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Elsevier Research Intelligence

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Introduction

Research assessments are an increasingly prominent feature of academic life. As universities become more deeply engaged in local and global economic systems, assessments play a key role in the allocation of funding, benchmarking, and the strategic management of the scholarly enterprise. At the national level, such exercises form an important connection between the research sector and government and, by extension, society as a whole. In a sometimes challenging association, centralized coordination and public accountability go hand-in-hand.

This paper looks at the role played by Elsevier as data provider and partner in a number of rankings, customized reports and national assessment exercises. As a central case study, we examine Elsevier’s contribution to- and multi-level support for the United Kingdom’s (UK’s) 2014 Research Excellence Framework (REF). With input from more than 56,000 research staff from 155 institutions across the UK, submitting more than 191,000 research outputs, the 2014 REF is one of the most ambitious national research assessments to date.

Selected by the UK’s Higher Education funding bodies to provide data and analysis for the REF, Elsevier deployed a combination of products, services and bespoke functionality. This paper examines Elsevier’s role in supporting the REF submission and assessment process, but also draws on the testimony of some of the information specialists, administrators and researchers who occupied the “trenches” of the assessment and whose efforts helped make the exercise happen.
The rise of research assessments

In many research-intensive nations, assessment and ranking exercises have become such an established feature of the academic landscape that it is difficult to imagine life without them. Their impact on the status and funding of institutions, departments and individual careers is often profound. While some stakeholders enter assessments with more confidence than others, the one overriding certainty is that everyone’s workload is about to increase substantially.

Despite the familiarity – and topicality – of research evaluations, they have an unexpectedly long history. In fact, more focused classifications have been with us since at least 1870, when the Commission of the US Bureau of Education began publishing an annual report of statistical data. By 1982, when the US National Academy of Science commissioned an assessment of research and doctoral programs, the process was operating on a national scale. Four years later, in 1986, the UK instituted its first systematic evaluation of national university research. Like many of its successors, this assessment was driven by the need to effectively distribute limited funding budgets. The exercise was widely credited with improving the UK research system and has been repeated at regular intervals ever since.

Hoping to achieve similar results, countries like Portugal, Italy and Australia have subsequently launched their own research evaluations. These programs have continued to develop as the strategic benefits of national assessment data – indicating research strengths and weaknesses, calibrating the social and economic contributions of specific research sectors – have become more apparent. In many cases, these “real world” impacts have given research assessments a markedly democratic slant, highlighting the need to provide taxpayers with transparency on research funding outcomes. In recent years, the debate around Open Access models and the public ‘ownership’ of government-funded research has served to reaffirm this idea. However, whether the ultimate goals are financial, strategic or ethical, these programs are essentially an attempt to improve the return on investment in research.

1 Source: ELIA Report on Rankings 2011
The university in the marketplace

Today, higher education institutions operate in a global marketplace whose parameters are defined by a series of increasingly robust metrics. Research assessment criteria are only part — albeit a vital one — of a picture that also includes the various international university rankings, as well as ongoing evaluation of areas like teaching, publication output, citation impact, funding success, collaboration, technology transfer and societal impact. Useful as these data may be, they are often challenging to obtain and interpret. Given the pervasiveness of their influence, large-scale research assessment exercises must deploy their analyses responsibly. This requires access to enormous quantities of data and the most sophisticated evaluation techniques available.

Over the last decade, Elsevier has emerged as the partner of choice in this fast-developing field. Scopus, the largest abstract and citation database of peer-reviewed research information, has been used to calculate the influential QS World University Rankings and has been adopted for US World News & World Report’s Best Arab Region Universities rankings. The database has also been chosen to provide data to the 2015 Times Higher Education (THE) World University Rankings and all subsequent rankings by that organization. At the same time, Elsevier has been commissioned by institutions, funders and policy-makers worldwide to collaborate in the resolution of key research challenges, leading to a series of major reports.

