

Supporting researchers with a research information management platform

Suzanne Enright

Interim University Registrar and Secretary
University of Westminster
s.enright@westminster.ac.uk

Research at the University of Westminster is increasing: in volume, importance and impact.¹ Advancing our research programme is one of the main pillars for the university's strategic plan, Westminster 2020, with renewed priorities for increasing research income, research student numbers, creating more world-leading research and international research alliances.

While the university's focus is on a mixture of world-leading research, pioneering teaching and providing education for all regardless of background or financial status, historically the Information Services department has been engaged more on supporting taught courses than research. In response to the university's shifting strategic priorities, an earlier review of the Information Strategy determined the need to rethink how the department could improve support for research. This challenge was also taken up by the university's researchers, doctoral students and research support communities, the Graduate School and Registry and the Research Committee.

Approach

We engaged an independent consultant to interview our researchers in order to identify their requirements.² This revealed that it was not that our traditional library services supplying books and journals to researchers needed to change, as these were well established and well used. Rather, our data and information management expertise was needed.

Information and data management pain points for researchers were varied and spread throughout the research lifecycle. We identified four main areas where researchers required assistance:

- 1 Research administration and governance
 - inefficiencies in submitting funding bids and managing grant contracts
 - managing information about projects and outputs and making this available to the various bodies requesting information on research activity
- 2 Collaboration
 - finding collaborators in other disciplines
 - collaborating effectively with researchers in other institutions
 - ensuring the confidentiality of sensitive information
- 3 Marketing and profile raising
 - ensuring a researcher's web profile is up to date and findable by search engines
- 4 Research outputs management
 - managing large volumes of research data collected and produced during a project
 - storing and making appropriate datasets available after a project

We recognised that many of these problems were interdependent: web profiles help attract funding and collaborators; published data sets help build a web profile. Given the interrelated nature of these problems, and the need to reduce the barriers to researcher adoption, we opted to create a research information management platform rather than tackle each problem with a separate initiative. We named our platform a 'Virtual Research Environment' (VRE), upon which we could build a series of solutions that together form a streamlined, integrated system.



Supporting researchers with a research information management platform

The guiding principles of our approach are:

a) A single system

With a single system, we had one 'system of truth' for information on our research activity. This made it easier for users, easier to maintain, and improved the quality of the data.

b) Collaboration and responsiveness

As a new initiative, our approach throughout the project has been to work collaboratively with researchers, to understand requirements and to adapt our solution as we learnt more.³

c) User driven

The information should be editable and controlled by the relevant researcher (with appropriate checks by other staff where needed). This has the advantage that the data owner was more likely to be motivated to keep their research profiles up to date, and more likely to notice where data is incorrect.

d) Automating administration

We were keen to automate time-consuming administrative processes through the VRE, to ease the administrative burden on researchers and improve the likelihood of important administrative processes being completed on time.

e) Insight

The VRE, even at the conceptual stage, showed the potential to provide an unprecedented level of reporting insight into our research activity, capacity and capability. Our intention is to use the system to help the university better understand where research support would have greatest impact.

FUNCTIONALITY

Researcher directory

Our first priority was to create a rich and searchable directory of our researchers. Basic details for each researcher are fed from our human resources system with extra details added directly by researchers in the VRE. With a mix of automatic and researcher-controlled input, the profiles we are creating

