Part A: The problem and the perspectives of funders, universities, and publishers

1. Background

This project is set in a context where publication of research articles in open access and hybrid journals, funded by APCs, is growing fast[1]. It is anticipated that it will grow faster still in the UK in the light of the recommendations of the Finch Report[2]; the new open access policies announced by the Research Councils, with new arrangements for providing funds to meet the costs of APCs[3]; the open access policies announced by the European Commission[4]; and the recent announcement by the Government that it is to provide £10m to thirty universities to help them with the transition to open access[5]. All these developments mean that both publishers and universities in the UK are having to consider a series of strategic and policy issues relating to how they can respond most effectively to the broader policy directions now set by Government and funders. As part of those considerations, they need to determine how best to deal with the operational issues surrounding the payment of APCs.

With the exception of a small number of wholly open access publishers such as PLoS, BioMedCentral and Hindawi, the current volumes of APC transactions for individual universities and publishers are as yet relatively low (at least in comparison to the overall numbers of publications they generate or publish). And among funders, only the Wellcome Trust in the UK is experienced in the arrangements for large volumes of publications funded by APCs. Moreover, only a very small proportion of the members of the research and academic communities in the UK have any direct experience of publishing articles in open access or hybrid journals and the processes associated with the payment of APCs[6]. Levels of awareness remain low, and this can cause problems for funders, universities and publishers alike.

For all these reasons, it is not surprising that the systems, processes and workflows for the payment of APCs and matters associated with open access articles funded by them, are in many cases relatively immature. Questions have therefore arisen as to whether current systems are scalable, how to minimise transaction costs, and whether and how processes and

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[1] Laakso et al, The development of OA journal publishing 1993-2009, *PLoS ONE* 6(6); Dallmeier-Tiessen et al, *First results of the SOAP Project: Open Access Publishing in 2010* http://arxiv.org/ftp/arxiv/papers/1010/1010.0506.pdf . Note, however, that there is as yet no clear analysis of the numbers of articles published by UK authors that are funded by APCs.

[2] Working Group on Expanding Access to Published Research Findings *Accessibility, Sustainability, Excellence: how to expand access to research publications*. June 2012. Available at http://www.researchinfonet.org/wp-content/uploads/2012/06/Finch-Group-report-FINAL-VERSION.pdf

[3] *Research Councils UK Policy on Access to Research Outputs*, available at http://www.rcuk.ac.uk/documents/documents/RCUK%20_Policy_on_Access_to_Research_Outputs.pdf

[4] European Commission, *Towards better access to scientific information: Boosting the benefits of public investments in research*. CO (2012) 402 final July 2012.

[5] *Government invests £10 million to help universities move to open access*, BIS Press Notice P/2012/349, 7 September 2012

[6] For example, the numbers of articles published by UK authors in 2011 with the two biggest open access publishers, PLoS and BioMedCentral, amounted to around four thousand; those figures include some authors who published more than one article, and of course not all of the UK authors were corresponding authors who would have been involved in the payment of APCs. The numbers of UK-authored papers published in other open access or hybrid journals were very much lower. For comparison, more than 50,000 researchers from UK universities were entered in the 2008 RAE.

workflows might be made more efficient and effective. In that context, the suggestion that intermediary services might help to address those questions is again hardly surprising. This study aims to examine the case for the introduction of an intermediary service or services, and what form that might take, by

- ❏ reviewing current mechanisms for the payment of APCs (especially amongst hybrid OA publishers) and assessing the case for an intermediary role in light of the potential efficiency gains and the potential costs.
- ❏ developing a specification for a possible intermediary role in line with maximising efficiency gains – including identification of markets to be served, models of collaboration, potential role in negotiating APC fees, and whether the service would be permanent or time-limited.
- ❏ identifying possible service providers and determining their preparedness and willingness to take on this intermediary role.

This report is based on an analysis of evidence focused on the position of UK funders and universities, though it is recognised that both publishers and potential intermediaries operate on a global basis, and that their systems and workflows are not unique to the UK.

The report focuses on the operational challenges faced by universities[7] and publishers relating to the payment of APCs. But underlying those challenges is a more strategic one. The recommendations of the Finch Report have been followed by a significant shift in policy in the UK towards the support of open access publishing funded by APCs. The assumptions underlying the new policies are that they represent the most effective way to increase access to the UK's excellent research, with publications underpinned by high-quality and sustainable services for both authors and readers; and that they should support the development of an effective, transparent and growing market for 'Gold' open access publishing. The development of such a market, however, depends not only on efficient operational processes, but also on effective flows of information between the different agents and players. More generally, it is likely that as the transition to open access gathers pace, there will be a complex set of interactions between developments at strategic and operational levels.

2. Issues for funders

In this short project, our analysis of operational issues and concerns for funders is based on our understanding of the position of the three largest public funders in the UK, the Wellcome Trust, the Research Councils and the Funding Councils. We have not sought information from other funders, such as Government Departments or medical research charities other than Wellcome.

Wellcome Trust

The Wellcome Trust has the longest and most extensive experience of supporting open access publishing through the payment of APCs[8]. It introduced in 2005 arrangements under which it

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[7] This report focuses on relationships and transactions in which *universities* are involved with funders and publishers. But the analysis might equally relate to research institutions other than universities.
[8] For guides to the Trust's policies, see Open Access at the Wellcome Trust: a guide for publishers; An essential guide to open access for Wellcome Trust-funded authors; Authors' FAQs; and other information available at http://www.wellcome.ac.uk/About-us/Policy/Spotlight-issues/Open-access/index.htm

now provides to 32 of its top funded institutions in the UK a block grant that is used to meet the costs of APCs for publications arising from Wellcome-funded projects. Grants currently range from £20,000 to £400,000 and are reviewed each year in the light of experience. For researchers based at other institutions, the Trust provides – on request from the grant-holder, to those institutions – supplements to grants (including grants that have expired) to meet the costs of APCs. In both cases – block grants and supplements – the actual payment of the APC is handled by the institution, not the Trust. This minimises transaction costs for the Trust in relation to the 1487 publications for which it met the costs of APCs in 2010-11; and it keeps responsibility for all matters relating to publication with grant-holders and their employing institutions. As we shall consider below, however, the Trust has natural concerns about accountability for the funds it provides, and compliance with its policies.

Research Councils

The Research Councils introduced polices in 2005[9] under which applicants for grants were explicitly allowed to include in their costings the anticipated costs of open access publications; and in 2006[10] it was made explicit that those costs could be included as part of an institution's indirect costs under the full economic costing regime. Like the Wellcome Trust, therefore, the Research Councils have passed responsibility for making payments for APCs to institutions and grant-holders. But the arrangements have been complex and little-understood, and take-up appears to have been low, though there is no systematic evidence on this.

In July 2012, however, Research Councils UK (RCUK) announced[11] that from April 2013 it will support the payment of APCs and other publication charges related to Research Council-funded research through block grants to UK universities and other research institutes. Precise arrangements for calculating the size of these grants and for administering them have yet to be announced. But the aim is clear: that the majority of the articles based on research funded by the Councils - estimated at over 26,000 in 2010 - should be published open access.

