Institutional ORCID Implementation and Cost-Benefit Analysis Report

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Executive summary

Introduction

In May 2014, Jisc and ARMA commissioned eight HEI ORCID Pilot projects to support the broader use of ORCID unique researcher identifiers (ORCID iDs) in UK higher education. Information Power Ltd and Research Consulting Ltd were commissioned to prepare this report on the results of the eight pilot projects in order to:

- Inform how ORCID is implemented in UK HEIs;
- Enable institutional managers to build a business case for ORCID adoption in HEIs; and
- Encourage wider adoption of ORCID iDs

The report is based on semi-structured interviews with the Jisc-ARMA ORCID pilot projects and other research community stakeholders conducted either face-to-face or through telephone/Skype interviews, attendance at the September 2014 and January 2015 pilot project workshops and desk-based review of other relevant evidence.

The key findings are presented in three parts, and are summarised below. A checklist summarising the lessons learned from the Jisc-ARMA ORCID pilot projects has also been developed, and is included at Appendix C.

Part 1: Key Stakeholder Perspectives

We consulted a wide range of different stakeholders in the research and scholarly communications process, in order to ascertain their attitudes towards ORCID. It was acknowledged by all those consulted that funder mandates could be very effective in promoting greater uptake of ORCID, and major funders of research in the UK such as Research Councils UK (RCUK), the Higher Education Funding Council for England (HEFCE) and the Wellcome Trust indicated high levels of support for the initiative. A desire to fully explore the implications of mandating ORCID iDs mean UK funders have taken a cautious approach to date, but the direction of travel is clear. Evidence from overseas funders suggests that the remaining concerns can be overcome, and it appears increasingly likely that ORCID iDs will become a mandatory requirement for UK research funders in the foreseeable future.

Furthermore, all the publishers, publisher support systems and current research information system ("CRIS") vendors we consulted were highly supportive of ORCID and all but the very small ones were members. They see ORCID iDs as enhancing their workflows, and adding value to their products. The CRIS vendors in particular have been extremely supportive of the implementation of ORCID both in the UK pilots and in the US pilots. They were highly responsive to integration issues and have regarded the pilots as excellent opportunities to enhance their products.

Collectively, our interviews indicated that there is strong and growing support for ORCID across all of the key stakeholders, which supports the case for increasing uptake of ORCID by UK HEIs and researchers.

Part 2: Pilot project findings

Eight pilot institutions participated in the Jisc-ARMA ORCID Project: Aston University; Imperial College London; Northumbria University; University of Southampton; Swansea University; University of Kent; University of Oxford; and University of York. The majority of institutions had project teams comprising representatives from the Library, the Research Office, IT Services and academic departments and project management was kept 'light touch'. Key to the success of the projects was early engagement with senior management, involvement and engagement with key stakeholders across the institution and early consultation with Legal Services and Human Resources. The HEIs found it helpful to secure advice from their legal services departments at the outset of their projects in order to ensure that any personal data processing was lawful.

Perhaps surprisingly, technical issues were not the major issue for most pilot institutions. A range of technical solutions to the storage of researchers' ORCID iDs were utilised during the pilots. Four institutions used their institutional research information system (CRIS): two used Pure; one Symplectic; and one Converis. Two other institutions developed in-house systems, one used Agresso Business World and one the student portal of SITS e:Vision. Of the eight pilot institutions, only one chose to bulk create ORCID iDs for their researchers, the others opted for the 'facilitate' approach to ORCID registration.

Most pilot institutions found it relatively easy to persuade senior management about the institutional benefits of ORCID but many found it difficult to articulate the benefits to individual researchers. Several commented that staff saw it as 'another level of bureaucracy' and it was also noted that concurrent Open Access (OA), REF and ORCID activities can make the message confused, as they overlap. The majority felt that future developments and enhancements to their systems would enable them to articulate the benefits better and encourage much greater take-up. Effective communication was seen as one of the most important elements of projects by every pilot institution. A huge range of advocacy and communication strategies were employed and the majority of institutions felt that their communication strategies had worked and advocacy had been successful. Clear and effective messages (as short and precise as possible), creating a well-defined brand for ORCID and the targeting of specific audiences and audience segments were identified as being especially important.

Generally speaking, all the pilot projects were successful in integrating ORCID into institutional systems and processes, but the participants felt it was currently too early really to see the benefits of this. Most reported an increased awareness of ORCID and researchers having a better understanding of the benefits. But all felt that this would change in the future as the ORCID system, and their own internal systems, developed and ORCID iDs became globally recognised by academic institutions, publishers and research funders. All pilot institutions stated that academic registration for an ORCID iD and advocacy and communication activities will continue after the end of the project. They believe that the benefits of ORCID implementation will grow over time and save administrative time for researchers and support staff by ensuring correct and accurate transfer of information between systems. Specific future benefits mentioned by institutions included:

- More automated author disambiguation;
- Improved automated CVs for researchers;
- Improved retrieval and transfer of author data by the authors (e.g. for seeking collaborations, grants and employment) and by organisations such as funders, institutions and publishers in transferring data between systems; and

- Real opportunities to support greater understanding through analysis and data mining techniques of inferred relationships between individuals, research communities and institutions

Part 3: Cost-benefit analysis

Drawing on the experiences of the eight pilot institutions, we found the following:

- Implementing ORCID took an average of 290 hours of staff time, at a total cost of £12,500. This is a one-off cost and includes the cost of membership for the first year (currently $4,000, but likely to fall in future under a national consortium arrangement)
- Institutions were able to resource the implementation from their existing staff, and the incremental costs of implementation were limited to ORCID membership, and a small amount of travel and promotional costs
- Other than the annual membership, the ongoing costs of using ORCID were felt to be negligible by most institutions
- We estimate that adoption of ORCID by 120 UK higher education institutions over the next five years would cost a total of £2.1m, assuming the proposed UK consortium membership proceeds
- The benefits of ORCID are difficult to quantify at this early stage, however only relatively small savings of 15 minutes per researcher and 0.1 administrative staff members per institution would be required to recover the initial investment required over a five-year timeframe
- ORCID is also expected to enable a wide of range of developments that will improve the scholarly communications ecosystem as a whole (see "Potential benefits of ORCID", p.10). We have not been able to attribute a financial value to these developments, but many of the stakeholders consulted considered these to be of greater value than the administrative savings and efficiencies enabled by ORCID

Overall, it is our view that adoption of ORCID can be achieved at a relatively small cost to institutions, and to the sector as a whole, and that the potential benefits substantially exceed the costs incurred. The proposed UK consortium membership would be highly beneficial in reducing the cost of ORCID per institution, and should be actively pursued.

Introduction

ORCID is an open, non-profit, community-driven effort to create and maintain a registry of unique researcher identifiers and a transparent method of linking research activities and outputs to these identifiers. ORCID is unique in its ability to reach across disciplines, research sectors and national boundaries. It is a hub that connects researchers and research through the embedding of ORCID identifiers in key workflows, such as research profile maintenance, manuscript submissions, grant applications, and thesis/dissertation completion.

ORCID in the United Kingdom

In the UK, a broad group of sector bodies and funders, including HESA, HEFCE, RCUK, the Wellcome Trust, ARMA, UCISA and Jisc have signed a joint statement[1] expressing their support for the ORCID initiative. This group has also been joined by RLUK and SCONUL. In May 2014, to support the broader use of ORCID identifiers in higher education, Jisc and ARMA commissioned eight HEI ORCID Pilot projects to enable further practical exploration and to ensure the best approach can be followed by each institution and the sector. The intention was to look at barriers and share emerging solutions and lessons learned. The institutional implementations were underpinned by a strand of work to analyse and understand how ORCID could best function in the UK, resulting in this report and the cost-benefit analysis found in Part 3.

The pilot institutions were at different stages in their ORCID implementation, with some already working on implementation when the project began. The project participants maintained blogs recording their progress and issues and there were three workshops in May and September 2014 and January 2015. These workshops were intended to facilitate discussion, sharing and collaboration around common issues and challenges when implementing ORCID identifiers in HEIs. They also provided an opportunity to engage with a wider group of universities implementing or interested in implementing ORCID that were not formally part of the pilot.

Report authorship and acknowledgements

Information Power Ltd and Research Consulting Ltd were commissioned to prepare this report to inform the HEI sector, and ARMA members in particular, on the findings of the HEI ORCID pilot projects, to inform future institutional practice of how ORCID is implemented in HEIs, to enable research managers to build a business case for ORCID adoption in HEIs and to encourage wider adoption of ORCID. The report is based on semi-structured interviews with the Jisc-ARMA ORCID pilot projects and other research community stakeholders conducted either face-to-face or through telephone/Skype interviews, and attendance at the September 2014 and January 2015 pilot project workshops. Our report has also been informed by the pilot project blogs and summary reports, the ORCID website and knowledge base, the report of the Alfred P. Sloan Foundation 'ORCID Adoption and Integration Program' in the United States[2] (henceforth referred to as 'the A&I Program'), and a survey of ORCID costs and benefits circulated to the pilot institutions in late 2014.

1 https://repository.jisc.ac.uk/4988/1/ResIDjointstatement.pdf
2 https://orcid.org/content/adoption-and-integration-program

The production of this report would not have been possible without the support and assistance provided by Jisc, ARMA, the pilot institutions and the interviewees listed in Appendix B, whose contribution is gratefully acknowledged.

Part 1: Key stakeholder perspectives

UK Research Funders

In the course of our work we spoke with representatives of three major funders of research in the United Kingdom, the Higher Education Funding Council for England (HEFCE), Research Councils UK (RCUK) and the Wellcome Trust. We also consulted the Higher Education Statistics Agency, which collects a range of data every year UK-wide from universities, higher education colleges and other differently funded providers of higher education.

The Wellcome Trust is the furthest advanced in its use of ORCID, having introduced it as an optional part of the registration process for users of its eGrants system in 2013. The eGrants system enables applicants to apply for grants online and, at the time of writing, 1,500 Wellcome-funded researchers had registered an ORCID, although many of these have not added any publications or other outputs to their record. Wellcome have encountered little or no resistance from researchers following ORCID's introduction, but acknowledge that there is an upfront cost to individuals and organisations in its implementation. However, they see ORCID as a crucial building block upon which other systems, standards and solutions can be built.