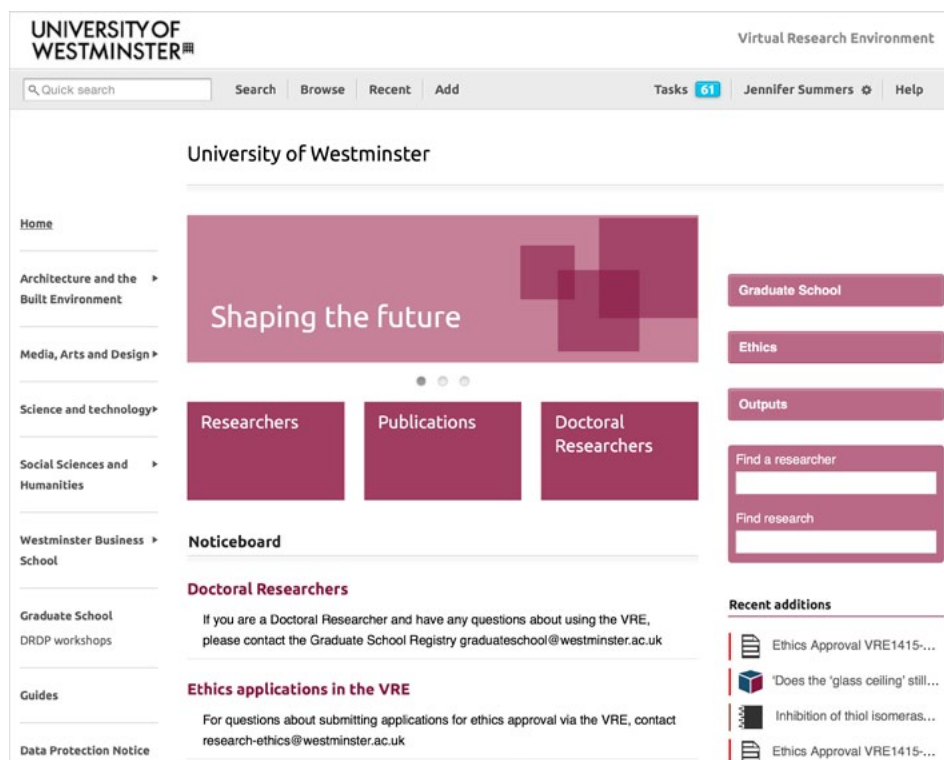


Fig. 1 VRE homepage

Supporting researchers with a research information management platform

are rich in detail, accurate and up to date. The VRE researcher directory will shortly become the source of our public website academic directory, removing duplication of information and effort in maintaining separate profiles in our website content management system.

The directory enables researchers to find potential collaborators in other disciplines, and doctoral research supervisors and examiners.

Graduate School

Our interviews with researchers revealed managing information about (student) doctoral researchers as a severe pain point. Existing information was spread across many systems: from our student record system (with limited access), to spreadsheets and notes kept within faculties and individual supervisory teams. Inevitably information became out of sync between these different sources.

The student record system, designed for managing cohorts of taught students, was limited in its ability to support doctoral research projects:

- Access was limited to a few administrators, but many different people support a doctoral research project and need access to project information.
- The system itself could not absorb all the information needed for an appropriate record of complex doctoral research projects.
- The student record system did not provide sufficient flexibility to handle the multiple changes inevitably required during a long-running project.
- The student record system could not support the individual nature of each doctoral research project.

The VRE provides a central, secure space to collate and share all relevant information about doctoral research projects in one place. With appropriate access rules applied, project details are restricted to the doctoral researcher, their supervisors, and faculty PhD coordinators; our Graduate School Registry is able to view all projects.

The screenshot shows the 'UNIVERSITY OF WESTMINSTER' VRE Graduate School dashboard. At the top, there is a navigation bar with 'Search', 'Browse', 'Recent', and 'Add' buttons, along with 'Tasks 21', 'Emily Russell', and 'Help'. The main heading is 'Doctoral Researchers' with a count of '371'. Below this is a table with columns: 'Doctoral Researcher', 'Faculty: Department', 'Director of Studies', 'Start', and 'Status'. The table lists several researchers, including Susanna Owen, Mila Banks, Emilia Burton, Hana Dervishi, Jasmine Mills, Henry Cooper, Jessica Hart, Jacob Payne, Darius Chambers, Uxue Michel, Mane Allen, Ronja Ismail, Gregory Faber, and Anna Torres.

Doctoral Researcher	Faculty: Department	Director of Studies	Start	Status
Susanna Owen	Humanities: Politics and Internatio...	Dr Christos Dunn	16 Sep 2013	Active
Mila Banks	Media: Journalism and Mass Com...	Dr Nikita Cooke	09 Jan 2012	Active
Emilia Burton	Science: Human and Health Scien...	Dr Frederick Cooper	19 Sep 2011	Active
Hana Dervishi	Business: Business Information M...	Prof Hassan Mackenzie	17 Sep 2012	Active
Jasmine Mills	Business: Leadership and Develo...	Dr Kira Reynolds	09 Jan 2012	Active
Henry Cooper	Media: Journalism and Mass Com...	Dr Nikita Cooke	19 Sep 2011	Active
Jessica Hart	Humanities: Politics and Internatio...	Dr Noel Garcia	19 Sep 2011	Active
Jacob Payne	Science: Psychology	June Byrne	05 Oct 2009	Active
Darius Chambers	Architecture: Architecture	Dr Leandro Price	19 Sep 2011	Active
Uxue Michel	Humanities: Law	Prof Emilia Nicholls	17 Sep 2012	Active
Mane Allen	Science: Human and Health Scien...	Dr Louise Burke	19 Sep 2011	Active
Ronja Ismail	Media: Journalism and Mass Com...	Prof Anthony Carter	05 Oct 2009	Submitted
Gregory Faber	Humanities: Law	Dr Marc Wilson	07 Jan 2013	Active
Anna Torres	Science: Human and Health Scien...	Dr Rebecca Karlsen	17 Sep 2012	Active