Funding Councils

The Higher Education Funding Councils provide block grants to UK universities - 'QR' funds calculated according to the size of the research community in each university and the quality of the research they produce (as determined in the periodic Research Assessment Exercises and now the Research Excellence Framework) - to support their research activities in general. Universities have considerable freedom as to how they use QR funds, and in a statement issued in July 2012[12] the Higher Education Funding Council for England (HEFCE) made clear that universities could use the QR block grant alongside other funds to meet the costs of APCs. The implication is that there would be no special accountability requirements associated with the use of QR in this way.

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[9] http://www.rcuk.ac.uk/documents/documents/2005statement.pdf
[10] http://www.rcuk.ac.uk/documents/documents/2006statement.pdf
[11] http://www.rcuk.ac.uk/documents/documents/RCUK%20_Policy_on_Access_to_Research_Outputs.pdf
[12] http://www.hefce.ac.uk/news/newsarchive/2012/statementonimplementingopenaccess/

2.1 Needs and requirements

This analysis of funders' needs and requirements is based primarily on Wellcome experience, since RCUK has not yet articulated its position, and the requirements of the Funding Councils specifically relating to APC payments are likely to be minimal.

❐ *Accountability.* There is an obvious need, where dedicated funds are provided to universities for the payment of APCs, for those universities to be able to provide a reasonably detailed account to the funder to show how those funds have been spent. In the Wellcome case, this takes the form of a spreadsheet template providing information about the amount of individual payments; basic metadata relating to the article published (see below); grant-holder and grant number; and date. For those institutions that receive block grants from Wellcome, accounting of this kind provides the basis for discussion on whether the grant needs to be supplemented or amended in size for the future. For Research Councils, there is a requirement to report to Government on how their funds have been spent.

❐ *Compliance.* Funders also wish to know whether both grant-holders and publishers are complying with their policies and requirements.

   o With respect to *grant-holders*, the key policy requirement relates to open access defined in specific ways, and is therefore broader than issues relating simply to APC-funded publications. For open access may be achieved *either* through publication in an OA or hybrid journal, *or* through deposit in a repository; and there may be specific requirements relating to accessibility and licence terms. Funders need information covering a range of possibilities, linking together all the publications arising from a specific grant and grant-holder. Information about APC-funded publications is a key part of that, but in many cases only a part.

   o With respect to *publishers,* key policy requirements include assurance that where an APC has been paid, the article has in fact been published in due time; that it is freely available to all readers on the publisher's site; that the licence conditions (CC-BY in the case of Wellcome and RCUK) have been met and are clearly indicated; and that (in the case of Wellcome) the article has been deposited and is available in UKPMC.

❐ *Split payments.* Many publications arise from work that is funded by more than one research grant, from different funders. Funders require mechanisms to be in place to handle split payments for such articles proportionately between the relevant funders.

❐ *Other charges.* In some cases, publishers levy charges (page charges, colour charges, fast track fees etc) in addition to APCs. Funders may have different arrangements for the payment of such fees, and so they must be clearly distinguished in any accounting and payments system.

❐ *Real-time and management information.* It is not clear whether, if the scale of APC-funded publications were to increase, funders would require – or see benefit from – access to real-time information about the latest position with regard to publications arising from grants; or to the progress of publications which they have funded; or to management information on a more frequent basis during the course of a year.

❑ *Optimised visibility and access.* The key driver of funders' OA policies is to increase the visibility and impact of articles arising from the work they fund. They therefore wish to be assured that articles in hybrid journals for which they have paid an APC are published quickly and are clearly labelled as OA, with clear information about use and re-use rights, on the publisher's platform; and that metadata is freely available, harvestable, and widely distributed, with links to full text.

❑ *Metadata.* In order to achieve all the needs and requirements outlined above, it is essential that high-quality metadata linking authors, institutions, grants, funders, and publications is generated – preferably once only – and that it flows freely between authors, funders, universities, publishers, aggregators, repositories and other information service providers.

2.2 Constraints

Like other players in the scholarly communications system, funders are under pressure to minimise transaction costs. They are reluctant and/or unwilling to take responsibility for making individual payments themselves, partly for that reason, and partly also because they wish, as noted above, to distance themselves from specific decisions about where and how researchers should publish their results.

3. Issues for universities

Only a small number of universities have set up systematic central arrangements for the payment of APCs. A recent study[13] indicates that seven UK universities[14] have established a co-ordinated approach for the payment of APCs, though the precise nature and extent of those arrangements differs from institution to institution; and some of our interviews suggest that the central organisation of payments is in some cases exiguous at best. Nottingham has the biggest and longest-established arrangements, and it spent over £318,000 in 2010-11 on APCs for over 260 articles. That represents, however, only a small proportion of the papers produced by researchers at Nottingham, whose authors publish around 3,500 journal articles and a further 500 conference papers each year. Increasing the proportion funded by APCs would therefore add substantially to workloads even at Nottingham. At institutions where current numbers of APCs payments are much lower, a substantial increase would pose even greater challenges.

Workflows and processes

Workflows are complex, not least because of low levels of awareness among researchers, which means that where there are central policies and arrangements for payment of APCs, those responsible for such arrangements may learn about the need to pay them at different stages in the publication process. In some, but not all, of the universities that operate central funds, access to those funds requires authors to fill in an application form; and in some cases, but again not all, a purchase order is required before an invoice can be paid. On the other hand, many universities – including some that have substantial block grants from Wellcome –

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[13] Stephen Pinfield and Christine Middleton. Open access central funds in UK universities, *Learned Publishing* 21 (2) 2012.
[14] There is some overlap with the 32 universities that receive block grants from Wellcome.

operate systems where responsibility is essentially devolved to departments, with little central involvement.

Three other issues bring added complexity.

- ❐ First, even where there are central arrangements, the sources from which the necessary funds are drawn may be various: from a Wellcome block grant; from funds within a research grant; or from a special fund set up by the university, or a department or other unit within the university. This can give rise to complex flows of information and of funds between different parts of the university.
- ❐ Second, both for reporting purposes and as part of moves towards closer management of researchers and their activities, universities are increasingly concerned to ensure that they have better management information systems which link information about their research staff, research grants, and published outputs. For many universities, research information systems are still in their infancy, and flows of information into and from them are not as yet fully developed.
- ❐ Third, universities are increasingly concerned to enhance the visibility of their research publications by making at least the metadata, and preferably the full text, accessible via their institutional and other repositories.

The flows of information to tackle these three issues can be complex and in many cases at present they are essentially ad hoc.

Scale of transactions

Quite apart from the strategic issues that universities will have to address over the coming months in handling the transition to open access - how they establish funds to meet APCs, the policies and procedures relating to them, how their open access policies relate to wider issues and policies on research management, and so on - they will have to address questions relating to how they will handle a relatively new and rapidly-growing number of transactions relating to APCs. And for both strategic and operational purposes they will need quick access to well-structured management information.