Major reports from Elsevier

- UK Department of Business, Innovation and Skills (BIS) on the comparative performance of the UK research base (2011, 2013)
- US research landscape for The Research Universities Futures Consortium (2012)
- Review of the Welsh research base for Higher Education Wales, the Higher Education Funding Council for Wales, and the Welsh Government (2013)
- Stem Cell Research: Trends and perspectives on the evolving international landscape (2013)
- World Bank report to deliver a landmark examination of the research enterprise of sub-Saharan Africa from 2003 to 2013 (2014)
- Brain Science: Mapping the Landscape of Brain and Neuroscience Research (2014)

Supporting global research assessments

Since 2009, Elsevier has also been involved in a number of national assessment exercises, providing data, citation benchmarking reports and other support. These include the Australian Research Council’s Excellence in Research for Australia (ERA) assessment (2010, 2012 and selected again for 2015), the Italian Abilitazione Scientifico Nazionale’s researcher assessment (2012, 2013) and Valutazione della Qualità della Ricerca (VQR) research quality evaluation (2012/13), as well as the Portuguese Fundação para a Ciência e a Tecnologia (FCT) assessment (2013/14). Elsevier was also selected to provide data, analysis and support for the UK’s REF 2014 assessment exercise. It is this exercise, in which Elsevier was involved from beginning to end, that forms the main focus of this report.
Case study – the REF 2014

The 2013 International Comparative Performance of the UK Research Base, undertaken by the UK Department of Business, Innovation and Skills (BIS) and Elsevier, ranked the UK ahead of the United States in terms of research quality, based on field-weighted citation impact. The shifting orientation of UK research in response to international developments (scientific, technological, economic) has been acknowledged as one reason for this success – an agility that is often attributed to the influence of the country’s succession of research evaluation programs, culminating in the Research Assessment Exercise (RAE) in 2008.

A revised system for assessing the quality of research in UK Higher Education Institutions (HEIs), the REF 2014 set out to continue this tradition. Undertaken by the four UK higher education funding bodies – the Higher Education Funding Council for England (HEFCE), the Scottish Funding Council (SFC), the Higher Education Funding Council for Wales (HEFCW) and the Department for Employment and Learning Northern Ireland (DELNI) – the program has been managed by a team based at HEFCE. Besides establishing reputational yardsticks and fostering accountability for public investment, the REF set out to provide assessment outcomes for funding bodies, the results of which will impact the allocation of their funding to institutions from 2015.

Vicky Jones, REF Deputy Manager at HEFCE, has characterized the REF as “a selective assessment exercise rather than an audit,” with institutions making their own submissions based on what they believe to be their best work, ensuring their focus is on excellence. These submissions, which could include any research type with any funding source, were grouped in 36 subject areas or Units of Assessment (UOAs), of which 11 were supported by Scopus data. Expert panels, made up of both practicing researchers and research users, were responsible for grading the submissions for each UOA. Each submission was assessed in terms of the following criteria:

- **Quality of research output**: Up to four research outputs per member of staff, published in 2008-2013 (65% weighting)
- **Impact of research beyond academia**: Impact case studies and details of the strategy for achieving impact (20% weighting)
- **Research environment**: Information and data about the research strategy, students, staffing, income, faculties and collaborations (15% weighting)

This was the first time an explicit assessment of the impact of research beyond academia featured in a UK evaluation exercise. Guided by policy objectives, the REF placed a particular emphasis on rewarding research departments in universities that engage with business, the public sector and civil society organizations.
Elsevier’s role in the REF

In 2011, HEFCE held a tender process to determine which supplier should provide citation data for the journal articles that would be submitted to the REF. According to Vicky Jones, “The two things that we were looking for were accuracy of the data and breadth of coverage.” There was keen competition, but Elsevier was ultimately judged to be, “The best deliverer in both of those respects... able to provide accurate data with broad coverage of the journals that were likely to be submitted to the REF.” Consequently, Elsevier won the tender and Scopus was named the principal bibliometric provider for the REF 2014.

In addition to citation data, Scopus was required to provide the core UOAs with contextual information (i.e. average citations and centile citation thresholds) within each field. To help speed up this process, the Elsevier team offered automated matching between submitted publications and their associated metadata and citations in the Scopus database. Moreover, universities were able to view matched outputs in Scopus by making use of the free Preview mode, made accessible to all UK higher education institutions via a link from the submission system. This provided additional metadata and information such as the author details, abstracts, references used and an up-to-date citation count.