The RCUK representatives we spoke to recognise that widespread adoption of ORCID in the UK has the potential, over time, to yield significant benefits to numerous stakeholders (including RCUK). While RCUK has no specific mandate to promote ORCID adoption, the 2014 Independent Review of the implementation of RCUK Policy on Open Access has recommended that RCUK mandates the use of ORCID in grant applications in order to make it easier to track the journal articles published by researchers in receipt of RCUK funding[3]. Prior to this review, RCUK had already approved in principle the addition of ORCID as an optional field in Je-S (Joint Electronic System), the online system used by research organisations to submit applications to the seven Research Councils (AHRC, BBSRC, EPSRC, ESRC, MRC, NERC and STFC). Delivery of this functionality in practice relies on the addition of ORCID to RCUK's common data repository (CDR), which is used to hold cross-council contact data, and underpins the Je-S grant application system. At this stage no firm timescale has been agreed for this work, which must be viewed within a wider context of significant cross-government changes and systems developments. Even following its introduction there will be a long period where both ORCID and RCUK's existing identifiers, of which there are more than 100,000, will need to run in parallel. However, RCUK grant holders can already record their ORCID iD in the Researchfish system, which is used by the Research Councils, and a number of other funders, to capture and analyse outputs from funded research. This is currently optional, but it is hoped that capturing ORCID iDs will facilitate interoperability between Researchfish and other systems in the future.

HEFCE's interest in ORCID relates primarily to the Research Excellence Framework (REF), operated by HEFCE on behalf of all the devolved HE funding bodies in the United Kingdom. The potential benefits of a unique researcher identifier have also been noted as part of the ongoing Independent Review of the Role of Metrics in Research Assessment[4], commissioned by HEFCE. While the next REF is not expected to take place until 2020, a consultation on the next exercise is due to be held later in 2015, and it is recognised that this could provide an opportunity to endorse or even require ORCID as part of a future REF submission process. Many of the other

3 http://www.rcuk.ac.uk/RCUK-prod/assets/documents/documents/Openaccessreport.pdf
4 http://www.hefce.ac.uk/whatwedo/rsrch/howfundr/metrics/

stakeholders we spoke to observed that this would be hugely significant in encouraging uptake of ORCID by UK researchers, but from HEFCE's perspective further work is needed to understand the potential implications of mandating ORCID in this way.

The HESA representative we spoke to recognised the scope for ORCID to deliver benefits in the domain of research metrics and research information, but noted that its value remains unproven given the current low level of take-up. ORCID is not used by HESA for organisational purposes at present, but in order to support the ORCID project HESA has introduced it as an optional field in the Staff and Student records for the 2014/15 cycle.

Funders value the fact that ORCID is easy to use, open, not-for-profit and cross-disciplinary, but some expressed concerns about ORCID's scalability, financial sustainability and the reliability of the ORCID data and API. Further work is also needed for funders to satisfy themselves that there would be no unintended consequences or legal ramifications as a result of making ORCID a mandatory requirement.

Overseas research funders

Many countries in Europe (and elsewhere) are currently integrating ORCID iDs nationally, with uptake often driven by research funder mandates. For example, the Swedish Research Council (SRC), which funds basic research across all disciplines, has introduced ORCID as a mandatory requirement for researchers seeking to access SRC funding since October 2014. Many of the concerns expressed by UK funders over ORCID adoption were considered by the project's steering group as part of the implementation, including questions over privacy. The committee concluded that since researchers decide what information they share via ORCID, and with whom, privacy concerns did not present a barrier to proceeding. Overall, the Swedish Research Council encountered very little resistance to the introduction of ORCID as a mandatory requirement, and the Council's Chief Information Officer noted: 'Compared to other aspects of administration for researchers, ORCID is a lot easier'.

Swedish interviewees from the SRC and Chalmers University of Technology indicated that an important role can be played by a national research information governance board. In Sweden this board has recently been established and is run by the Swedish Research Council, with members from universities, other funders, and the national library, helping to improve co-ordination across the key players involved. Sweden is now exploring the potential for federated authentication using ORCID, increasing the transfer of information between systems, and making greater use of ORCID to generate CV data and researcher profiles.

The ORCID website[5] includes a large number of other examples of ORCID adoption by funders in Europe, including:

- Denmark: The DEFF-funded ORCID implementation project has the goal of 80% participation by researchers
- Portugal: There is a nationwide mandate for all investigators funded by the FCT, Portugal's national research funder, to register with ORCID
- Italy: Exploring a national consortium for research evaluation
- Norway: Implementing ORCID iDs in their national CRIS
- Finland: Have announced plans to use ORCID to support national bibliometrics, and are integrating ORCID into their federated authentication system

5 https://orcid.org/blog/2014/02/19/link-your-orcid-record-your-funding

» Netherlands: Linking ORCID iDs to their national author ID

» Austria: FWF is mandating ORCID iDs from 2016

Publishers and Vendors

A representative selection of publishers was interviewed, including larger STEM publishers like Springer Business+Media (Springer), Taylor & Francis (T&F), BioMed Central (BMC), and Oxford University Press (OUP), and also Learned Society Publishers including the Royal Society of Chemistry, the Regional Studies Association and the Modern Humanities Research Association. We also spoke to Aries who produce Editorial Manager and HighWire Press who produce BenchPress. All the larger publishers were highly committed to ORCID and all are members. The current list of members is on the ORCID website[6]. One of the major barriers to adoption, especially for those publishing on behalf of smaller learned societies, was the autonomous nature of many editorial boards, which have a big say in not only editorial policy but also the systems used and procedures. For example, OUP have 81 journals which do not have a manuscript submission system. This seems to apply particularly in the arts and humanities. Some larger society publishers see ORCID as providing their whole community with the best services, and see that ORCID offers a tremendous opportunity to bring together a scientist's complete scholarly published record.

Within the manuscript submission systems, the ORCID iD has been implemented in Editorial Manager, ScholarOne, eJournal Press and BenchPress, the major systems used by the publishers interviewed. None of the publishers mandates an ORCID iD in order to submit a paper, due in large part to editors' concerns that this might deter potential submitters, but this is something they are keen to pursue in future. In general the level of interest is high throughout the organisations because of the benefits to editorial management and marketing.

ORCID, CrossRef and DataCite have been working together to improve the connections between their Persistent Identifiers. New functionality due out in 2015 means that when a publisher sends article metadata to CrossRef to mint a DOI for that article, CrossRef will scan that metadata for ORCID iDs. DataCite will do the same when minting DOIs for research datasets. If an ORCID iD is found, then CrossRef and DataCite can push that metadata to the author's ORCID record, enabling close to real-time updating of a researcher's publication list. As more and more publishers are collecting ORCID iDs during manuscript submission, this will mean that researchers will not have to update their records manually, and will improve the flow of publications information to systems that access the ORCID registry. This workflow is known as 'round tripping' and is seen as the most effective way of implementing ORCID iDs by all the partners in the workflow[7]

Research System Vendors

Interviews were conducted with the three major current research information systems (CRIS) vendors used in the UK: Symplectic (which has investment from Macmillan Publishers' Digital Science); PURE (which is owned by Elsevier) and Converis (which is owned by Thomson Reuters). All three vendors interviewed were completely committed to ORCID as they understand it is integral to their systems. They do not see it as a technical challenge, except for de-duplication, which was raised by all the organisations interviewed including publishers and publishing systems vendors (see Part 2 for more information on ORCID's arrangements for managing

6 http://orcid.org/about/community/members
7 http://orcid.org/blog/2015/01/13/new-webinar-metadata-round-trip

multiple versions of a publication or other work). A challenge for all these stakeholders is determining which system or service should be the 'hub' for the author metadata. The more 'hubs' there are the more difficult it is to de-duplicate ORCID iDs.

British Library and ISNI

The British Library's perspective on ORCID is that it forms an element in other projects such as DataCite and ODIN (embedding ORCID iDs in article metadata and making associated links to datasets)[8]. The BL has not implemented a formal ORCID system for their small number of researchers (its own curatorial staff) but uses the ORCID model of self-registration, plus some collaborative working with external researchers. The BL is a founding member of the ISNI consortium and Board member of the ISNI International Agency. The ISNI IA and has a Memorandum of Understanding with ORCID[9]. One of the advantages of ORCID is that it is aiming for good researcher engagement which aims to ensure the IDs are used in workflows and in the future embedded in metadata for works, e.g. articles. ISNI is focussed on assignment and diffusion of its identifier into existing metadata for works, e.g. in journal articles recorded in Table of Contents services.

From work on identifiers, especially the ISNI, that the BL has done with academic institutions internationally including Harvard University in the USA and LaTrobe University in Australia[10], the main issue seems to be cultural - how to get researchers engaged with ORCID and get registered. Conversations with the Harvard libraries demonstrates that library support is an important element in the implementation of ORCID iDs, particularly when the library can assist in the pre-population of databases to assign ISNIs. One of the problems that the BL has with ORCID is that the database is weak on citations. Where both IDs will really work is when they are well diffused and there is good interoperability, which is being developed in the ODIN11 and THOR project12.

8 http://odin-project.eu/
9 http://orcid.org/document/orcid-isni-mou
10 http://isni.org/content/member-story-la-trobe-university-0
11 http://odin-project.eu/
12 http://www.eu-thor.eu/

Potential benefits of ORCID

Our consultation identified a large number of potential benefits. These are summarised in the table below, together with the primary stakeholders who stand to benefit in each case.