Researchers in UK universities are currently publishing over 100,000 articles and conference proceedings a year.[15] Researchers at a large Russell Group university such as Manchester published 5-6,000 articles and conference proceedings in 2011; at a smaller 1994 Group university such as Sussex, c1,200; at a post-1992 university such as Hertfordshire, c500. If just a third of those publications were to involve the payment of APCs, that would imply c2000 transactions a year at Manchester, 400 at Sussex; 160 at Hertfordshire. Few universities other than Nottingham are handling anything like these volumes at present. And the proportion of articles published that would involve the payment of APCs could in a relatively short time rise much higher than a third.

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[15] The overall total of UK-authored articles and conference proceedings in 2011 was c 120,000. A proportion of those were authored by researchers from outside the university and Research Council institutes – those working for research-intensive companies, or for organisations in the voluntary sector. But it is likely that well over 80% of the articles had university or Research Council institute authors.

Cost of transactions

The administrative costs of transactions on this scale will be significant[16], particularly since even the procedures relating just to the payment of APCs will not be simple in many cases; and the added need for services such as progress and compliance checking, deposit in repositories and so on, will add to complexity and cost.

Costs of APC transactions may be compared with the current costs of handling subscriptions for thousands of journals. These are themselves complex. The number of actual payments to publishers, subscription agents and aggregators may be relatively much smaller - particularly at a large research-intensive university - than the anticipated number of APC transactions. But university libraries have had to develop sophisticated and costly systems - many of them involving the use of subscription agents - to manage and keep track of a frequently-changing portfolio of subscriptions. The more important point for the current study is that all these transaction costs will be sustained during a period of transition to a fully OA environment which is likely to take several years. Thus APC transaction costs will represent an additional burden for universities, not offset by reductions in administrative costs in libraries.

3.1 Needs and requirements

This analysis of needs and requirements is based upon interviews and information provided by eight universities.

- ❑ *Accountability.* As implied in 2.1 above, universities need to be able to provide to funders reasonably-detailed and itemised accounts of how the funds provided to them for the payment of APCs have been spent. Universities also have their own requirements for recording and reporting on individual items of expenditure. And as open access publishing increases in volume and becomes a more prominent issue for the research community, universities will need to be able to account to their staff on how their policies and procedures are operating in practice.
- ❑ *Memberships and pre-payment accounts*. Universities that join membership schemes or set up prepayment accounts with specific publishers need to ensure that appropriate discounts have been and are being applied, and that they have up-to-date information about the status of their accounts.
- ❑ *Other charges.* Like funders, universities require a clear distinction to be kept between the arrangements for payment of APCs and other charges.
- ❑ *Authorisation*. Cases may arise where a corresponding author - especially one who does not have direct access to funds for the payment of APCs through a research grant - submits an article to a journal without informing the relevant people in the university who manage the funds required to pay an APC. In such cases, it may be that the first the university learns about an article that has been accepted, and a requirement to pay an APC, is when an invoice is received. Such situations are typically dealt with ad hoc at present, but will become increasingly irksome and potentially difficult to resolve as

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[16] If it is assumed that the time taken in making a typical payment and the checks involved were to be on average 60 minutes, the workload for handling payments for c2000 articles a year (as in the hypothetical example for Manchester given above) would amount to more than a full time post.

volumes of APC transactions increase. Ideally, universities would like an authorisation loop before an invoice is issued[17].

❑ *Compliance.* Universities need to be able to assure themselves and others that researchers and publishers are complying with the policies and obligations set by funders as well as by the universities themselves.

      ○ With respect to *researchers* (particularly grant-holders)*,* this requires, as noted at 2.1 above, that universities have up-to-date, linked, and comprehensive information about *all* the articles published by their researchers, and the grants to which those publications relate.

      ○ With respect to *publishers,* key requirements are similar to those for funders, including assurance that where an APC has been paid, the article has in fact been published in due time; that it is freely available on the publisher's site to readers from anywhere in the world; that funders' licence conditions have been met and are clearly indicated; and that any requirement to deposit articles in a repository has been met.

❑ *Split payments.* It has been calculated that 47% of the articles published by UK authors in 2010 included other researchers from overseas in the author list[18]; a further proportion include authors from other institutions in the UK. Many publications also report on research supported by more than one funder. Hence it is even more important for universities than for funders that there should be clear and equitable arrangements - which add an inevitable layer of complexity - to handle split payments for such articles proportionately between the relevant institutions and funders.

❑ *Real-time and management information.* If the scale of APC-funded publications increases rapidly, access to real-time information about the latest position and progress with regard to publications for which APCs have been paid will become essential for universities[19]. They will also require regular management information on publications and costs during the course of the year, structured and presented in ways that they can use for both operational and strategic purposes. Hence in both cases they want the ability to query by author, journal, publisher, funder, grant number, and time period.

❑ *Optimised visibility and access.* Like funders, universities wish to be assured that articles - particularly those in hybrid journals where they have paid an APC - are published on the publisher's platform as quickly as possible; that they are clearly labelled as OA, with clear information about use and re-use rights; and that metadata is freely available, harvestable, and widely distributed, with links to full text.

❑ *Metadata.* Again as with funders, in order to achieve all the needs and requirements outlined above, it is essential that high-quality metadata linking authors, institutions, grants, funders, and publications is generated - preferably once only - and that it can flow freely between universities' own distinct systems (finance, research information, library, repository etc) as well as between all the key players outside the university,

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[17] Under the BioMedCentral membership scheme, universities *are* asked to confirm when an article is submitted that payment of the APC will be authorised if the article is accepted for publication.

[18] Elsevier, *International Comparative Performance of the UK Research Base -2011*, Elsevier 2011

[19] Again, under the BioMedCentral membership scheme, universities do have access to real time information of this kind.

including aggregators, repositories and other information service providers. Automated harvesting and linking of metadata that is entered once only is a key requirement.

3.2 Constraints

The prime responsibility for making individual APC payments rests with universities. Associated with that responsibility, universities wish to see that the requirements set out above are met as fully as possible. But like funders, they need to minimise transaction costs, and particularly those that arise from checking and progress chasing. There is a tension between these requirements.

Simplified systems and user interfaces, and automated transfers of data, are core requirements; but those have to be achieved within the constraints of accountability and checks against unanticipated and unauthorised expenditure. Simple systems need to be accompanied by efforts to raise researchers' awareness and understanding of what is required.

4. Issues for authors

A relatively small proportion of UK researchers, as we have already noted, have direct experience of the payment of APCs, and the policies and processes with which they must engage in their relationships both with publishers and their universities. But authors must – for obvious reasons - be at the centre of any set of processes relating to payment of APCs.

There are thus three key sets of requirements with regard to authors.

- ❒ First, there is a need to raise levels of awareness and understanding of the processes involved, and the reasons for them.
- ❒ Second, those processes must be as simple and straightforward as possible, with clear documentation and guidance, and with user-friendly interfaces.
- ❒ Third, authors need to be able to get information about the progress of their articles, including the payment process.

5. Issues for publishers

The analysis here is based on discussions and documentation from nine publishers, both commercial and not-for-profit, and with the Association of Learned and Professional Society Publishers (ALPSP). The publishers covered a range of disciplines from the life and physical sciences through to the humanities and social sciences. They tended to come from the larger and medium-sized publishers, but we tried to cover the interests and perspectives of smaller publishers through our discussion with ALPSP.