Dedicated support for REF institutions

Besides the provision of data, Elsevier offered ongoing support to all institutions submitting data for the REF. While the vast majority of matches to Scopus were made automatically, and most of these outputs were found in Scopus, there were inevitably some exceptions. The “connective tissue” was provided by a significant back office operation that enabled institutions to raise matching queries, or concerns about the number of citations reported, or general questions pertaining to Scopus, such as coverage issues, directly with Elsevier. Throughout the Pilot and Submission phases of the REF, Elsevier provided a range of services including dedicated Scopus Helpdesk support and Scopus training sessions for HEFCE staff, sub-panel members and UK institutions.

Crucially, these arrangements were based on careful engagement with HEFCE. As Vicky Jones points out, “[Elsevier] took the time to understand what we were trying to achieve and what we needed.” Particularly challenging was the need to observe the strict submission deadline of 29 November 2013. Elsevier responded with a customized system that fast-tracked REF queries. This process had to be robust, particularly as the number of calls escalated with the approach of the final deadline (see Fig 1.), and a number of additional staff were hired specifically to maintain it.

According to Vicky Jones, “This was the first time that this volume of data was systematically collected for an exercise like this and because of the primary contact we had at Elsevier, it went very smoothly. Good lines of communication and a good relationship meant that any issues were quickly resolved. We were very pleased with the outcome.”

“[Elsevier] took the time to understand what we were trying to achieve and what we needed.”

Vicky Jones, REF Deputy Manager, Higher Education Funding Council for England (HEFCE)

The REF in numbers

- A total of 191,232 research outputs were submitted.
- Details of 56,089 research staff were submitted.
- From that number, 16,361 staff were submitted with individual circumstances. Of these, 10,099 were submitted as early career researchers (ECRs).
- Staff submitted an average of 3.41 outputs per individual.
- 6,975 impact case studies, relating to research beyond academia, were submitted.
- The REF results help to inform the allocation of research funding worth nearly £2 billion per year

2. Source: http://www.ref.ac.uk/subguide/
3. As a key measure for supporting equality and diversity, the REF made special provisions for staff who were unable to submit the required four outputs due to individual circumstances. These could relate to career status (e.g. it was assumed that early career researchers would be less able to publish the full quota of articles) or personal circumstances (e.g. illness, parental leave, etc.). This provision was widely used.
The Pure REF module – making the REF easier to manage

While Scopus and its extended support team worked closely with HEFCE to implement the REF submission process from the top down, several Elsevier products played an important role at the institutional level, enabling on-site “REF champions” and information professionals, as well as researchers themselves. Notable among these was Pure, a CRIS (Current Research Information System) that is designed to promote an evidence-based approach to institutional research and collaboration, as well as day-to-day business decisions. Pure joins together data from many separate systems, including internal proprietary data, consolidating it into a single system.

The Pure REF module was developed with the Pure UK user group (for which there was a specific REF 2014 working group) as a fully-functional submission preparation and management tool for all content types within the scope of the exercise. Drawing on the first-hand knowledge Elsevier had gained from its close working relationship with HEFCE and interacting with the Scopus data that was being used throughout the exercise, the REF module went live in 2011. The module was continually developed to meet user needs, including observance of the various HEFCE rules and protocols, and was successfully employed by a number of UK institutions to make their REF 2014 submissions. These included the Universities of Edinburgh, Bristol, York, St Andrews and Birmingham, as well as King’s College London and Queen’s University Belfast.

Institutions faced more submission management choices

In 2008 there were no commercial systems available to help with the complex task of RAE submissions, so a number of institutions built their own. As Mark Cox, Head of Research Information Systems at King’s College London, recalls, “We had a home-built research information system called Research Gateway. It did the job, but required a lot of manual intervention once the data had been extracted to pull it together into a format that you could actually import into the RAE submissions system.”