Benefit	Researchers	Publishers/ vendors	Funders	Institutions	Learned Societies
Ability to link automatically from an author in a citation to other works by the same author (High Wire and Springer are both implementing this).	Y	Y			
Disambiguation between authors for reputation management, and consistency across systems.	Y	Y	Y	Y	Y
Managing altmetrics (especially with the increase in OA)	Y	Y	Y	Y	
Facilitating transfer of metadata between different systems (e.g. in the cases of title transfers or system changes for publishers, or movement between organisations)		Y		Y	Y
It would see publishers re-orienting around authors rather than publications.	Y	Y			
Enabling single sign-on for multiple systems.	Y	Y	Y	Y	Y
Allowing credentialed security for multiple systems (authors are very lax about their passwords and security).	Y	Y	Y	Y	Y
Identification and verification of authors to know whether their funder is mandating open access, and whether they need to submit to repositories. The publisher can then do this on their behalf (Springer Open Choice).	Y	Y			
Verification and use of FundRef in conjunction with ORCID would allow the publisher to send the funder or institution notice that a funded article has been accepted and/or published.	Y	Y	Y	Y	
ORCID could be used as the 'glue' allowing a researcher's profile to be disseminated across multiple systems, ensuring data is up-to-date.	Y	Y	Y	Y	Y
Increasing author visibility and discovery by linking metadata, and creating a single repository of identity.	Y	Y	Y	Y	Y
Streamlining workflows through pre-population of data (e.g. article submission, grant applications and outputs reporting)	Y	Y	Y	Y	
Career progress tracking	Y		Y	Y	Y

Increasing rates of ORCID uptake

Opportunities to increase uptake of ORCID were noted as follows:

- All parties recognise the important role that funders can play in encouraging or mandating ORCID adoption by researchers
- Publishers are keen to pursue greater use of ORCID, but must overcome editorial concerns that this may reduce submissions
- Publishers also suggested that researcher profiling services could be promoting ORCID iDs more as mechanism to establish and manage professional reputations
- Learned societies interviewees recognised that they could promote ORCID iDs more as it would let them increase their membership benefits by linking members to publications, meetings and services
- The system vendors feel that publishers can encourage ORCID iDs in the submission and refereeing process. For example Hindawi – an OA publisher - has contacted all their authors and asked for their ORCID iDs
- Vendors also noted the need for other content providers to be involved, especially organisations dealing with datasets. In some disciplines (especially computer science) the Google Scholar profile is seen as more important. Google Scholar (Anurag) has confirmed that the ORCID iD is one of the fields they use to index publications. They've been encouraging publishers to include ORCID iDs in published works

The role of HEIs in promoting ORCID adoption is explored in detail in Part 2

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Part 2: Summary of findings from pilot institutions

Introduction

The aim of the Jisc-ARMA pilot project was to investigate how HEIs might streamline ORCID implementation and develop a best-value approach for the potential UK-wide adoption of ORCID in higher education. The universities participating in the pilot were diverse, ranging from large research-based universities to smaller teaching-orientated universities. Some had CRIS systems and easy access to technical expertise, others not, and this variety was reflected in their implementation plans. The specific objectives of the Jisc-ARMA pilot were:

- To explore the embedding of ORCID iDs in institutional systems and workflows
- To assess costs, benefits and risks of ORCID implementation
- To gather evidence and recommend how to proceed – if appropriate – with national ORCID membership

The following findings arising from the project are compiled from information obtained from the pilot institution interviews, the project workshops, pilot institution blogs and the final project reports. A summary of the pilot institutions is provided in Figure 1, and the implementations have been classified in accordance with the three options for ORCID implementation identified by the Australian National Data Service of 'light', 'partial' and 'full' implementations. Further information on each of these options can be found at: http://ands.org.au/discovery/orcid-implementation-options20150414.pdf.

Figure 1: Profile of Pilot Institutions

Pilot institution	No. of academic staff (per HESA, 2013/14)	Pilot Project focus	Type of implementation	System/s used	University Policy/ support	ORCID membership and approach
Aston University (Aston)	600	Set up a 'Click & Connect' service for researchers to populate Pure with their ORCID iDs	Partial	CRIS: Pure	No policy but high level support	Basic membership (Trusted party)
Imperial College (Imperial)	4,055	Issue all researchers with ORCID iDs & get them to link their iD to Symplectic Elements	Partial, progressing to full in time	CRIS: Symplectic Elements	No policy but implemented under the framework of the College's OA Project	Basic membership (Creator member), taken out before the pilot began.
University of Kent (Kent)	1,900	Encourage PhD students & early career researchers to sign-up for	Partial	CRIS: CONVERIS	No policy	Basic membership (Trusted party)

		ORCID and employ PhD student to act as ORCID champions				
Northumbria University (Northumbria)	1,370	Establish a partnership with stakeholders around the University to explore ORCID implementation at different stages of the research lifecycle	Light touch	No CRIS. Utilised e:Vision, the web-based student portal of SITS	1st year P/Gs must include an ORCID in order to receive project approval for their PhD & continuing students must at their annual progression point	Basic membership (Trusted party), though API was not used in practice.
University of Southampton (Southampton)	2,900	To create 'Southampton ORCID site' to allow researchers to create an ORCID iD or link or an existing one	Partial	No CRIS but soon to be implemented. In-house system developed for ORCID iDs	No policy	Basic membership (Trusted party)
Swansea University (Swansea)	1,240	Encourage adoption of ORCID IDs across Swansea University & more widely across Wales	Light touch	Internal Research Inf. System and Agresso Business World (HR system)	No policy	None
University of Oxford (Oxford)	6,470	To set up a production service for linking researchers ORCID iDs to their 'Oxford single sign on' (SSO) profile	Partial, progressing to full in time	CRIS: Symplectic. ORCID iDs integrated with the central Identity and Access Management (IAM) systems	No policy but implemented under the framework of the Oxford Person Identifiers Group	Basic membership (Trusted party), but expect to require premium membership for full implementation
University of York (York)	1,605	Populate Pure with researcher ORCID iDs & share with White Rose Research Online (shared ePrint repository)	Partial implementation	CRIS: Pure	Yes. Policy on publication of research	Basic membership (Trusted party)

Approaches to ORCID membership

ORCID is free to use for the individual researcher, and there is a public application programming interface (API) which can also be used free of charge. Therefore it is possible for an institution to deploy ORCID without incurring any membership costs. In practice, all but one of the pilot institutions took out a paid ORCID membership as part of their project, and most institutions choosing to implement ORCID will find it beneficial to become an ORCID member. Membership allows institutions to access additional features of the ORCID API[13], and to create, update and retrieve data on their researchers (subject to permissions granted by ORCID iD holders). As a non-profit organisation, ORCID also relies on membership and subscription fees to sustain the registry and its mission of addressing the name ambiguity problem in scholarly communications.

Full details of the membership options open to institutions are available on the ORCID website[14]. Standard membership for an HEI is $4,000, while premium membership costs either $8,000 or $20,000 depending on institutional size. At the time of writing, negotiations were ongoing over the establishment of a consortium membership for the UK HE sector, to be co-ordinated by Jisc. Depending on the number of participating institutions, this could reduce the cost of membership per institution to below $4,000, and would also allow all participants to access the benefits of premium membership at no additional cost.

Research organisations looking to promote ORCID adoption among their faculty, staff or students can do so by setting up a facilitated 'Create-on-Demand'[15] process. Create-on-Demand is a flexible option that allows users to create a new record at any time, and to grant their institution access to read from/write to their record (via the API) as part of the process. Users who already have an ORCID iD can use the same process to send their existing iD to the institutional system and grant the system read/write access. In order to take advantage of this process, institutions need to become 'trusted party members' of ORCID. This is ORCID's recommended approach, since it does not allow institutions to create ORCIDs on behalf of their researchers, and so can be characterised as an 'opt-in' approach to ORCID. The create-on-demand process has been refined by ORCID since the pilot projects commenced, but an equivalent 'opt-in' approach was taken by six of the eight Jisc-ARMA pilot institutions (the other two being Swansea, who did not take out a membership, and Imperial, who took the 'creator member' option as noted below). The majority of the participants in the US A&I program also took an 'opt-in' approach to ORCID.

The alternative option for institutions is to become a 'creator member', whereby the institution is able to bulk create ORCID iDs on behalf of its staff and students, or staff. Upon claiming these iDs, individuals assume management of their record and may re-set privacy and delegation settings, giving them the option to 'opt-out' if they wish. This option offers the potential to secure more rapid uptake of ORCID, but creates a risk of 'dead' or duplicate records, or low levels of user engagement, and places additional obligations on institutions as 'data controllers'. Of the Jisc-ARMA pilot institutions, only Imperial College London chose this approach, while three of the participating institutions in the US A&I program chose to create ORCID iDs on behalf of their researchers. The Imperial project identified 764 existing ORCID iDs linked to College staff and created 3,226 new ones. Within seven weeks from creating the ORCID iDs, 1,155 academics had logged into their ORCID accounts and linked them to Symplectic Elements (Symplectic), the College's publication management system. Prior to the start of the project, all staff were contacted and given the option either to opt-out, or, if they already had an ORCID iD, to add it to Symplectic to prevent a new iD being generated

13 Further details on the API can be found at: **http://orcid.org/blog/2015/03/23/balancing-innovation-and-stability-orcid-api**
14 See: **http://orcid.org/about/membership**
15 For information on Create-on-Demand see here: **http://members.orcid.org/create-records**

The potential for duplicate ORCID iDs to be created is also greater under the 'creator member' options, but remains a possibility whatever route is taken, though ORCID has processes in place to minimise the likelihood of this occurring. For example, an email address can be associated with only one ORCID record, and on initial registration the system will search the ORCID database for matching name-email address combinations, and return an 'Is this you?' message to the requestor where there is a match on name only. Further information on deduplication arrangements can be found on the ORCID website[16].