With the exception of PLoS, BioMedCentral (BMC) and Hindawi, most large and medium-sized publishers have a mix of subscription, hybrid and fully open access journals. The numbers of OA articles published in the last year varied from around a hundred to two-three thousand for the 'mixed' publishers, to over 18,000 for PLoS and BMC. For all of them, a high proportion of the OA articles were from UK authors. All the 'mixed' publishers we spoke to reported an increase in the uptake of open access and all had plans to increase their hybrid and open access offerings. Nevertheless, articles funded by APCs as yet still

represented a small proportion of all the articles they publish; and many smaller publishers have as yet no experience at all of open access publishing.

5.1 Systems and workflows

Many - but not all - publishers are concerned that their systems and workflows may not be able to cope with a significant expansion in the number of articles funded by APCs. Key issues include:

- ❑ *Integration.* Publishers vary as to the editorial/submission (Scholar One, Aries, in-house etc.), production and finance systems they use, and the interfaces between those systems. Except for the fully open access publishers, those systems and interfaces have been designed in the main for handling subscription-based, rather than OA, publishing. Only BMC has developed a fully-integrated system that tracks and links articles, authors, institutions and funders all the way through from submission to publication, including the payment of APCs. Hence for most publishers, a key challenge is to achieve better integration between their editorial and production systems on the one hand, and the systems and workflows associated with the payment of APCs on the other. Such integration has to maintain, however, the barrier between decisions on whether or not to *accept* an article on the one hand, and payment (including waivers) on the other.

- ❑ *Payment options.* For most publishers, the starting point in achieving a link between publication and payment is usually an email to the corresponding author once an article has been accepted. This typically includes a link to a form for authors to complete - alongside a licence-to-publish form - providing options for payment by credit card, PayPal (in some cases), or invoice. Some but not all large and medium-sized publishers have access to e-commerce systems that provide for online credit card payments. Most of the smaller publishers with open access or hybrid journals rely on invoices.

- ❑ *Link between payment and publication.* Publishers also differ in the extent to which they can integrate the receipt of a payment and publication of the article. Those that have achieved closer integration between different systems insist that no article will be published on OA terms until payment is received. Some others operate more on the basis that once an article is accepted for publication on OA terms, they proceed to 'publish it and then hope we get paid'.

- ❑ *Credit control.* With the exception of BMC (which discourages invoices and promotes payment either by credit card or through pre-payment accounts), publishers report that the majority of authors opt for payment by invoice, with the author providing details of to whom the invoice should be sent. The lack in most cases of any authorisation loop here can be a weakness. For publishers report that they devote considerable efforts to chasing for payment, typically after 30, 60 and 90 days. One large publisher reported that 10-15% of invoices remained unpaid after 90 days. If the article has not been published on OA terms at that point, it will remain behind a pay-wall. If it *has* been published OA, then special efforts have to be made to put it behind a pay-wall.

- ❑ *Membership and prepayment accounts.* Some but not all of the larger publishers offer membership schemes and/or facilities for prepayment accounts which universities and

other institutions can draw on to meet the costs of APCs, usually with a discount. The larger publishers that do not at present offer such facilities are all considering introducing them (in one case as part of the introduction of an e-commerce system).

❑ *Split payments.* Some, but again not all, of the larger publishers provide facilities for split payments for multi-authored articles. Others lodge responsibility for split payments with the corresponding author and/or his/her institution. Split payment facilities may involve manual systems; and they clearly add to complexity and problems of credit control.

❑ *Reporting to universities and funders.* With two exceptions, the publishers we interviewed do not provide reports back to universities and funders as a matter of routine; but they do provide such reports on request, and many are considering how they might automate their production.

5.2 Needs and requirements

Most of the publishers we spoke to saw a need to develop their systems further, and to streamline them to make them more efficient. For the smaller publishers with little or no experience of open access publishing - many of which publish important journals, especially in the humanities and social sciences - the key requirement is for advice and guidance on setting up new systems. Like funders and universities, all publishers want to minimise transaction costs, particularly as the volume of APC transactions increases. Many spoke about a tension between a necessary degree of complexity on the one hand, and the desire for efficiency and simplicity on the other.

❑ *Relationships with authors.* Publishers are especially concerned to maintain good and direct relationships with their authors. In an OA environment even more than in a subscription-based one, authors are their main customers. Publishers therefore need to make things as simple and user-friendly for their authors as possible.

❑ *Relationships with universities and funders.* Publishers are also aware that the flow of articles and of APCs depends critically on the universities that employ researchers and on their funders. They therefore wish to sustain good relationships with those bodies, to provide assurance on compliance with relevant policies and requirements, and again to facilitate simple interfaces and effective flows of information.

❑ *Metadata.* High-quality metadata is essential if publishers are to maximise the effective dissemination and impact of the journals and articles they publish. They recognise the case for greater standardisation, including the tags for open access and precise licence terms.

6. Workflows and interfaces

Workflows relating to APCs begin in an important sense even before an article is submitted to a journal. For it is important that funders, publisher and universities should provide clear information about their policies and procedures, so that each is aware of what others require; and, crucially, so that they can make authors aware - using print and online information but also via help-desks - of what they have to do. The key point is that funders, publishers and universities all have key roles to perform at this stage, and that they must liaise with each other if they are to provide effective guidance to authors.

6.1 Submission of articles

When authors submit an article to a journal, they may or may not provide to the publisher two pieces of information that may help to initiate an APC workflow[20].

- ❑ First, they may indicate that their work has been funded by a body which provides funds for APCs; and the provision of such information may become more frequent once the FundRef system[21] developed by CrossRef is fully implemented. If a funder such as the Wellcome Trust is acknowledged, the publisher may be able to check with the corresponding author's institution that it will meet the APC.
- ❑ Second, in the case of a hybrid journal, authors may or may not indicate that they wish the article to be published OA. If they do so, then again, the publisher may check – with either the corresponding author or his/her institution – how the APC will be paid.

It is not common at present for checks of this kind to be initiated at submission stage[22]. Moreover, as we have noted above, authors may not inform their institutions at this stage that they have submitted an article that they expect to be published open access, and so the institution may not know that it may expect a call on the funds that it manages to meet APCs.

6.2 Acceptance and payment

Workflows more commonly at present begin at the acceptance stage, when the publisher issues an email to the corresponding author with links to forms to be filled in for a licence to publish, and for payment of the APC by credit card, PayPal or invoice. Provision must be made at this stage for fee waivers, for discounts arising from membership schemes, for payments of charges other than APCs (page and colour charges etc), for drawing on any pre-payment accounts, for payment in different currencies, and for split payments. The extent of linkages between editorial, finance and production systems varies between publishers. Articles may move direct to a production system once the corresponding author has submitted the licence to publish, but that does not appear always to be the case.

Where the APC is not paid direct and immediately by the corresponding author, and an invoice is issued, the receiving institution must check that the author named on the invoice is the corresponding or a lead author and a member of the institution, the source of funds from which the APC can be met, and the project and/or grant to which the publication relates. In some cases a purchase order is raised before the invoice is paid. The workflows here may involve the library, the research office, the finance office and the relevant department of the university, as well as liaison with the author.

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[20] The BMC system alerts member institutions when an article is submitted, and provides them with information about the articles in the pipeline and the potential call on their pre-payment accounts.