Fig. 2 Example of VRE Graduate School dashboard

Supporting researchers with a research information management platform

Doctoral researchers are required to pass a series of key stages during their doctorate, enabling the Graduate School to monitor successful progression. The paper-based processes were inefficient and opaque. We added workflow to support these processes through the VRE, dramatically cutting the time to complete each process and increasing visibility of the progress of each application.

By solving the problem of managing doctoral researchers, we helped engage researchers with the VRE and gained their support for the rest of the project.

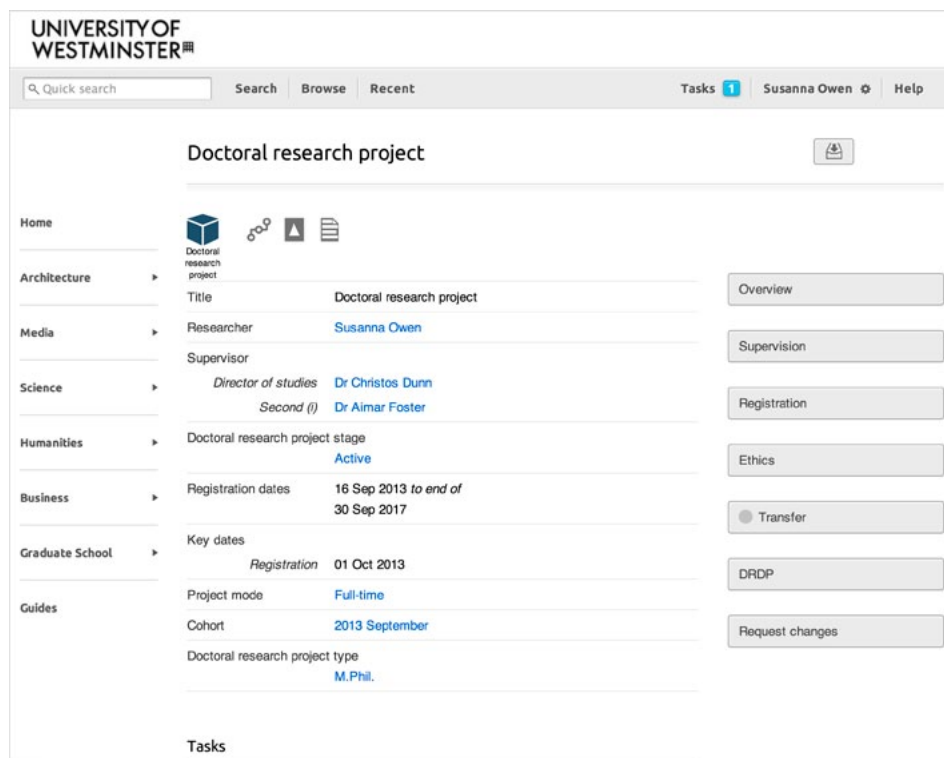


Fig. 3 Example of Doctoral research project

Research ethics

It is not only good practice to encourage researchers to consider the ethical implications of their research, but for an institution it is critical that we fulfil our duty of care to our researchers and their research subjects, and ensure that all research activity is covered by university insurance. Although we have a long-standing requirement for researchers to complete a research ethics form for all projects, until the implementation of the VRE it was complex to monitor compliance. With a simple-to-use online form, it is now easy for researchers to complete a form and feasible for faculties to monitor completion.

Where research ethics approval forms require additional consideration, forms can be forwarded to the appropriate research ethics committee through the VRE, which provides tools for committees to schedule applications, notify applicants, and support an online discussion where applications are being considered outside a regular committee meeting.

As the chair of one of our faculty ethics committees reports, 'The VRE has allowed the process [of applications for ethics approval] to be transparent, creating a significant reduction in staff and student frustration levels and importantly it has reduced the number of errors that occurred in our old procedures.'