Further useful information relating to ORCID membership can be found on the ORCID website http://orcid.org/about/membership

Institutional approvals and project management

None of the eight pilot institutions encountered difficulties in obtaining institutional approval to participate in the project but, in almost all cases, successful delivery was reliant on securing input and support from several different departments across the institution. The approaches to institutional approval followed as part of the project can be summarised as follows:

Pilot institution	Approval process	Project management approach
Aston	The project team, comprising the Library, IT Services and the Research Support Office, met with the PVC Research, who gave approval to proceed.	Steering Group comprising representatives from the library (which led the project), the Research Support Office and IT.
Imperial	A business case to implement ORCID was incorporated into a paper submitted to the OA Board (prior to the Jisc-ARMA project). Once approved by the OA Board the paper was transformed into a paper, requesting permission to participate in the project, for the Provost Board and this was approved.	Project Board with representatives from ICT, the Library, academic departments and the Research Office. The Project Director was the Vice-Dean.
Kent	A business case was prepared (available on their project blog17) but only required approval by the PVC Research, meaning the process was straightforward and quick.	Project was a joint project between IT, the Library and Research Services. The project team comprises representatives from the Library and IT. The Project Sponsor was the Head of Research Services.
Northumbria	Already working on ORCID implementation before the start of the project. No further formal approval was required to participate in the project.	Ad-hoc steering group comprising a range of stakeholders from around the university, including academics, research managers, etc.
Oxford	The growing proliferation of person identifiers	Person iD group had been established in 2013 and

16 https://orcid.org/blog/2014/01/09/managing-duplicate-iDs
17 http://blogs.kent.ac.uk/orcid/project-plan/

	(ORCID, ISNI, ResearcherID, HESA numbers, etc.) had led to the establishment in 2013 of a Person iD group with representation from many parts of the University. Institutional approval to implement ORCID was therefore secured before the start of the project. No further formal permission was required to participate in the project.	this continued as the project management board for the Jisc-ARMA Project. It comprised representation from many parts of the University including: the Library; IT Services; Research Services; Legal Services; Oxford University Press; Planning and Resource Allocation; and Student Administration.
Southampton	Engaged key senior management and the Legal Services Department at an early stage and had no difficulty obtaining approval for the project. The project team developed a business case for the Project Steering Group and resourcing for IT services had to be approved by the Advisory Group for Research Support.	Project team was chaired by an academic and they saw great advantage in having an academic leading. Technical aspects of the project and advocacy were handled by the Library, and the Steering Group comprised representatives from across the university.
Swansea	The implementation of ORCID at Swansea had already started before the Jisc-ARMA project. No further formal business case was required to participate in the project.	Ad-hoc steering group comprising a range of stakeholders from around the university, including academics, research managers, etc
York	Business case and project proposal were approved by the Information Directorate, Senior Management Team.	The project was led by the Information Directorate's Research Support Team, with input from the Digital York team and the Research Strategic and Policy Office (RSPO). At York the RSPO manages Pure and without their collaboration the project would not have been possible. They did not have a Steering Group.

Engagement with Human Resources and Legal Departments

Implementing ORCID in an HEI requires consideration of some legal aspects and human resources issues. For example, a number of pilot institutions wanted to do bulk-creation of ORCID iDs initially but changed their mind after consultation with their Legal Departments. Certainly the majority of pilot institutions found it valuable to engage with their Human Resources (HR) and Legal Departments at the outset of the pilots, in order to satisfy themselves that there were no data protection and privacy concerns associated with the implementation of ORCID. In practice none of these concerns represented a significant barrier to implementation of ORCID, which is governed by the principle that researchers will control the privacy settings of their own ORCID record data. Researchers decide what information they share and who they share it with, and the minimum requirements to register for an ORCID iD are an individual's name and email address, with no personal data collected during the process. See ORCID's privacy policy[18]

As would be expected, due to their decision to undertake bulk creation of ORCID iDs, Imperial consulted with both their Legal Services department and HR on legal and ethical aspects of the project and decided to offer an

18 http://orcid.org/footer/privacy-policy

opt-out approach. Furthermore, it was agreed to only share information with ORCID that was already public and that academics would normally want to be widely known: i.e. name, institutional affiliation, and publications. One issue with the bulk creation process was that ORCiD records are automatically made public after a period the creating organisation decides, even when researchers do not interact with them. (It should be noted that the new 'create on demand' processes avoid this issue.) To address this, Imperial made the decision that all ORCID record information would, by default, be set to private, apart from the ORCID number and name as these fields are always public.

After discussion with the University's legal team, Oxford determined that central services should not bulk-issue ORCID iDs to all eligible researchers, since the release of personal information, such as university affiliation and email details, had to be individually and specifically authorised by the person in question. The researcher could, of course, choose to provide more information if they wished.

Aston University also consulted with both HR and their Legal Department. HR had recently changed the HR system and originally the project team had considered asking HR to ask academics to register for an ORCID. However, in order to avoid errors in manual input, they decided against this route. All parties agreed that Pure was the obvious home for ORCID iDs, and registration information is now included in the new staff induction programme. They also consulted with their Legal Department, who did raise initial concerns about the ownership of data, but that has been resolved. Southampton worked very closely with their Legal Service department from the early outset of the project, thus ensuring that the project did not impact on their legal and contractual obligations.

Northumbria reported that during the pilot they had learned a lot about the legal aspects of ORCID membership. They found it helpful to obtain a review of the ORCID membership agreement from their Legal Services department, resulting in a small number of amendments, primarily relating to the 'hold harmless' clause (which involves agreeing not to hold each other responsible for any damages or legal liability as a result of the agreement) and the US jurisdiction clause. Other institutions were happy to accept the membership agreement in standard form.

Technical approaches

Perhaps surprisingly, technical issues were not the major issue for most of the pilot projects. A number commented that the project was delayed at the start due to technical issues, but this was mainly waiting for IT colleagues to undertake some initial systems work at the start of a new academic year – which is always a very busy time. It is interesting to note that each of the pilots adopted a very different approach to recording ORCID iDs within their systems, and those with commercial systems such as Pure, Converis and Symplectic did have to work closely with their systems provider in the early stages of the project to get various aspects changed and/or upgraded, and there certainly were 'teething troubles' in a number of institutions. A number of institutions recorded detailed technical reports on their project blogs and these are linked below.

Due to the diverse range of technical approaches adopted by the pilot institutions it is difficult to present a general list of lessons learned from the pilot project. A 'broad brush' list would include:

- Early discussions with IT colleagues will help ensure that you have the full support of IT services
- Institutions should decide early in the implementation process which institutional system is most appropriate to store ORCID iDs (typically a CRIS or HR system) and what other systems will also need to be populated with this data

- The exchange of data via the ORCID API should be managed in accordance with existing institutional arrangements for cloud services, using the ORCID member API and OAuth 2.0 protocols
- The level of technical development required depended on whether institutions simply wished to record existing ORCID iDs in their systems, or whether they wanted to give researchers the ability to create (or link an existing) ORCID iD from within internal systems
- If using a commercial CRIS:
  - Ensure early communication with the system vendor. Many now have experience of ORCID implementation with other clients
  - Ask the system vendor for contacts in other institutions that have implemented ORCID

What follows now is a short account of the technical approaches adopted by the pilot institutions.

Pilots using their Current Research Information System (CRIS)

Aston University made the decision to use their CRIS, Pure, for ORCID registration, as this is the system which holds their publications and funding data. There were considerable delays and frustrations in establishing a Pure version that both worked with ORCID and maintained other required functionality. The Aston blog provides a detailed time line of technical notes and additional progress reports: **http://orcidaston.blogspot.co.uk/2015/01/aston-orcid-technical-notes.html**

These technical issues caused a serious delay to the start of the project. Eventually they set up a 'click and connect' facility as the single point of registration for ORCID iDs, and by the end of the project 23.6% of staff had registered. Academics reported that they found the process quick, straightforward and simple to use. New ORCID iDs were automatically recorded in Pure. Senior management buy-in was easily achieved and registration was a simple process with detailed instructions provided on 'Aston Author' web pages.

At the University of York, which also used Pure, despite experiencing some technical delays, the project team's experience of setting up the ORCID option in Pure was relatively straightforward and the options themselves (Create and Add ORCID iD) were easy to use. A detailed technical perspective is given on the York blog: **http://yorkorcid.blogspot.co.uk/**. They hope that the York project can feed into future development of ORCID options in Pure and assist the Pure UK User community. Another significant target for the York project was populating the University's shared repository, White Rose Research Online (WRRO), with ORCID iDs from Pure by modifying the EPrints connector. This was initially delayed by technical issues but is now working successfully in Pure 4.20.3 Test. To apply retrospectively ORCID iDs will require a re-synchronisation of data between the systems at a later date. During the project, York completed a pilot exercise with four departments and is now moving to full implementation. Two key lessons learned from the pilot were:

- Some of the researchers experienced difficulties creating their ORCID iD, the most common one being not saving their iD by failing to click the Save button. The issue of unsaved changes was reported back to Pure and the project team are also investigating the potential to customise the text in Pure to remind researchers to click on Save
- Currently there is no interaction between ORCID and Pure in terms of profile content - other than the iD itself. The pilot exercise highlighted the need for clarity in distinguishing the ORCID profile function from the ORCID iD itself, as this can be a source of confusion when interacting with researchers (who in some cases

assumed that Pure would automatically populate their ORCID record with their research outputs and expressed disappointment that this was not the case)

Imperial College used their CRIS, Symplectic Elements, to store the ORCID iDs they had created. The main reason for this was that it was the only College system that would deliver a direct benefit to academics. Symplectic Elements can automatically add publications from the ORCID registry to a researcher's institutional profile and academics can link ORCID and Symplectic with just a few clicks. ICT staff were closely involved in the project from the start. They developed a technical project plan and the script to create the ORCID iDs, and they identified the staff involved in the roll-out and extracted all the relevant information from College systems. It is estimated that over 90% of scholarly publications of Imperial staff are registered in Symplectic. As a result, the XML sent to ORCID included information on over 240,000 academic works by College authors and ICT had to map this information to the publications fields in ORCID. Further details are available in the College's final report: **https://repository.jisc.ac.uk/5876/1/Imperial_College_ORCID_project.pdf**.