[21] FundRef is designed to provide a standard way of reporting on funding sources in journal articles. See http://www.crossref.org/fundref/index.html

[22] Again, BMC is the major exception among the publishers we interviewed, in providing to member institutions not only alerts and up-to-date information about the potential call on their funds, but a facility for an authorised person in the institution to indicate at submission stage that it is *not* willing to pay the APC in a particular instance.

6.3 Publication

Articles are typically published on the publisher's platform some time before they are put into an issue of the journal; but they may not be made accessible on OA terms until the APC payment has been received. Universities and funders such as Wellcome seek to check, on the other hand, that once payment has been made, the article is indeed published and accessible on OA terms. Since delays between acceptance and final publication of an article can be significant, this checking can itself be time-consuming.

Once an article has been published in a journal issue, universities increasingly seek to ensure that it is logged with metadata in their research information systems, linked to author, funder and research project/grant. In the case of Wellcome Trust-funded articles, publishers take responsibility for depositing articles in UKPMC (and both Wellcome and universities seek to ensure that they do so). Universities may deposit metadata and/or full text in their institutional repositories; in the case of articles in UKPMC, they may harvest the link.

6.4 Interfaces within and across organisations

For both universities and publishers, there are challenges to be addressed in establishing effective interfaces between their various internal systems: finance, library, research information, repositories etc in the case of universities; editorial, finance and production in the case of publishers. The key requirement is to ensure that information is entered only once, and that the demands placed on authors are as simple and straightforward as possible.

But there are also important interfaces between systems *across* organisations. These relate in part to exchanges of data, so that, for example, the metadata and other information gathered by a publisher up to the point that an article has been accepted can be transferred automatically to a university's systems when an invoice is submitted. They relate in part also to access to process and tracking information, so that, for example, a university can easily check the progress of an article towards publication. And more generally, there is a need to provide for easier reporting and automated exchange of information about grants, projects and publications between funders, universities and publishers. Some of the services that JISC has developed or is developing in its research information management programme[23] and commercial services such as Converis[24], Pure[25], or Researchfish[26] may help in this.

7. Metadata

This report has at several points stressed the importance of high-quality and accurate metadata, relating to articles, authors, funders, grants and projects, and universities. The development of the ORCID[27] and FundRef systems to provide standardised information about authors/contributors, and funders and grants respectively, should bring significant improvements in this area. It would also be beneficial if there were simple standards for metadata signifying open access and precise licence terms.

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[23] See. http://www.jisc.ac.uk/whatwedo/programmes/di_researchmanagement/researchinformation/ .
[24] http://www.avedas.com/en/converis.html
[25] http://www.atira.dk/en/pure/
[26] https://www.researchfish.com/aboutus
[27] http://about.orcid.org/

We have also stressed the importance of optimising visibility and access to OA articles – the whole point, after all, of open access. There are as yet no systematic arrangements for exposing standardised metadata relating to open access publications and harvesting them so that they can be presented in repositories and other information services. There could be significant benefits from the development of such a service, which would increase the number of points of access to OA articles.

8. Summary: what's lacking at present

This section presents a brief summary of the needs and requirements of the different players, and of what we lack at present, in terms both of processes and of effective flows of data and information.

8.1 Systems and workflows

- ❒ *Scalability.* A key concern at present is that workflows for all parties will not be able to cope with a significant increase in the volume of OA publications, and of the associated payment of APCs; and that there may need to be considerable investment in the development of new systems if publishers and universities in particular are to address that problem.
- ❒ *Transaction costs.* Related to scalability is the problem that the average cost of transactions is thought - especially by universities - to be too high (though we have seen no systematic information on this). That is partly because manual systems are being used to deal with many of the complexities that can arise relating to discounts, fee waivers, multiple charges, split payments and so on; but also to the amount of progress-chasing that seems to be involved for both universities and publishers.
- ❒ *Interfaces.* For all players in the system, there is much to be done to improve interfaces and the flows of information between different systems, both internally and externally. There is a significant amount of re-keying of information that already exists in other systems.

8.2 Management information: reporting and compliance

The arrangements for reporting on the OA articles published and funded by APCs, and the costs involved, tend to be unsystematic. There is a lack of simple systems to produce reports structured or queried by institution, funder, author, publisher, time-period and so on. At a strategic level, this makes it much more difficult than it should be for all parties to analyse key trends; at an operational level, it makes it difficult to monitor progress during the course of the year. The lack of real-time information makes it difficult to keep track of compliance with funders' and universities' expectations and requirements.

8.3 Metadata

The lack of standardisation in metadata hinders the effective flow of information between systems; and the lack of standardised and widely understood formats for signifying open access and licence terms means that the full benefits of OA publications may be hidden from readers. The absence of systematic arrangements for exposing standardised metadata for harvesting and presentation in repositories and other information services means that opportunities for multiple access points to OA articles are not being optimised.

8.4 Awareness and understanding

The complexity of current systems and processes, and sometimes of user interfaces, may act as a barrier against researchers' take up of open access. Levels of understanding are low, and this adds to the burdens on operational staff working for both publishers and universities. Moreover, the numbers of such staff who are expert in the various systems is rather low too, which adds to the vulnerability of those systems.

Part B: A potential role for intermediaries?

9. Intermediaries

The use of outsourcing and intermediaries is a common feature of the scholarly communications system. So is the use of sectoral and cross-sectoral bodies to develop, and in some cases to implement, common approaches and solutions to issues and problems that are shared by a wide range of players. In some cases different intermediaries and service providers compete; in others, a single body provides a common service. Thus a number of organisations compete to provide online submission systems for publishers, while a single organisation, CrossRef, has been established to provide cross-publisher citation linking. Similarly, a number of organisations compete to provide library management systems, while JISC Collections provides for the whole academic library sector in the UK a service in negotiating big deals with publishers. Decisions on whether or not to outsource, to use an intermediary, or to seek to develop a common solution require careful consideration in each case. It is therefore appropriate to consider the role that intermediaries might play in improving the efficiency of processes and information flows associated with APCs.

9.1 Some potential intermediaries

The specification for this study suggested five possible intermediaries, and we have interviewed all of them. It should be stressed that we do not see these five organisations as the only possible candidates for providing a useful set of intermediary services. Other bodies – existing or newly-created – might well emerge as possible service providers. But a search for other candidates was beyond the scope of this brief study. Potential intermediaries fall into distinctive groups

> ❒ *Subscription agents*. EBSCO and SWETS were two of the specified organisations, and we had long discussions with both of them. Both are well-established intermediaries, offering a range of services including subscriptions to thousands of journals, packages, research databases, and books to libraries across the world. They provide management, administrative, analytical and decision-support, sales and marketing, and discovery services to help both publishers and librarians. They both aim to integrate workflows and services for publishers and libraries, and also for end-users. EBSCO also acts as a secondary publisher, publishing a number of full text and secondary research databases.