With the 2014 REF promising to be even more demanding than its predecessor, Cox and his colleagues began to look around for other possible solutions. “We considered all the available systems and asked if we couldn’t do it better with our own system,” he says. “Employing contractors was expensive and we didn’t have the internal funding to manage it. However much we tried to develop our own system, we didn’t have the quality of resources to create something as sophisticated as a commercial system.” Determined to acquire the right system, the King’s College team launched a procurement process which culminated in the selection of Pure. “The Pure system was considerably more sophisticated than its rivals,” says Mark, “it gave us a lot more reporting options and made the actual final submissions a great deal easier.”

Figure 1: Calls and queries handled by Elsevier during the REF. As the graph shows, support teams experienced a substantial increase in activity as the November submission deadline approached. Source: Elsevier internal report. Dec. 2013.
King’s College did not implement Pure until late 2012, but still found the product essential for the management of their REF submission. One of the advantages of Pure was the way information that was routinely entered into the system could be readily harnessed for the REF, so that the ramp up experienced by subscribers going into the exercise was often far less severe than that faced by other research institutions. “A lot of people had already put information into Pure because of the automatic publication feeds that we have,” says Mark. “A lot of their REF publications would have already been in the system. The starting point was there.”

Other types of data regularly uploaded to Pure were also easily re-purposed for the REF. Carmel Hughes, Professor of Primary Care Pharmacy and Director of Research of the Pharmaceutical Science and Practice Cluster at The School of Pharmacy, Queen’s University Belfast, comments on how “People use it to update their CVs, especially around promotion time. It’s done on an annual basis. You submit your CV using Pure, which ensures that the process is standardized.” Institutions where researchers managed their CVs within the system, or that used Pure to assess individuals for promotion, already had much of the information they required for the REF. According to Hughes’ colleague Dr Claire Dewhirst, Research Impact Manager, the same applied to funding data. “When people ask for reports and feedback on research grant projects, we are able to get that information from Pure. It only needs to be entered once, or fed in from other systems, and we can avoid a situation where academics have to regurgitate the same info on a number of different occasions.”

“A lot of their REF publications would have already been in the system. The starting point was there.”

Mark Cox, Head of Research Information Systems, King’s College London
Organizing for the REF

In many institutions, the effort to coordinate research information ahead of the REF was mirrored by the establishment of special organizational structures. At Queen’s University Belfast, Claire Dewhirst was part of a dedicated team of seven people whose strong coordination proved immensely valuable. “Claire’s team were fantastic.” remarks Carmel Hughes, a so-called ‘REF champion’ for her unit of assessment. “Because of the complexities of the REF and the implications for the university if you don’t get it right, this central support mechanism was essential.”

Using Pure to maintain a coherent, cross-UOA approach, Claire and her colleagues were able to limit the information seen by internal stakeholders, both for the sake of clarity and to safeguard confidential staff details. “We locked down the REF module quite tightly,” she says, “Partly because of the information held in REF about staff, particularly where there were exceptional circumstances which required data protection.” Similarly, REF champions like Carmel, with a responsibility for coordinating specific departmental submissions, saw only information that related to their core task of uploading outputs and impact case studies from their respective assessment areas into Pure. “We managed everything within the REF module,” Claire explains. “We didn’t really work within the HEFCE system at all.”

For all of the product’s sophistication, the experience at Queen’s University Belfast really underlines the simplicity of Pure. Charged with inputting data for her team, Carmel found herself to be unexpectedly comfortable. “It was a system that certainly worked well for me. I didn’t dread having to open it up and go into it, which is praise from me. I did find it useful. And believe me, I would tell you if I didn’t as I’m not a techy fan.”

“It was a system that certainly worked well for me.”

Carmel Hughes, Professor of Primary Care Pharmacy at the School of Pharmacy, Queen’s University Belfast
Checking and validation

Pure is a carefully designed and highly flexible system, but what made the REF module particularly successful was its painstaking integration of rules, data validation, and protocols. This dense regulatory framework is an essential consequence of any project on the scale of the REF, but clearly presented challenges to many stakeholders. As Claire explains, Pure helped to mitigate these: “Complicated HEFCE rules were all built into the REF module, which made it much easier to manage. The four main REF assessment panels and their sub panels’ all had different rules and regulations, so to be able to manage these though the REF module was very helpful.”