Supporting researchers with a research information management platform

Research outputs repository

Like most UK higher education institutions, the university of Westminster has a well-established institutional repository (WestminsterResearch⁴) using ePrints software. We were keen to improve the completeness of our collection and increase the number of open access files in preparation for the next Research Excellence Framework exercise.

To achieve this we wanted to enable researchers to add and edit their own research output records, essentially to 'own' their records, as they are more likely to notice errors and omissions, and to quickly add the missing material.

The screenshot shows the University of Westminster Virtual Research Environment (VRE) interface. At the top, it displays the university logo and the text 'Virtual Research Environment'. Below this is a search bar and navigation links for 'Search', 'Browse', and 'Recent'. The user's name 'Viren Swami' and a 'Help' link are also visible. The main content area is titled 'Outputs: Dr Viren Swami' and features a 'Back' button. On the left, there is a vertical navigation menu with categories like 'Home', 'Architecture and the Built Environment', 'Media, Arts and Design', 'Science and technology', 'Social Sciences and Humanities', 'Westminster Business School', 'Graduate School', 'Guides', and 'Data Protection Notice'. The main area shows a dashboard with icons for 'Journal article (202)', 'Book chapter (23)', and 'Book (4)'. Below these are filters for years (2015-2007) and types (Peer-review, Research, Scholarly, Open access). Three research outputs are listed for 2015, each with a title, author list, and publication details.

Fig. 4 A researcher's outputs

It is our experience that ePrints does not provide sufficiently flexible access permissions to enable researchers to add and edit their own outputs directly. We therefore decided to use the VRE as a feed to ePrints. Researchers could add their outputs in the VRE, which by this time is well embedded in their working practices. The repository team are alerted to new submissions, check and amend the record before sending it to the institutional repository.

The VRE provides faculty research directors with an overview dashboard of the number of outputs being produced and, importantly, the provision of versions suitable for open access. In collaboration with the repository manager, this enables faculties to ensure ongoing compliance with open access policies.

Our intention is to extend the VRE management of outputs to include datasets, with workflow to support ingest services, including setting appropriate access and licensing.

Supporting researchers with a research information management platform

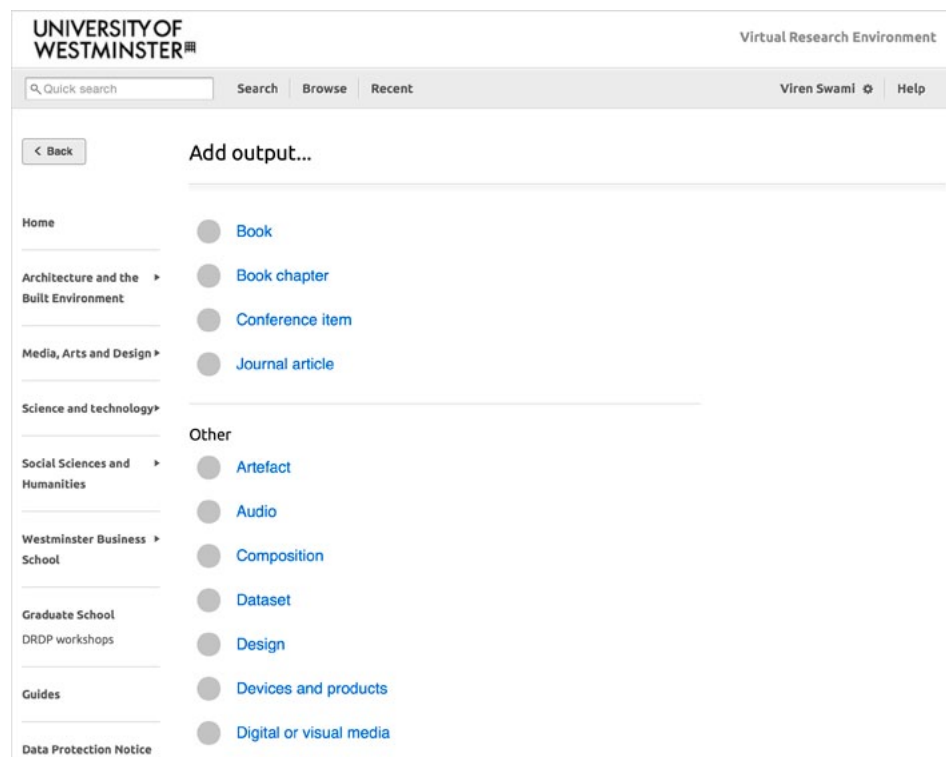


Fig. 5 Adding outputs

Future functionality

Our next round of development will focus on improving support for funding applications and contract management. This will include the completion of data management plans, and enable the VRE to support the management of data throughout the project, thus helping to ensure compliance with contractual requirements regarding the availability of data at the end of a project.