> ❒ *Reproduction Rights Organisations*. Such organisations are involved in the collective management or rights on behalf of rights-holders. We interviewed the Copyright Clearance Center (CCC), a not-for-profit company based in the US which provides collective copyright licensing services for corporate and academic users of copyrighted materials. It procures agreements with rights-holders and acts as agent for them so that users can pay one annual fee for the use of all the materials of those rights-holders. It represents thousands of publishers across the world, and it has a well-established system (RightsLink) for handling payments and other transactions. It announced in October the launch of it Open Access Solutions service for the

management of APCs and other charges[28]. Related organisations operate in many other countries[29]. Relevant bodies in the UK include the Copyright Licensing Agency[30] and the Publishers Licensing Society[31].

❑ *Collective Procurement Organisations*. Procurement consortia exist in many countries. We interviewed JISC Collections, which is a membership organisation, established by the UK Higher and Further Education funding councils, to support the procurement of digital content for education and research in the UK. It also provides analytical services and tools, and a consolidated payment service to publishers on behalf of participating institutions.

❑ *Start-ups.* As the scholarly communications system has developed rapidly over the past decade, a number of new organisations have been set up to provide new kinds of services. We interviewed Open Access Key (OAK), a start-up company that has developed a web-based platform to manage, consolidate and process APCs, and to connect individual authors, universities, researcher funders and publishers. A pilot implementation of its service in the UK is being initiated during the course of this study; and JISC Collections has recently announced that it has negotiated for its member institutions a small discount off the subscription fee for the service, along with some modifications to OAK's standard terms and conditions of service.

9.2 Organisational criteria

There is a broad consensus on the kinds of attributes that intermediaries would have to display before either funders or universities or publishers were prepared to make use of them for the payment of APCs and related services. These include:

❑ *Trustworthiness.* This is of course an essential criterion, but different intermediaries will have different ways of demonstrating it. And different publishers, universities and funders will also have different procedures and attitudes (for example, with regard to ownership) when it comes to the practical question of whether they are prepared to place their trust in an intermediary organisation which will have a crucial impact on their business processes, and will handle significant sums of money on their behalf.

❑ *Experience.* A key element in establishing a reputation for trustworthiness, and in securing trust, is of course the ability to demonstrate a track record in dealing with related or similar processes and procedures, including the handling and transmission of significant sums of money.

❑ *Knowledge and understanding.* Any intermediary would have to be able to demonstrate clear and detailed knowledge and understanding of the higher education, research and scholarly publishing environments; and of the different policies and practices of a wide range of different players in those environments.

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[28] http://www.copyright.com/content/cc3/en/toolbar/aboutUs/newsRoom/pressReleases/press_2012/press-release-12-10-11.html

[29] See the membership of the International Federation of Reproduction Rights Organizations (IFRRO) and its list of members at http://www.ifrro.org/rro .

[30] http://www.cla.co.uk/

[31] http://www.pls.org.uk/about/default.aspx

❏ *Efficient, effective and reliable systems and services.* Universities, publishers and funders would be prepared to deal with intermediaries only if they were reasonably convinced that the systems and services they provided would meet their key requirements, and reduce or eliminate costs that they would otherwise incur. They would also need assurance that systems were reliable in providing a 24/7 service.

❏ *Established relationships.* A key criterion for publishers, universities and funders in determining whether to place (or withhold) trust in an intermediary will be whether or not they have already established effective relationships with them. Hence it would be an advantage if intermediaries were able to build their services on the basis of established relationships with a wide range of publishers and universities. Unless a single intermediary were to be appointed whose services all UK universities and publishers of UK-authored articles would be required to use, a significant part of the work of intermediaries will relate to the management of 'opt-ins' to their services from both universities and publishers.

9.3. Service attributes

In addition to those attributes as an organisation, any would have to be able to demonstrate that its services would be

❏ *Scalable and robust.* That is, systems and workflows must be able to deal with a rapidly-growing and potentially high proportion of the 120,000 articles published by UK authors each year, and potentially of the two million articles published globally. Any service specification should include standard requirements as to allowable downtime.

❏ *Cost-effective.* That is, the intermediary service must be able to demonstrate that it will - after taking account of the fees charged by the intermediary - reduce transaction costs for publishers, libraries and funders by reducing time and staff costs and/or by reducing or eliminating the need to invest in in-house systems.

❏ *User-friendly,* with simple user interfaces (especially for authors), clear guidance for users, and help-desk facilities.

❏ *Flexible.* That is, the service must be able to cope easily with a wide range of varying systems and requirements from different funders, research institutions and publishers, including
  o *The point at which they intervene,* which may vary as between the point when an article is submitted for publication, or when it is accepted for publication, or some other point.
  o *Import and export,* so that the service can readily import relevant data from publishers, funders and research institutions' systems, and to export relevant data in the other direction, so that any re-keying is reduced to a minimum.

❏ *Accessible.* It is assumed that bibliographic metadata for open access articles will be freely accessible to any individual or organisation. Beyond that, the service must provide managed authorised access to the system and the data and information it contains.

❏ *Secure.* That is, it must provide guarantees against unauthorised access.

❐ *Query-able.* That is, it must provide facilities to enable authorised users easily to specify and produce regular as well as bespoke reports queried by institution, funder, author, publisher, time-period and so on.

9.4 Potential services: core

The aim of introducing intermediaries into the processes involved in the payment of APCs would be to address the key needs and requirements set out earlier in this document, in terms both of processes and of effective flows of information. The kinds of services that intermediaries could provide might be developed from a central core, around which further important value-added services could be built and implemented as needed.

The core of the services would relate to payment transactions themselves, where intermediaries would provide a clearing-house-type service, collecting APC payments from authors, universities and/or funders and distributing them accurately, efficiently and transparently to publishers. Such a service would have to be flexible in operation, providing a range of options and functions including, but not limited to

❐ *Online payment by credit card or by invoice,* with the full functionality of an e-commerce system, including facilities to make payments in foreign currencies
❐ *Split payments,* as between different institutions and funders, with flexible limits on the number of splits
❐ *Discounts and fee waivers,* for different categories of author and/or institutions
❐ *Membership schemes, pre-payment and credit accounts,* which may involve agreements between research institutions and publishers on the one hand, or the intermediary on the other (where again there must be flexibility as to the kinds of accounts that can be provided). Intermediaries must be able to manage such accounts on behalf of universities, and allow controlled access to them according to rules set by the university.
❐ *Charges that may be levied by publishers in addition to APCs,* such as page and colour charges etc., which must be separately identified and accounted for
❐ *Progress chasing and reporting,* at mutually-agreed points (which may vary as between different universities and publishers) relating to whether payments have been made on the one hand, and articles published on the other.

9.5 Potential services: value-added

The kinds of value-added services that might be provided on top or those relating more strictly to the payment process are outlined below. It is assumed that, at least initially, such services would be subject to an additional fee.

❐ *Analytical services.* Intermediaries would gather in the course of their work a good deal of valuable information about the activities, inputs and outputs of authors, publishers, research institutions and funders. And they could exploit that data to develop powerful analytical services which would in turn provide valuable information to various customers. Care would have to be taken in the specification of

such services, however, in respect to confidentiality and the granularity of the data and information provided to third parties.

❒ *Negotiations*. Analytical information of the kind outlined above could be particularly valuable in the context of periodic negotiations between funders, publishers and research institutions on licence deals and the amounts to be paid both for subscriptions and for APCs. As well as providing relevant information to the parties involved, intermediaries might play a role in the negotiation process itself.