Indeed, the REF module proved extremely useful in handling all kinds of validation and checking-based tasks. Mark Cox recalls that “The checking that could be done in Pure was extremely valuable. Hugely valuable.” Similarly, Claire Dewhirst provides a vivid description of how Pure was used to validate Impact Case Studies at Queen’s. “It would warn you if anything was invalid and would not allow you to upload it. It told you how many case studies were required. Was the title correct? Were the contents added? It gave a very easy visual summary if you had correctly filled in the Impact Case Study sections.”

“Complicated HEFCE rules were all built into the REF module, which made it much easier to manage.”

Dr. Claire Dewhirst, Research Impact Manager, Queen’s University Belfast

4. For more on the structure of the REF Expert Panels, see: http://www.ref.ac.uk/panels
Tracking and monitoring progress

The detailed and highly customized organization of the Pure REF module also extended to its reporting capabilities, for all stakeholders. As Research Impact Manager, Claire Dewhirst was able to track the overall progress of the REF at Queen's University, drilling down to school, department and researcher levels. “Pure made it very easy for us to create reports on things like outputs, circumstances surrounding output reduction and any other information relating to staff. This could be pulled out of Pure and put on our Microsoft Sharepoint. It was then very easy for the schools to access this information and for us to manage different reports at different times and to see the progress as we moved towards the submissions deadline.”

What appears to have most impressed users about the reporting features of the REF module was the combined comprehensiveness and granularity. “Every member of staff is listed,” says Claire, “You can see what category they are in, their full time employees, how many outputs they are required to submit. Pure also captures the internal grading of each output, with links to the actual papers.” Similarly, from the Information Systems perspective, Mark Cox received positive feedback from his colleagues at King’s College, “The overview screens that had a listing of all the people in the UOA, showing the number of outputs they had proposed and the grade point average – everybody said they were brilliant.”

Under Mark’s leadership, King’s College was able to use Pure to undertake meticulous preparations for the REF. “In the lead-up to the REF, we held three dress rehearsals where academic leads and the Vice Principals who formed the REF coordination group were using Pure on the screen. They were interacting with it whilst they were discussing their progress.”

“Pure made it very easy for us to create reports...”

Dr Claire Dewhirst, Research Manager, Queen’s University, Belfast
Managing data overload

Looking back on the 2014 REF, what seems to strike most of those who participated in the submission process, whatever their role, is the sheer volume of data that was involved. This reflects the growing complexity of the REF which, compared to the 2008 RAE, featured the additional administrative burden of managing more robust equality and diversity concessions. “Speaking to people who didn’t have a system like Pure, they said that they really struggled with the volume of information needed for this REF,” says Claire. “The level of textual submissions was much higher this time around. Pure was a way of managing the huge volume of text that had to be submitted.”

Her conclusions are echoed by Mark Cox, who conducted his own review of how King’s College handled REF 2014. “I interviewed staff members in the university and they said that they didn’t know how they would have got by without Pure. In fact they didn’t know how any other university could get by without it.” Mark also had warm words for the Scopus data on which much of the evaluation was based. “We had very few issues with Scopus data,” he says, “I don’t remember there being any problems at all!”

How Pure helped

- **Content required for the REF, such as CVs or funding data, was already in Pure through normal use** – “A lot of their REF publications would have already been in the system. The starting point was there.” (Mark Cox)
- **Validations and checking-based tasks** – “The checking that could be done in Pure was extremely valuable (Mark Cox). “Complicated HEFCE rules were all built into the REF module, which made it much easier to manage.” (Claire Dewhirst)
- **Reporting** – [We held] “dress rehearsals to present their submissions to the Vice Principals, who formed a group called the REF-coordination group. Pure was being used to see how far along they had got. During the meetings they were using Pure on the screens, interacting with it.” (Mark Cox)
- **Tracking progress** – “Pure made it very easy for us to create reports on things like outputs, circumstances surrounding output reduction and any other information relating to staff. This could be pulled out of Pure and put on our Sharepoint. It was then very easy for the schools to access this information and for us to manage different reports at different times and to see the progress as we moved towards the submissions deadline.” (Claire Dewhirst)
- **Dedicated user “views”** – “We locked down the REF module quite tightly”, she says, “Partly because of the information held in REF about staff, particularly where there were exceptional circumstances for data protection.” (Claire Dewhirst)
- **Managing submissions** – “The level of textual submissions was much higher this time around. Pure was a way of managing a huge volume of text that had to be submitted.” (Claire Dewhirst)

“Speaking to people who didn’t have a system like Pure, they said that they really struggled with the volume of information needed for this REF.”