Just prior to the start of the project, Kent had recently implemented a new CRIS – Converis. One of the aims of the 'Early ORCID' project was to get ORCID integrated into Converis, another being to encourage Kent PhD students and early career researchers to sign up for ORCID. Kent had not anticipated that some users would find the process of registering for an ORCID difficult, but a small number did. After this was brought to the attention of the project team, further help and guidance was prepared. By the end of the project the number of staff and students registered with ORCID stood at 323, but integration with Converis was not completed within the project time frame due to developmental delays. A further aim was to integrate Converis with their institutional repository, Kent Academic Repository (KAR) – and an ORCID field was successfully added alongside the record name and email fields. However, total integration of the two systems was not completed before the end of the project. Further technical information is available on the Kent blog: **http://blogs.kent.ac.uk/orcid/**.

Pilots using in-house systems

The University of Southampton reported that many of their technical issues related to discussions around the imminent procurement and implementation of their new CRIS and the interface with their ePrints repository. However, the technical approach they adopted for the pilot project required minimal implementation, although it did take longer than expected. They set up the 'Southampton ORCID site' for staff to create an ORCID iD (pre-populating the ORCID template) or link to an existing one. Both of these used the ORCID API. This created a table of staff numbers and their associated ORCID iD from which other university systems could rapidly look up ORCID iDs. They then worked with a selected group of academics from departments in each University Faculty (104 in total). The responses were unanimous in saying that the registration service was simple and easy to use and presented no technical barriers. An overview of their approach is available on the Southampton blog: **http://blog.soton.ac.uk/orcid/**, with further technical details available at: **https://github.com/cgutteridge/southamptonOrcid**.

Swansea University operated a converged Library and Information Service (LIS) and thus were fortunate in regard to the level of technical and systems support made available to the project. Swansea University began their project by trying to ascertain which staff in the university already had an ORCID iD. This was done by email and by requesting information during staff training sessions, but this was not a particularly successful strategy. The Swansea project team subsequently linked up their Research Information System (RIS) and the public ORCID API to enable staff to 'claim' academic works that appear in their public ORCID record for inclusion in the RIS. Researchers registered their ORCID iD in the University's HR system (Agresso Business World) and, after registration, staff simply entered their ORCID iD into the system once and this then populated the Research

Information System, the staff profile pages and the IR with the ORCID iD. Further technical details are available on the Swansea blog: **http://orcidswan.blogspot.co.uk/2014_05_01_archive.html**.

Northumbria University undertook two case studies during their pilot project. The first, 'Moving ORCID Upstream', involved creating an additional field in the postgraduate research student record which is held in the web-based student portal of SITS – e:Vision. An additional tab was added in MYPGR (their installation of e:Vision) which included a field for students to add their ORCID iD, with a link enabling them to go to the ORCID site to sign up. The Library then proactively promoted and supported ORCID self-registration, both as an identifier in the institutional repository Northumbria Research link (NRL) and as part of a well-established research skills programme.

Northumbria's second case study aimed to incorporate ORCID in an OA journal publication service, (which operates on the Open Journal Systems (OJS) software) managed in the School of Law and administered by the Scholarly Publications team in the Library. Although it is possible for academics to add their ORCID iD when they register to write, edit or review for a journal, they did experience technical issues with their installation that prevented them from opening their journals for submission through the OJS software. Additional work will be required to develop a streamlined user experience for authors submitting to these journals. Northumbria concluded that in order to proceed with further implementation, they would need to engage more closely with their IT Services or develop technical capacity in the Library to work with the API.

At Oxford, it became clear at the outset that ORCID implementation should not be just a library-focused project as it would have implications for systems more widely. Accordingly, the decision was made to integrate ORCID with the central Identity and Access management (IAM) systems. This work was carried out by IT Services. Thus, ORCID iDs could be managed by researchers at the same online portal where they managed their remote access accounts, single sign-on credentials and other key centrally provided services. By adopting this approach, any system linked to the University single-sign-on system could, with relevant permissions, access an authenticated user's ORCID details. The technical workflow, which is currently awaiting notification to go live, is detailed in the Oxford final report at: **http://orcidpilot.jiscinvolve.org/wp/hei-based-projects/**. However, the publication of ORCID data to a 'data warehouse' area for access by other applications was not completed by the end of the project. Oxford were not able to link the IAM accounts to their CRIS – Symplectic - as this would have required another API connection and thus incur premium membership.

Advocacy and communication

Many of the pilot projects found it difficult to articulate the benefits of ORCID to individual academics and researchers. However, most pilots reported that senior management quickly understood the benefits to the institution. The majority felt that future developments and enhancements to both ORCID's system and their own systems will enable them to articulate the benefits better and encourage much greater take-up. At the University of York, ORCID registration was backed up by institutional policy and therefore had the backing of senior management, and this helped tremendously to articulate the benefits. Issues raised by the pilot institutions in relation to articulating the benefits of ORCID were:

- Some academic staff saw ORCID registration as 'another level of bureaucracy', or were concerned that ORCID may allow 'the watchers to watch'
- Concurrent OA, REF, ORCID activities can make the message confused

- Academics thought that the benefits offered by other commercial systems such as Thomson Reuters ResearcherID and Scopus author iD provided better advantages in terms of being able to generate publications lists and citation metrics, although ORCID does not provide metrics itself and facilitates use by these commercial organisations
- Some institutions reported having specific difficulty in articulating the benefits of ORCID to particular disciplines or user groups (e.g. social scientists at Aston and postgraduate researchers/ senior academics at York. **http://yorkorcid.blogspot.co.uk/2015/01/important-lessons-learnt.html**)
- Some researchers expressed concerns at data being stored in the U.S.A.
- Other academics were concerned about duplication of effort/work in entering their information into numerous different systems in the short term, although it is clear that ORCID offers scope to reduce this level of duplication in the longer term
- There was some confusion among researchers about the exact role of ORCID – while it is intended as a person identifier, some perceived it as simply another profiling service
- One institution found it necessary to create different messages for different groups (e.g. Swansea who identified 'experts' in online publishing and those unfamiliar with disseminating their research online)
- Some academics felt overwhelmed with the range of identifiers available to them and often felt that there were few benefits

Effective communication was seen as one of the most important elements of the projects by every pilot institution.

In particular, early engagement with key stakeholders was felt to be vital. Clear and effective messages (as short and precise as possible), creating a well-defined brand for ORCID and the targeting of specific audiences and audience segments were identified as being especially important. The institutions employed a wide range of communication channels including:

- Initial emails articulating the benefits of ORCID and encouraging researchers to register from a senior member of staff (e.g. Vice-Chancellor, PVC Research), followed up by emails from the project team
- Agenda items at relevant formal and informal meetings across the institution
- Promotional events both in the Library and within academic departments
- Presentations and training sessions
- Guidance and instructions on Library and institutional web pages, including FAQ content
- Blogs and social media
- Posters, digital screen and pop up stands
- Postcards and business cards
- Branded items e.g. badges, t-shirts, sweatshirts
- Including ORCID iDs in signature blocks

Other strategies adopted by specific institutions were:

- **Aston** - Piloted materials with a small number of staff from three Schools and adapting in line with feedback, displaying ORCID iDs alongside staff names on the institutional webpage
- **Imperial** – Put together a communications plan in consultation with ORCID and the College's Communications and Public Affairs team, and set up a College ORCID email account and distribution list. All staff involved in the roll-out were added to the list, with consent from the College Secretary. The project drafted an initial email to all staff, to be sent by the Provost, and a follow-up from the project. Both emails highlighted ORCID benefits, explained how to opt out, and included links to further information. During the first stage of the project only 25 staff decided to opt out. Those who gave reasons stated that they were close to retirement or about to leave the College
- **Kent** - Used a wide range of promotional materials which were eye-catching, clearly branded, and contained simple, succinct messages, and employed an Advocacy Team of seven PhD students to deliver the ORCID message. As one of their project outputs they produced a very useful Advocacy Toolkit[19], and they recommend creating a specific ORCID email box which is constantly monitored, including the email address on all promotional material and composing a standard responses to FAQs to ensure consistency of message across the University
- **Northumbria** - Northumbria's case study, working with postgraduate research students, helped them establish an approach to ORCID that will be applicable to other groups of stakeholders. The project team is now able to offer their skills and expertise in supporting researchers through training in a range of formats and can provide an expert enquiry service through the Scholarly Publications team
- **Oxford** - Much of the project concentrated on outreach and communication planning for the new ORCID service. They did express concern that there were a number of other events occurring in the same conceptual space which involve ORCID iDs to some extent, so care had to be taken to not confuse the messages. These events were: Open Access initiatives; REF and REF Next; and the EPSRC research data mandate. Oxford compiled a useful communications plan, broken down in terms of audiences and channels with responsibilities assigned. This is available in their final report at: **http://orcidpilot.jiscinvolve.org/wp/hei-based-projects/**
- **Southampton** - Took a planned and integrated communications approach which included, among many other things, meetings with research groups, and a library contribution to the Postgraduate Certificate in Academic Practice (PCAP) – a teaching programme for new staff. A key issue for them was to engage with their staff and researchers, and this was helped by having project staff who understood the issues and utilised their knowledge of the institution to speak to the right people
- **Swansea** – Focussed on communicating the importance and benefits of ORCID to all Welsh universities and colleges as well as to their own researchers and academics, through a series of events, meetings and presentations
- **York** - Used the 'Distinguish Yourself' tagline (as used within ORCID's own registration page) and this proved successful. Other promotional materials contained a duck motif which was designed by a member of the Research Support team. 'Duck density' is a notable feature of the University, so the design worked well in the York context

19 http://repository.jisc.ac.uk/5879/2/Appendix_1_ORCID_Advocacy_Toolkit_.pdf

Current and future achievements and benefits

Generally speaking, all the pilot projects felt it was really too early to see the benefits of ORCID, beyond increased awareness and understanding in the research community. But all felt that would change in the future as interoperability of systems improves and ORCID iDs became globally recognised by academic institutions, publishers and research funders. At Imperial College, their bulk creation of ORCID iDs was positively received by the academic community. One Head of Department forwarded information about ORCID to his colleagues and commented: 'I can't conceive why anyone would want to opt out of something that sounds so useful'. Currently the main achievement of the project is the creation of ORCID iDs. Of the 3,226 new staff iDs created, 1,155 have been linked to Symplectic.