❒ *Metadata*. Intermediaries might
  o play a time-limited role in helping to standardise metadata formats, including tags to signify open access and precise licence terms.
  o on a more regular basis
    ▪ check that metadata meets agreed standards
    ▪ aggregate relevant metadata from publishers and provide it to individual universities
    ▪ harvest metadata for presentation on a variety of platforms and services.

❒ *Repositories.* Intermediaries might aggregate full texts from a range of publishers and deposit them in designated repositories.

❒ *User awareness*. Intermediaries could perform a valuable service in simplifying systems and providing user-friendly services; but it is unlikely that they could play a major role in raising researchers' awareness and understanding of open access publishing and its requirements. That responsibility rests primarily with funders, institutions and publishers, and it is difficult to see how it could be effectively outsourced.

10. Perspectives of advantages and disadvantages

While there is a clear consensus on the need to develop and implement better systems and workflows, that consensus does not extend to a clear vision as to how intermediaries might most effectively help to achieve that end, or as to the advantages and disadvantages.

10.1 Universities

Many UK universities are currently considering the implications of the policies announced by RCUK and how they will handle a greatly-increased volume of APC and related transactions. Alongside an acknowledged strategic need to develop new policies and procedures in relation to open access publishing, their overriding operational concern is that current systems for the payment of APCs - where they exist - are ad hoc and expensive and will be unable to cope with the increases in volume they foresee. Hence they see considerable advantages in the use of intermediaries which could

❒ reduce administrative burdens by handling transactions in bulk and reducing the number of interfaces with publishers;
❒ reduce or eliminate the need to invest in the development of new in-house systems;
❒ undertake progress chasing; and
❒ provide better current status and management information, and reports for funders.

Universities express little concern about the kinds of organisation that could provide such services:

- ❑ commercial, 'quasi-commercial' or not-for-profit;
- ❑ whether a single body or more than one (but not too many); or
- ❑ what kind of agreement they would have with the intermediary/ies (see Section 10 below).

A key assumption we found among many universities is that the fees charged for the service would be minimal (and that by implication the cost of the service would be met by publishers, who would, of course, pass them back to universities in the cost of subscriptions and APCs).

10.2 Funders

As noted earlier in this report, funders have largely passed on to universities the responsibility for making payments to publishers. This limits the scope of their potential direct interaction with intermediaries; but they do have an interest in minimising transaction costs for universities, and also in ensuring that any intermediary services work effectively to that end, and in line with their requirements for accountability, compliance and so on. They might also see benefit in themselves' gaining direct access to at least some of the data and information held by intermediaries, and in management information reports. Like universities, however, they have no a priori views about the kinds of bodies that might provide intermediary services.

10.3 Publishers

The publishers we have spoken to also acknowledge the need for streamlined and more standardised systems, and some lay stress on the importance of initiatives such as ORCID and FundRef in helping to achieve that. Two of the publishers we spoke to - one fully open access, the other with a mixed portfolio - have developed their own integrated systems and processes, and decided not to adopt outsourced solutions. But as one of our interviewees put it, 'publishers have been quite good at developing and implementing industry-wide standards, and we need an industry-standard process here'. Some take the view that intermediaries could be helpful in developing the standards, processes and perhaps software. Beyond that, however, the publishers we have spoken to express some caution about the potential for using intermediaries, for four main reasons.

- ❑ First, they express concern about the risk of loss of immediate contact and relationships with their authors
- ❑ Second, they are concerned about the risk of loss of direct control over their revenues and cash-flow
- ❑ Third, they are concerned about the potential for conflicts of interest, especially in relation to the handling of commercially-sensitive information
- ❑ Fourth, not all are convinced that the use of intermediaries, and the fees they would charge, would reduce costs as compared with in-house systems.

Some publishers express especial concern about the risks involved in any proposal to designate a *single* intermediary, although some - notably among the smaller publishers[32] - suggested that a special 'jointly-owned' body might be an acceptable option.

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[32] A widely-expressed view is that smaller publishers will follow where the larger publishers lead.

Part C. Conclusions: recommendations and options for the future

11. Introduction

The evidence we have gathered indicates that the problems that this study was set up to address are real: with a very few exceptions, the systems and processes currently associated with the payment of APCs are sub-optimal, and could present a significant barrier to the wider adoption of open access publishing. Our study also indicates, however, that there is no consensus on the potential value of the use of intermediaries as a means of addressing these problems, or whether it would indeed be beneficial to introduce intermediary services, or how intermediary services might most effectively be set up. Put another way, there is some scepticism, especially but not solely among publishers, as to whether the introduction of intermediaries would bring greater efficiency, and whether the benefits would outweigh the disadvantages or the risks. Such concerns are exacerbated by lack of clarity as to how intermediary services might be organised, structured and managed.

Nevertheless, there is a strong consensus that in the broader strategic context to which we have referred – where in the UK in particular funders, universities and publishers are all seeking to address a wide range of issues relating to an increase in open access publishing – all parties need to work together to ensure that progress towards that end is as smooth as possible. As we have already noted, it is likely that in seeking to accelerate the transition to open access publishing, there will be a complex interplay between operational and strategic developments; and the actions of any one party are likely to have significant consequences and implications for others. In this context, **dialogue between representatives of all the key players will be essential in order to reduce friction and to avoid unintended consequences.**

12. Standards

A key area for dialogue relates to standards. Our study has revealed an almost universal consensus that work is required to develop and implement standards to facilitate more effective flows between authors, publishers, universities and funders of information relating to the payment of APCs. Consistency in metadata is essential if it is to flow easily and effectively between different systems within and across organisations. Much work has already been done in this area by a variety of bodies, but there is clearly still more to do. Standards will only be effective, of course, if they are developed and implemented on an international basis, not just for the UK.

We are more cautious about the suggestion that there should be an attempt to develop standardised workflows. The variations in workflows for different publishers and universities reflect in many cases real differences in the contexts in which they operate, and thus in their requirements. The evidence we have gathered, however, does suggest that some workflows are over-complex, and that there is scope for simplification. Again, there is work to be done to reduce the friction between publishers', funders' and universities' systems and processes; and to simplify interfaces.

One or more intermediaries might facilitate the development of the necessary standards. But equally, a number of existing bodies which are already active in these areas could lead or facilitate such work, including EDItEUR[33], which includes among its members the major journal publishers, subscription agents, CCC, JISC Collections, and relevant representative bodies; CrossRef[34], the membership association founded and directed by publishers, which enables persistent cross-publisher citation linking in academic journals; the National Information Standards Organisation (NISO)[35], which is based in the US, but which frequently works on an international basis; EuroCris[36], the body which is responsible for the Common European Research Information Format (CERIF); and the Consortia (sic)Advancing Standards in Research Administration Information (CASRAI)[37], which is based in Canada, but which has a number of international partners including EuroCris and JISC.

As a first step, representatives of the key players in the UK - publishers, universities, JISC, RCUK and the Wellcome Trust - should meet together to identify the key areas where standardisation is needed, and to determine a process for the development of the necessary standards.