University of Westminster Press

In parallel, the creation of a University of Westminster Press (UWP) was approved in 2014, with the aim of being an open access publisher of high quality, peer-reviewed, academic publications. It will be primarily an online publishing operation and is being developed in conjunction with Ubiquity Press. The launch is due in 2015. Although the press will support initiatives in widening access to university research, it is primarily aimed at reputation-enhancing activities. UWP will support a wide range of disciplines from the natural sciences to the creative arts, and in formats including journals, conference papers, books and monographs and edited book series. We intend that UWP will make rigorously peer-reviewed research freely and widely available on an affordable and sustainable basis. There is of course the added benefit of being able to use UWP directly as a route to publishing for early career researchers or those just returning to research.

UWP is governed by an editorial board comprising university staff and alumni, the latter with publishing experience. The board is responsible for ensuring that the UWP profile maintains the highest standards, developing the business model and ensuring that submissions to the press follow ethical guidelines of both the university and Ubiquity.

We have recently appointed a Press Manager, who is key to the successful start-up of this new venture for the university and will be extensively involved in promoting the benefits of publishing with UWP. The Press Manager will work closely with the UWP Board as well as with researchers, academic staff and editorial boards of individual journals, monographs, conference proceedings,



Supporting researchers with a research information management platform

as well as liaising with prospective editors of journals and book authors in the development of open access titles for publication.

VRE Technology

Our ambitious plans for the VRE could only be realised with appropriate technology. We selected the Haplo⁵ open source platform as the foundation of the VRE. We were the first higher education institution to use Haplo, although it has been in use in other information-intensive sectors for several years.

Flexibility

The key to being able to represent such varied information in one system was flexibility. The Haplo platform uses a non-relational data model based on the semantic web, enabling it to provide the flexibility and ability to evolve that we required.

Workflow

As we wanted administrative workflow within the same system as our database of researchers and projects, we needed a platform to support both. The Haplo platform supports workflow around the information it manages, implemented as simple JavaScript plugins.

Integration

Although our intention is for the VRE to hold a comprehensive collection of information about our research activity, we will inevitably need some information to be fed into and out of the system. The Haplo platform is easy to connect to, with data accepted in many formats and with minimum effort required on our part. Data can be provided in its source format, with any data transformations undertaken by the Haplo team.

Hosting

Our policy is to use externally hosted solutions wherever they meet our requirements for secure data hosting:

- hosted in the EEA
- personal data encrypted in transit and at rest
- active / passive disaster recover with service restoration within two minutes
- backups at least daily.

Using a hosted service, we can deliver solutions faster to our researchers with no delay in setting up and purchasing hardware. It enables us to benefit from the supplier's expertise and knowledge of the system, and avoids our IT staff from having to learn and maintain a multitude of external systems.

We have a 99.5% service availability contractual guarantee with the platform providers, and have been satisfied with 100% uptime since launch 18 months ago.

Ease of operation

A key requirement for the university was that any solution must be easy for busy researchers to adopt. We have found that the simple user interface, together with functionality that has been highly tailored for our processes, has contributed to high engagement with minimal training. With a platform, researchers just have one new system with which to become familiar and any future functionality would just be added to the familiar interface.

Custom plugins

We chose to commission the Haplo team to build custom functionality for the VRE, thus benefiting from their business analysis expertise and experience in



Supporting researchers with a research information management platform

designing and developing functionality on top of the platform.

Change requests and new functionality are implemented quickly with minimal support required from in-house staff.

As an open source platform, it is possible for institutions to build their own functionality using JavaScript plugins.

Support

Our partners at Haplo provide third-line support. We have contractually guaranteed response and fix times for any issues. The Haplo platform includes a detailed system audit trail and active monitoring, enabling the Haplo team to provide quick diagnosis and resolution of any problems. On several occasions, they have alerted us to problems before we heard from our own users.

Supplier changes and export

We are not tied into a long-term contract with Haplo. Unusually, we are required to give just thirty days' notice of cancellation. Data can be exported easily should we wish to change platform supplier in future.