All pilot institutions stated that academic registration for an ORCID iD and advocacy and communication activities will continue after the end of the pilot project. Institutions were quite diverse in articulating their future plans what benefits they hope to see from the increased take-up of ORCID iDs, with examples from six of the pilots summarised in the table below:

Pilot institution	Future plans and anticipated benefits
Aston	» 'Future proofing' in case funders and publishers started to mandate ORCID iDs (e.g. a mandate for the next REF) » Population of ORCID records with publications from Pure (taking advantage of the work that Aston puts in in terms of record quality and comprehensive coverage) » Scope to use ORCID for retrieval and transfer of researcher data both by researchers (e.g. for seeking collaborations, grants and employment) and by organisations such as funders, institutions and publishers in transferring data between systems
Imperial	» Further engagement with ORCID to be taken forward through OA project » Encourage funders to collect ORCID iDs during the application stage and enable academics to add the IDs of all project staff, allowing funders automatically to receive updates on new outputs » Encourage publishers to associate DOIs with ORCID iDs and to share article metadata with CrossRef on acceptance
Northumbria	» Continue work on enhancing ORCID registration in their campus-based publishing partnerships, working with their editors to include ORCID registration and entry in workflow submission to their journals » Potential to roll out current model of registration to other groups of staff and students » Explore potential to enhance data held for the institution in the Scopus database, which would increase the accuracy of reporting on research performance in SciVal
Southampton	» Alert system for publications missing from their ePrints repository » More automated author disambiguation, with potential to improve bibliometrics and altmetrics services » Improved automated CVs for researchers » Application of ORCID iDs to other types of output including esteem indicators and other measures of impact » For those staff who want to maintain publications in their ORCID record, a system which makes this much easier and less time consuming » Potential to link publications and grant application data to the Equipment Data Service which would then enable demonstration of the values and impact of expensive research equipment and facilities

Swansea	» Continue to foster co-operation and formulate creative solutions to increase ORCID registration, embedding ORCID engagement within workflows (e.g. applying for grant funding, completing professional development reviews, and PhD project applications) » Improved disambiguation of authors by associating ORCID iDs with staff numbers » Improvements in attribution of works to individuals and creating associated performance data at the individual, departmental, college and even discipline levels » Explore opportunities for analysis and data mining techniques of inferred relationships between individuals, research communities and institutions » Potential to track the career of individuals in creating narratives of success
York	» University-wide implementation of ORCID iDs via Pure is planned for early 2015, utilising lessons learned from the pilot project » ORCID awareness will be built into training and development activities. » ORCID iDs to be made visible from the York Research Database » New EPrints connector will be made live and the impact on the WRRO monitored. It has been agreed with White Rose partners that the addition of an ORCID iD field in WRRO will be investigated » Investigate the feasibility of storing postgraduate students ORCID iDs with the student record (e:Vision). This may enable a link to HESA » It is anticipated that ORCID iDs will also be associated with datasets as well as other research outputs within the Pure system

When asked about next steps in general, all the pilot institutions said that they will continue their ORCID membership (although some concern was expressed by smaller and medium-sized institutions about the perceived high cost of the basic membership, while others noted the importance of ORCID being financially sustainable in the long-term if institutions are to rely on it). All participants were enthusiastic about a Jisc-led national agreement which might be helpful in encouraging ORCID to offer more value to institutional members, for example, in providing improved management information on institutional records and input.

Part 3: Cost benefit analysis

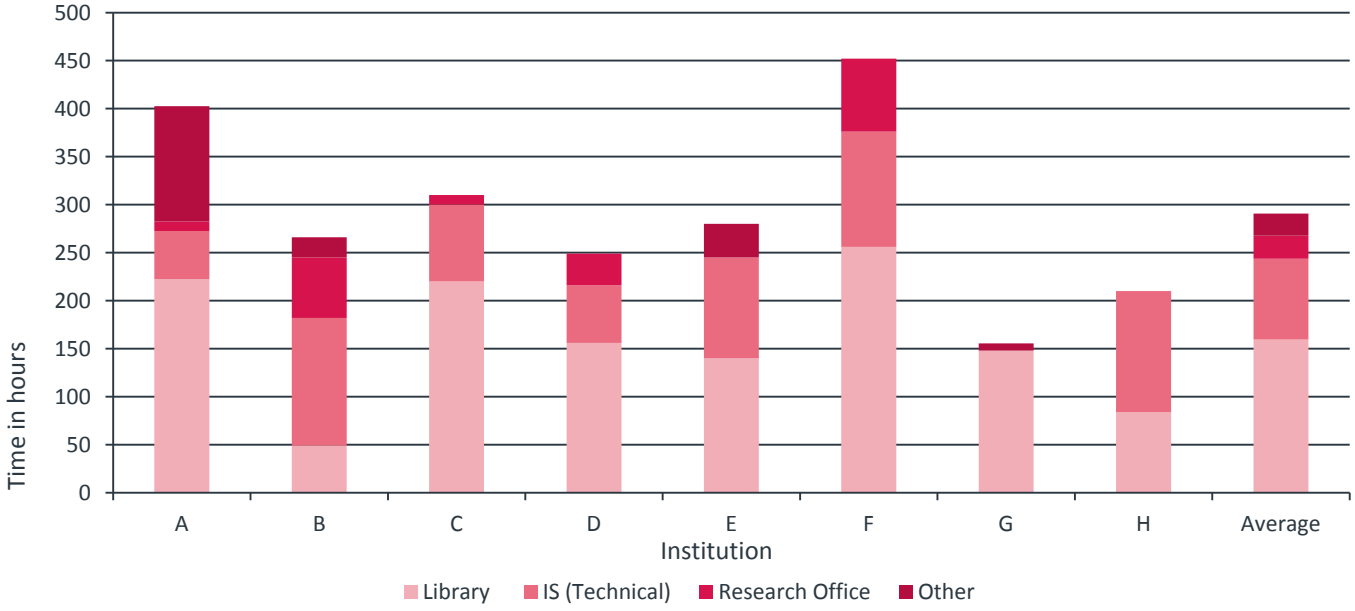
ORCID implementation costs

The scope of objectives of the pilot projects varied, but typically the implementation of ORCID involved:

- A feasibility process associated with the adoption of ORCID, which entailed consideration of the technical implications, and of any legal and regulatory factors that might affect the introduction and operation of ORCID in the institution
- Technical development of institutional systems to allow an ORCID iD to be recorded and associated with existing staff records (whether in the institution's HR system or a CRIS)
- Development of promotional materials, websites and delivery of advocacy activities to encourage researchers to sign up for an ORCID iD and/or record it in institutional systems

On average, the eight pilot institutions estimated that they had devoted 290 hours of staff time to ORCID's implementation (see Figure 2), over a period of roughly six to nine months. In most cases, implementation projects were managed by library staff (who contributed 55% of the overall effort), with additional support from information services/technical staff (29%), and the institutional research office (8%). A small amount of input from other areas was also required (8%), including oversight by academic managers, postgraduate researchers used as ORCID advocates, and staff in human resources, internal communications and legal departments. On average, institutions estimated that the time taken for an individual researcher to create an ORCID iD and record it in institutional systems was no more than three minutes.

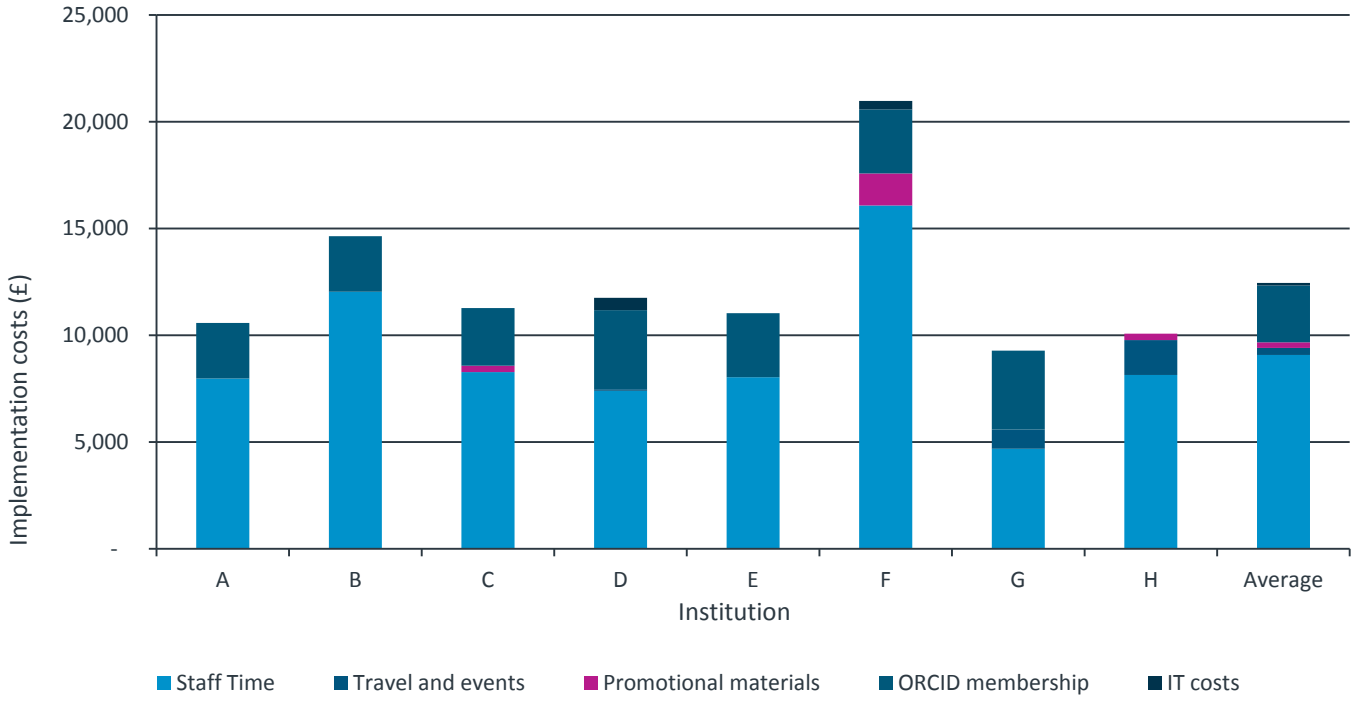
Figure 2: Time spent on ORCID Implementation



To determine the cost of implementation, staff time was converted into costs using salary data provided by the institutions, assuming 1,650 productive hours annually per full-time equivalent staff member. On-costs were included at 25% of staff costs, but no allowance has been made for overheads. Staff costs were combined with other implementation costs (including ORCID membership, travel, events and promotional materials) to calculate the costs shown in Figure 3. The average implementation cost was £12,500, or £9,800 excluding the costs of ORCID membership. In practice, all staff time associated with the implementation represented a reallocation of existing resources, as none of the institutions had recruited additional staff for this purpose. There are indications that some smaller institutions may need to buy-in technical resource to develop a full interface with the ORCID API, if the necessary expertise is not available in-house. The actual time and cost associated with ORCID implementation will also depend on the project scope and level of integration required (particularly the number of internal systems in which an ORCID iD is to be recorded, and the number of interfaces required between these internal systems and with the ORCID API).