Dr. Claire Dewhirst, Research Impact Manager, Queen’s University, Belfast
SciVal and the REF

As assessments like the REF become more sophisticated and ambitious, the onus is on research institutions to match these changes by developing their own internal systems, organization and working practices. Aside from products like Pure, which provide cost-effective alternatives to in-house systems, universities have used a number of additional tools to assist them in their preparations. In the UK, several universities employed SciVal, designed to measure the quality and impact of research projects, to evaluate faculty members and their papers in readiness for the REF. To help academics and administrators make informed decisions about which papers should be put forward for the REF submissions, SciVal introduced new functionality which made it possible to objectively assess a specific selection of a researcher’s work, as well as their complete publication output.

Bottom-up metrics

Consistently applied institutional metrics were hugely important to the success of the REF. Both SciVal and Pure incorporate Snowball Metrics, a series of methodologies designed to support institutional strategic decision making. Developed by a project team comprised of eight prestigious UK institutions and Elsevier, Snowball Metrics is a “bottom-up”, or sector-led, initiative in which universities themselves have agreed on a single method to calculate metrics about their own performance, so that they can compare themselves against each other in an apples-to-apples way.

In June 2014, the Snowball Metrics team formally responded to a call for evidence from HEFCE, which has launched an independent review of the role of metrics in research assessment. The submission makes the case for the adoption and development of the Snowball Metrics as a “gold standard” for institutional benchmarking within the UK and beyond.

Learning from the results

What happens when the results of the REF finally become available? While it will soon be evident which institutions and departments have fared better or worse, much of the value of an exercise like this one lies at a deeper level. What trends can be observed and how can this information be factored into a university’s strategic planning? This is particularly true of a data-rich assessment like the REF, although, as ever, the sheer quantity of the information available imposes a challenge. To help institutions gain a deeper understanding of the overall results of the assessment, Elsevier has developed the REF2014 Results Analysis tool. The tool provides comprehensive analysis of the overall results and sub-profiles, Institutional and Unit of Assessment (UOA) level rankings and regional and comparator group analysis.

The REF2014 Results Analysis tool offers a tailored solution for institutions looking to coordinate their internal and external response to the REF results, although other research management products can also be used to draw policy conclusions from the data. For example, several UK institutions are currently planning to use SciVal to help determine resource allocations based on the outputs of the REF. While the very idea of ‘results’ sometimes conveys a kind of misleading finality, it is important to stress that REF remains a dynamic planning exercise for all its participants. It is as much about where research is going as where it is now.

Elsevier is looking ahead too and as soon as more details are known about the next iteration of the REF, will begin developing a new REF module in Pure to help manage the submission preparation and management process. Building on the experiences described in this paper, the company is also refining a Pure module that has been specifically designed to support the Excellence in Research for Australia (ERA) assessment, while similarly targeted tools will be developed for Denmark’s Bibliometric Research Indicator (BFI) and the Netherlands’ Standard Evaluation Protocol (SEP).
Towards an holistic research management – beyond the 2014 REF

The REF has become such a central part of UK academic life – the practical demands so great and the potential gains or losses so significant – that many of the institutions we spoke to when writing this paper told us they are already preparing for the next one. There is a widespread movement to adopt REF-friendly working practices now to avoid pain later, while many of our contacts are already planning for possible changes in the scope of the assessment. “We realize that the key area is going to be open access,” says Claire Dewhirst. “We are trying to get into the habit now of using Pure to manage our outputs for Green Open Access.”