IMPACT

Data quality

The first noticeable impact of introducing the VRE was an improvement in the accuracy and completeness of our data on research activity. For example, with doctoral researcher records previously kept in our student record system and on a spreadsheet with limited access, inaccuracies may not have been noticed. Once our records were visible to supervisors and doctoral researchers, data problems were quickly noticed and rectified. In future, having integrated administrative workflow means records will be automatically updated during application procedures.

Time saving

The breadth of administrative functions now taking place in the VRE has provided a broad spectrum of time-saving benefiting individuals in every role: from doctoral researcher to supervisor, faculty PhD coordinators and Registry administrators.

The time taken to approve applications has been significantly reduced – the turnaround for some types of applications undertaken as part of our doctoral research programme has decreased from over six months to less than six weeks. Where the VRE has been used to administer the assignment of supervisors for taught student research projects, supervisors are now being assigned in hours rather than weeks, significantly increasing the amount of time available to students for their research projects.

Visibility and transparency

As an institution, we are always keen to improve the transparency around our processes and decision making, to engender trust and respect and to reduce the frustration of not knowing when decisions will be made. The VRE is improving the visibility of the records we hold on research activity and the transparency of our administrative process, leading to reduced frustration and improving researcher engagement.

Increased numbers of doctoral researchers

Streamlining the administration of our doctoral research programme has helped increase our capacity to manage a larger doctoral researcher community. We believe the VRE will also help us to improve the quality of our support for doctoral researchers, helping our supervisory teams work more effectively and aiding in the early identification of doctoral research projects which are not progressing well.



Supporting researchers with a research information management platform

Understanding our research capability

Integrated dashboards provide real-time views of the current status of research applications and projects.

We have focused this year on improving data quality and making optimising the workflow functionality. Now we are in a position to benefit from the detailed insight gained through tracking long-term trends. The VRE gives us an excellent basis for whatever reporting is required by us or by external bodies (including the REF): good quality data, every aspect of the research process administered through one system, ease of interoperability and export of data.

FUTURE PLANS

We are delighted that other higher education institutions are now using the Haplo platform. For some this may just be for managing specific elements such as their doctoral research programmes,⁶ whilst others will benefit, as we have done, from the streamlined integration of multiple functions.

Functions built on top of the open source Haplo platform can either be developed and available commercially, or open source. We hope that as more institutions use the platform, we can collaboratively fund more open source functions to the benefit of the whole sector.

At the University of Westminster we continue to add functionality to the VRE to solve emerging research information management challenges. With each new function added, our researcher engagement increases and our insight into our research capability is enriched.

Both the VRE and Press ventures reflect the commitment of the university to excellence and impact in research, ensuring its highest quality work is made available to benefit audiences in a global context, and to advance the development of open access academic publishing.

Screenshots (of anonymised data) and details of the Haplo platform provided by Jennifer Summers, Founder, Haplo. jennifer.summers@haplo.org

Colleagues are invited to join us for the launch of PhD Manager and Haplo at the University of Westminster, April 17th 2015, where they can find out more about these systems. <http://www.phd-manager.co.uk/launch>

References

- 1 The university was ranked 66th out of 128 institutions in the recent Research Excellence Framework. The proportion of research outputs judged as world leading in the 2014 REF was double that achieved in the 2008 Research Assessment Exercise.
- 2 For more information on this preliminary project, see Chad, K. and Enright, S. (2014). The research cycle and research data management (RDM): innovating approaches at the University of Westminster. Available from: <http://uksg.metapress.com/content/j7m660w305183240/?p=005b25cf7ae6487ea71bcf7e74f0ccc1&pi=8> [accessed 16 February 2015]
- 3 Our 'agile' and collaborative approach to the project was described in a presentation at the Internet Librarian International 2014 conference. Enright, S. and Summers, J. (2014). The agile library: developing services for researchers. Available from: <http://www.infotoday.eu/Articles/Editorial/Featured-Articles/The-agile-library-developing-services-for-researchers-100145.aspx> [accessed 16 February 2015]
- 4 <http://www.westminster.ac.uk/research/westminsterresearch> [accessed 16 February 2015]



Supporting researchers with a research information management platform

- 5 Haplo is the open source version of the ONEIS platform <http://www.haplo.org> [accessed 16 February 2015]
- 6 <http://www.phd-manager.co.uk> [accessed 16 February 2015]

The copyright in items published in *SCONUL Focus* remains the property of the author(s) or their employers as the case may be.