Nevertheless, the incremental cost to the pilot institutions of adopting ORCID was found to be minimal, being limited to the basic ORCID membership (which most of the institutions considered sufficient for their needs at this stage), and a small amount of travel and promotional costs.

Figure 3: Cost of ORCID Implementation



The cost of future implementations of ORCID should reduce over time, as several third-party suppliers are now better placed to implement ORCID as a result of the pilots, and the pilot institutions incurred some additional costs as result of their participation in the project (though these and other implementation costs were in large part offset by the funding received from Jisc). The proposed UK consortium membership of ORCID could reduce the cost of membership significantly, as shown below:

Figure 4: Institutional cost of ORCID membership under the premium consortium model

Number of consortium members	Cost per institution (Premium membership)
Fixed cost per member (0-29 members)	
5-9	$6,000
10-19	$5,000
20-29	$4,000
Fixed cost per consortium of $135,000 (30-99 members)	
40	$3,375
60	$2,250
90	$1,500
Fixed cost per consortium of $200,000 (100-250 members)	
120	$1,667
140	$1,428
161 (all UK HEIs)	$1,242

Recurrent costs of supporting ORCID

Institutions were asked to estimate the annual cost associated with managing, maintaining and promoting ORCID on an ongoing basis. The annual membership (currently $4,000 or approximately £3,250 per institution, but this would reduce under a consortium arrangement) was noted as by far the most significant recurrent cost, with other costs estimated at less than £2,000 per annum, for staff time plus occasional production of promotional materials. Five institutions provided estimates of the time they expected to spend supporting ORCID on an ongoing basis, while the rest described these as negligible. Estimates ranged between 20 to 200 hours per annum, with an average of 70, split evenly between library and information services staff.

Estimated cost to UK Higher Education sector of ORCID Implementation

Drawing on the evidence from the pilot institutions, we estimate that it would cost the sector £2.1m over the next five years to implement ORCID progressively at 120 institutions (roughly equivalent to the number of institutions that made submissions to the 2014 Research Excellence Framework). Of this figure, £1.1m represents the one-off costs of implementation for institutions, £100k represents the nominal cost of three minutes of researcher time for each ORCID iD created/claimed, and the remainder relates to the costs of consortium membership and the recurrent costs to institutions of maintaining ORCID. It is assumed that 75,000

HEI researchers will sign up and actively use ORCID over this period, increasing from an estimated 20,000 in 2014/15[20]. The figure of 20,000 represents a conservative assumption, given that there were over 44,000 ORCID iDs with a UK affiliation in January 2015, but allows for the fact that not all of these IDs relate to staff within UK HEIs, and only a proportion of researchers will make active use of ORCID. The expenditure incurred to date by Jisc and the 10 or so institutions which have already implemented ORCID is considered a sunk cost, and excluded from this analysis.

Figure 5: Estimated costs of ORCID Implementation by 120 UK HEIs

Year	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Total
Researchers actively using ORCID (cumulative)	**20,000**	**30,000**	**40,000**	**50,000**	**60,000**	**75,000**	
Institutional ORCID implementations (cumulative)	**10**	**25**	**50**	**80**	**100**	**120**	
Costs in £Thousands							
One-off implementation costs							
ORCID sign-up - Cost of researcher time		19	19	19	19	28	102
Implementation Cost - Institutions		135	225	270	180	180	990
Recurrent costs							
Consortium membership (prices current as at April 2015)		75	88	88	131	131	513
Recurrent cost to institutions of ORCID adoption		19	46	93	148	185	490
Total cost		**247**	**378**	**469**	**477**	**524**	**2,096**

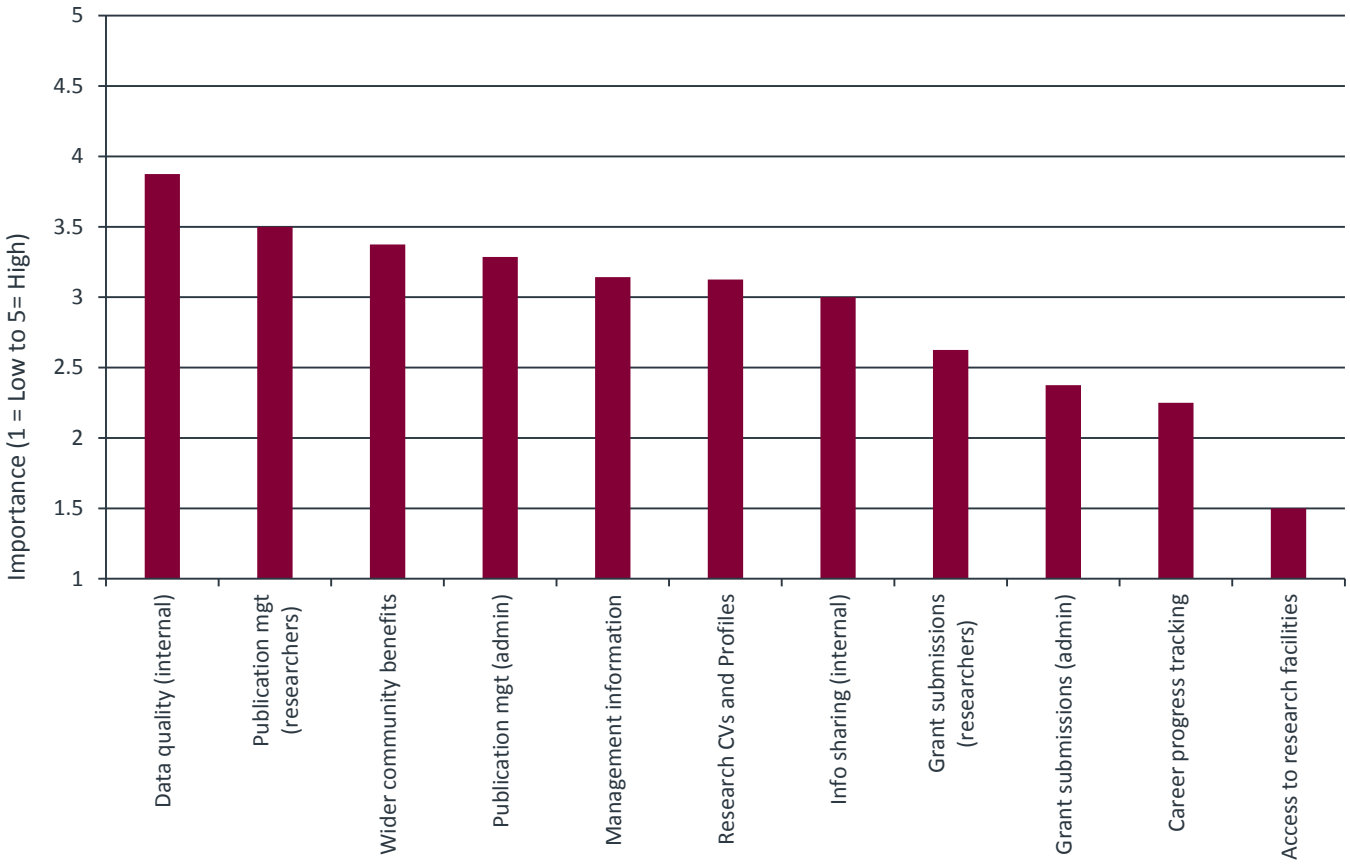
20 For reference purposes, HESA data indicates that there were 140,000 teaching and research and research-only staff employed in UKHEIs in 2013/14, while the total number of full-time equivalent staff submitted to the 2014 REF was 51,300. 75,000 is therefore used as an estimate of those HEI staff who are actively engaged in research and likely to derive the greatest benefit from ORCID.

Quantifying the potential benefits of ORCID

As outlined in part one of this report, the potential benefits of ORCID are wide-ranging in nature, and all the stakeholders we consulted agreed that it has the potential to deliver significant time savings. At this stage, however, there is little evidence that can be used to quantify the value of these savings reliably, reflecting the fact this was a pilot exercise and uptake of ORCID amongst researchers is rising but remains well short of 100%. Several of the pilot institutions also cautioned that any attempt to capture ORCID's value purely in terms of financial savings (for example those achieved through streamlined submission of manuscripts and grant applications) would understate its importance as an enabler of more fundamental improvements to the scholarly communications ecosystem.

Given the absence of realised benefits to date, the pilot institutions were therefore asked to indicate which potential benefits had been of greatest importance in their decision to adopt ORCID (see Figure 6). The list of potential benefits used here was informed by the ORCID user case report prepared for Jisc in 2013[21], although several respondents noted other benefits, such as ORCID's potential role in enabling data-mining and discovery, which were also relevant to their decision.