While there is some evidence that an “assessment culture” is becoming rooted in UK universities, the international spread of systematic research evaluation remains unabated. Vicky Jones of HEFCE told us that there had been discussions with representatives of the Swedish government following the completion of the REF, while there is an ongoing dialog around the feasibility of an international REF, extending the UK system to incorporate submissions from universities in other countries. Meantime, several large-scale exercises, notably Denmark’s BFI, the Netherland’s SEP and Australia’s ERA – all supported by Elsevier – are about to move into the submission phase.

As policy objectives become more ambitious and international competition more intense, there are signs that other assessments will follow the example of the REF and become more data-oriented and analytically driven. Ongoing efforts to make these programs more efficient, reliable and fair may serve to accentuate this trend as new procedures and additional metrics are incorporated.

Clearly an appropriate balance must be struck between the complexity of the analysis undertaken and what can feasibly be handled at the institutional level. An appropriate use of advanced metrics can help to ease the burden and some universities are already looking to see whether these can complement peer review, reporting progress against institutional and departmental objectives, as well as benchmark institutions, as part of regular internal reviews. However, a more comprehensive solution may depend on the implementation of REF-compatible systems to manage the research process. “For us, a CRIS had to support the REF as a main priority,” says Mark Cox of King’s College London which, like many universities participating in the REF, successfully used Pure to coordinate its submissions. However, as Mark suggests, this is not a matter of set piece crisis management – dusting off the big machine every once in a while to crank out the submissions – but an ongoing modernization of working practices.

For many, this represents a major cultural change, but it is one that promises to deliver benefits far beyond the amelioration of the regular “exam stress” of the assessment. Indeed, there may be a real opportunity here – a chance to link together all the disparate stakeholders in the research enterprise in an institutional framework which helps to meet their discrete needs, yet permits a judicious and genuinely holistic approach to research management.
Contributors

We would like to thank the following professionals for sharing their experiences of the REF and their invaluable assistance in the preparation of this paper.

**Vicky Jones, REF Deputy Manager, Higher Education Funding Council for England (HEFCE)**

Vicky is Deputy Manager for the REF, with particular responsibility for delivery of the REF submission system. This includes the collection of citation data, and the process for collecting, storing and distributing research outputs submitted to the REF during the assessment phase. Prior to joining the REF team Vicky worked in HEFCE’s research policy team and was involved in research funding policy and research information issues. Before joining HEFCE Vicky spent six years at the Engineering and Physical Sciences Research Council, following a PhD in analytical chemistry.

**Dr Claire Dewhirst, Research Impact Manager, Queen’s University Belfast**

Claire joined the Research Policy team at Queen’s University Belfast in January 2013 having spent 20 years in Geography Education, firstly as a teacher and then as a Head of Geography in St Andrew’s High School, Fife. This was followed by 10 years as a Teacher Educator at the University of Stirling. In this role Claire was involved in a range of partnership activities with Local Authorities, as well as supporting the professional development of teachers. Whilst still keeping some academic work up through writing and as Associate Editor of The International Journal of Educational Research, Claire now mainly works in the area of impact and public engagement. Having been heavily involved in supporting the completion of impact case studies across the University for REF2014, Claire is now exploring, in collaboration with the end users of research and academics, how impact through research can be relevant, excellent and accessible.

**Mark Cox, Head of Research Information Systems, King’s College London**

Mark is head of the Research Information Systems team at King’s College London, and leads on the business development of systems and processes to provide accurate and up-to-date data to inform all staff involved with research management. He is also involved in a number of groups, both nationally and internationally, which look at the strategic development of research information and systems, and was heavily involved in the College submission to both RAE 2008 and REF 2014. Mark joined the College in 1998 and worked in IT on research systems for a number of years, before joining RMID in 2013.

**Carmel Hughes, Professor of Primary Care Pharmacy at the School of Pharmacy, Queen’s University Belfast**

Carmel Hughes is Professor of Primary Care Pharmacy at the School of Pharmacy, Queen’s University of Belfast. She was a Harkness Fellow in Health Care Policy in 1998, and a former National Primary Care Career Scientist. Her research interests lie in evidence-based medicine and the care of older people.
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