13. Options for the use of intermediaries
13.1 Options

As we have noted, while there is agreement on the need for standards, as well as on the kinds of criteria that intermediaries would need to demonstrate or fulfil if they were to provide any kind of effective service, there is no consensus across all stakeholder groups on a possible role for intermediaries. In this context, it is appropriate to set out options for how intermediaries might provide the kinds of services set out in Section 9.3-9.5.

A first option would be to leave the development and implementation of such services to the market. All five of the intermediaries we have consulted are actively engaged in discussions with publishers and universities in the UK about the kinds of services they might offer, though some are more advanced than others. One approach would be to let those discussions mature, and then to leave it to universities and publishers to decide whether or not to make use of whatever services the intermediaries - or other entrants to the market - are able to offer. Such an approach has a number of attractions in a context where there are uncertainties as to the benefits that intermediary services would provide; and where both universities and publishers - and hence intermediaries - must take account of global developments. A possible disadvantage of such an approach is that it risks losing the potential efficiencies that could derive from a single clearing-house-type service, at least for the UK.

A second set of options would build on the first, by bringing representatives of universities, funders and publishers together to help them consider how best they might improve the efficiency of their own systems; to facilitate, monitor and evaluate market developments among intermediaries; and possibly to stimulate such developments by establishing pilots.

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[33] http://www.editeur.org/2/About/#Who%20we%20are
[34] http://www.crossref.org/
[35] http://www.niso.org/about/
[36] http://www.eurocris.org/Index.php?page=homepage&t=1
[37] http://casrai.org/about

A third series of options would amount to the adoption of a more proactive and managed approach for the UK, seeking to maximise the benefits of intermediary services and to address some of the reservations noted in this report. Such an approach would require agreement between universities, funders and publishers on the precise nature and scope of the services to be provided, and on a complex series of issues including

a. *A single provider or multiple providers.*
   i. A single monopoly provider would bring the benefit of a single set of interfaces for universities and publishers. It would probably not be feasible, however, to secure agreement from all relevant publishers (in the UK and overseas) and UK universities on a single provider; a decision would have to be made by the key funders in the UK.
   ii. Multiple and competing providers might be appointed on the basis of a commitment to meet the terms of a common framework agreement on the nature and scope of the services to be provided.
   iii. Intermediaries might be appointed to operate in partnership with each other, with separate bodies providing, for example, administrative, money-handling, and analytical services. A partnership could operate either as a single monopoly provider, or as one of a competing set of providers. In either case, a governance structure would have to be created to oversee the partnership and its delivery of services.

b. *A new body or an existing one*

   If it were decided to work with a single provider, further decisions would need to be taken as to the nature of that provider.

   i. Funders, universities and publishers could establish a new body to provide a service, with a governance structure to ensure that it operated in the interests of all relevant parties. They could work either separately or jointly in establishing such a body (which would have implications for the governance structure).
   ii. Funders, universities and publishers – again either jointly or severally – could appoint an existing body (or bodies operating in partnership) to provide the required services.

c. *Service or commercial role*
   i. Intermediaries could operate in a service role, in which they would provide a specified set of services to prescribed standards and for an agreed set of fees.
   ii. They might also operate in a commercial role in which, while they would provide a prescribed set of services, they would also provide dealing and brokerage services between universities and publishers.

d. *Funding*
   i. Intermediaries could be funded in a number of ways: by membership fees (which might be graduated by the nature and/or by some measure of the size of the organisation and its transactions); by fees per transaction (which again might be graduated by volume); or by fees or levies agreed across a

consortium. The allocation of the direct burden of costs as between publishers and universities would require careful consideration.

e. *For profit or not-for-profit*

    i. Some publishers have expressed reservations about an APC intermediary service provided by a commercial body operating for profit, and a preference for a non-profit organisation (which could be newly-created or an existing body)

f. *Exclusive or opt-in*

    i. Intermediaries could be established or appointed – again either jointly or severally by funders, universities and/or publishers – as the exclusive providers of intermediary services which all publishers or universities would use (but note that some scholarly communications services that operate in that way – eg CrossRef – have come to do so by a voluntary collaborative effort on behalf of the sector or the industry as a whole, operating as effective enablers on a non-competitive basis)

    ii. Intermediaries could alternatively be established or appointed on an opt-in basis. Universities, funders or publishers could decide to run their own in-house services, rather than adopting the intermediary service

g. *Contracts and service level agreements*

    i. Depending on the nature of the body/ies to be appointed, relationships with funders, universities and publishers, and the services to be provided, could be governed by a contract, which may include service level agreements (SLAs) applicable to the different parties

    ii. If a new body is established - owned or governed jointly or severally by universities, publishers and funders - contracts might not be appropriate, but SLAs would be.

h. *UK and international*

    i. Since the UK has a significant presence in scholarly publishing, and is among the leaders in seeking to promote open access publishing, it may be appropriate that it should take a leading role in seeking to implement a managed system of intermediary services. It will be important, however, that in developing models for those services in the UK, it should be borne in mind that they should be transferrable to other countries.

These issues are presented in a logical order, but the decisions required are in many cases not binary; and hence the relationships between decisions on each of the issues are complex. Hence we have not attempted to develop a decision tree, which might serve only to confuse rather than to simplify decision-making.

13.2 Conclusions

The evidence we have gathered demonstrates that there is indeed widespread concern that the systems and processes for the payment of APCs - and all that is involved in tracking and checking the progress of open access articles – are less than satisfactory; that many of the problems arise from difficulties in ensuring efficient flows of data and information both within and between publishers, universities and funders; and that these problems will become

more serious as the volume of open access publications increases. While widespread, however, the concern is not universal; and there is no clear consensus as to the best way to tackle the problem, or the role that intermediaries might most effectively play and how.

In the light of our findings and our analysis of the options, we believe that it is important that representatives of the key parties in the UK – funders, universities and publishers – should engage in further detailed discussions as to next steps, and in particular to determine

1. a process for developing and implementing standards to facilitate more efficient flows of information between organisations, and simpler workflows;
2. whether to leave to the market the development, implementation and adoption of intermediary services;
3. whether, and if so how, to facilitate and stimulate such market developments; and/or
4. whether to adopt a managed approach, and if so, to decide on the key issues outlined in Section 12.1 relating to the kinds of intermediaries; how they might be funded; the kinds of services that they might offer and on what terms; how they might be governed; and the transferability of services and relationships from a UK to an international context.

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Annex A

Organisations consulted during the course of this study

Funders

RCUK
Wellcome Trust

Universities

Birmingham
Cambridge
Edinburgh
Imperial
Kent
Leicester
Manchester
Nottingham

Publishers

Association of Learned and Professional Society Publishers
BioMedCentral
BMJ
Elsevier
NPG
OUP
PLoS
SAGE
Taylor and Francis
Wiley-Blackwell

Intermediaries
CCC
EBSCO
JISC Collections
Open Access Key
SWETS

Members of the Steering Group
David Carr, Wellcome Trust
Ian Carter, Association of Research Managers and Administrators
Neil Jacobs, JISC
Robert Kiley, Wellcome Trust
Graham Taylor, Publishers Association
Mark Thorley, Research Councils UK