Figure 6: Importance of Potential Benefits in Decision to Adopt ORCID

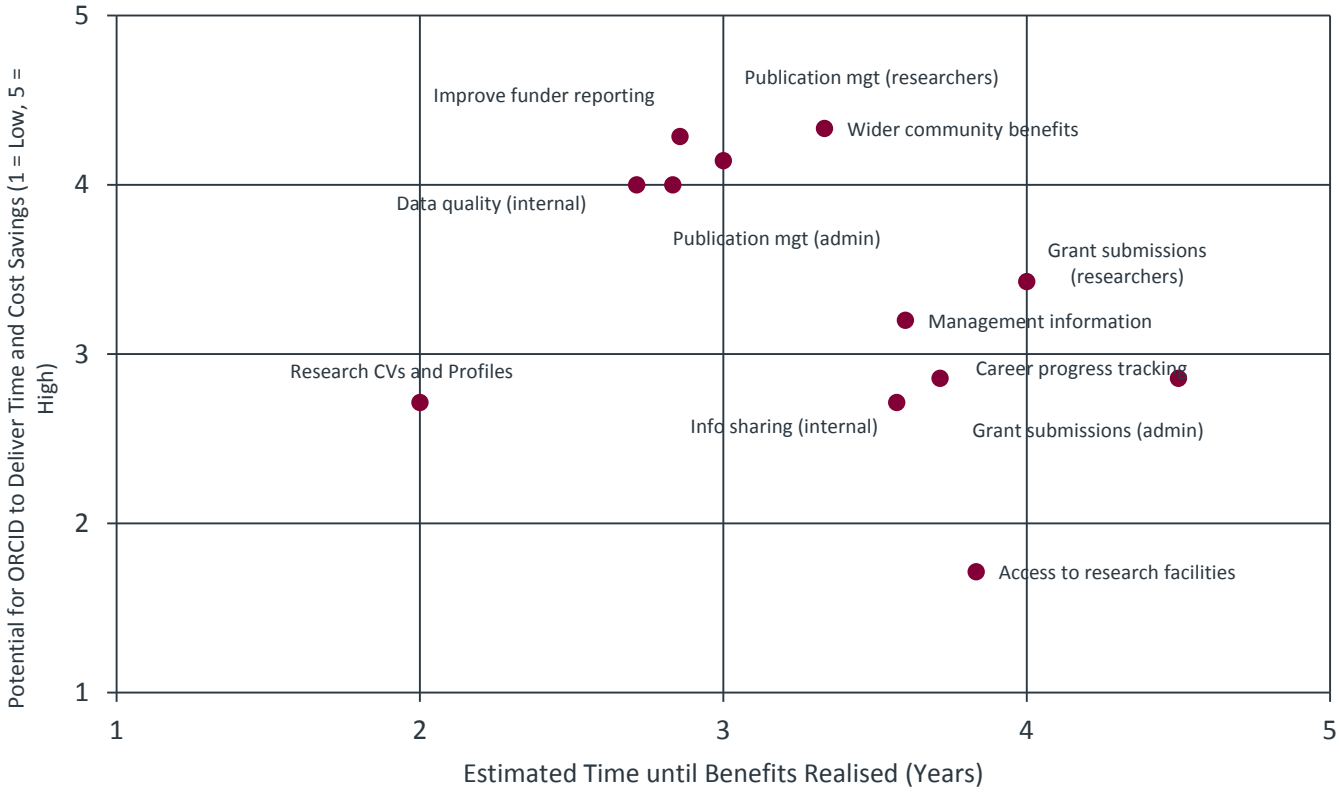


21 Ferguson, Nicky (2013): Use cases and views on the future use of ORCID in UK Higher Education. http://repository.jisc.ac.uk/5377/1/ORCID-for-UKHE-final-report-web.pdf_Retrieved Feb 17, 2015

There were notable similarities between the benefits identified by participants in the Jisc-ARMA pilot and those reported by US institutions as part of the Alfred P. Sloan foundation 'ORCID Adoption and Integration Program'[22]. The final report from the US program identified improving attribution and data quality in local systems as a common goal, and also noted the importance to institutions of reduced opportunity costs, improved information resources, and better, faster integration and software development. In common with the UK pilots, many of these anticipated outcomes had yet to be realised, but the report suggests US institutions are beginning to see benefits from the enhanced attribution and authentication processes enabled by ORCID.

The UK pilot institutions were also asked to estimate the extent to which certain types of benefits were expected to deliver efficiency savings, and when they expected these savings to crystallise. The results of this process are shown in Figure 7, below. This analysis indicates that on average institutions expect it to be a minimum of two years before they will see measurable benefits from their implementation of ORCID, with most benefits still three or four years away from realisation. The greatest efficiency gains are expected to come from improvements in internal data quality, streamlined management of publications, and improvements in funder reporting arrangements. For most institutions, the implementation of ORCID at this time is therefore a preparatory move, undertaken for the benefit of the wider research community as much as the institution itself.

Figure 7: Efficiency Gains vs Timescales for Benefits Realisations



22 Brown, Josh; Oyler, Catalina; Haak, Laurel (2015): Final Report: Sloan ORCID Adoption and Integration Program 2013-2014. figshare. http://dx.doi.org/10.6084/m9.figshare.1290632. Retrieved Feb 17, 2015

Evaluating the cost-benefit of ORCID adoption by UK HEIs – Break-even analysis

In view of the paucity of robust data on benefits, the most appropriate way to assess the value of the £2.1m cost of widespread adoption by UK HEIs is to conduct a break-even analysis. This can be used to determine what level of savings would be required, and over what time frame, to recoup the upfront investment and recurrent costs incurred in the roll-out of ORCID across the sector.

The break-even analysis on the following page is based on the same assumptions for rates of ORCID take-up by researchers and institutions used in the modelling of implementation costs, above, and assumes that a premium consortium membership is put in place for UK HEIs from the 2015/16 academic year onwards. The value of the cost savings enabled by ORCID has been calculated with reference to HESA average salary data for the 2012/13 academic year, uplifted for inflation and inclusive of on-costs, but excluding overheads. In order to allow for the time value of money, future cash flows are discounted in this analysis using a rate of 3.5%[23].

Allowing three years before any benefits are realised, the 'base case' shows that if ORCID delivers savings of only 15 minutes per researcher, per year, and 0.1 full-time equivalent staff members (FTEs) per institution, the savings made will offset the costs incurred within 5 years. Per institution, the value of the time saved at this level would equate to an average of £10k per annum on average, though the actual saving would vary depending on the size of the institution, the number of researchers using ORCID, and the administrative processes in place.

With a 10-year time horizon, the net present value of the base case scenario is £2.5m (i.e. the savings generated will exceed the costs incurred by £2.5m over a 10 year period, measured in today's terms). Given the large number of other potential benefits identified in this report (such as streamlined preparation of grant applications, easier reporting of outputs to funders, faster manuscript submissions to publishers, and improvements to open access and REF administrative processes) savings of 15 minutes and 0.15 FTE look eminently achievable.

Accordingly, two additional scenarios have also been modelled, 'mid case' and 'upper case', showing the value to the sector of adopting ORCID if greater levels of efficiency savings can be achieved. These demonstrate that the net present value of ORCID adoption for the sector rises to £1.5-£3.6m over 5 years, and £6-12m over 10 years. These figures are based on ORCID delivering savings of 20-30 minutes per researcher within 5 years, and 0.2 – 0.4 FTEs per institution. Per institution, the savings would be in the range of £18k-32k per annum, on average.

23 The discount rate used of 3.5% is in line with HM Treasury guidance for public sector bodies on how to appraise proposals before committing funds to a policy, programme or project. See https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government

Figure 8: Cost/Benefit Analysis – Implementation of ORCID by 120 UK Higher Education Institutions.

Year	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Years 6-10
	0	1	2	3	4	5	6-10
Assumptions							
Researchers actively using ORCID (cumulative)	20,000	30,000	40,000	50,000	60,000	75,000	75,000
Institutional ORCID implementations (cumulative)	10	25	50	80	100	120	120
Base case - Breakeven Analysis							
Time saved in minutes per researcher, per annum	0	0	0	5	10	15	15
Time saved in administrative FTEs per institution, per annum	0	0	0	0.05	0.1	0.1	0.1
Net cost/benefit to sector (£000s)	**0**	**(247)**	**(378)**	**(162)**	**275**	**631**	**802**
Mid case							
Time saved in minutes per researcher, per annum	0	0	5	10	15	20	20
Time saved in administrative FTEs per institution, per annum	0	0	0.05	0.1	0.15	0.2	0.2
Net cost/benefit to sector (£000s)	**0**	**(247)**	**(159)**	**145**	**651**	**1,319**	**1,490**
Upper case							
Time saved in minutes per researcher, per annum	0	0	5	10	20	30	30
Time saved in administrative FTEs per institution, per annum	0	0	0.1	0.2	0.3	0.4	0.4
Net cost/benefit to sector (£000s)	**0**	**(247)**	**(64)**	**449**	**1,407**	**2,696**	**2,867**

Year	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	Years 6-10
Net present value of scenarios (£000s, 3,5% discount rate)	**5 years**	**10 years**					
Base case	32	2,511					
Mid Case	1,422	6,030					
Upper Case	3,602	12,470					

Illustrative case study – Imperial College London

In order to illustrate the savings that could be enabled as a result of their ORCID implementation, Imperial College London have estimated the potential for ORCID to deliver cost savings in the publications management process as follows:

- Under the forthcoming REF open access policy[24], effective April 2016, as many as 10,000 articles per year will need to be deposited in the College's institutional repository at the point of acceptance for publication
- The College's current estimate for staff time to deposit an article is ~60 minutes, including time spent by the academic
- This is based on the College's current 'on publication workflow', and does not factor in that: a) after publication the repository team will need to go back to the article and set a final embargo date; b) time will be required to clean the metadata provided by the academics and to match the minimal metadata with the final publication metadata. A further 10 minutes per article is assumed for these tasks, making 70 minutes in total
- Out of those 70 minutes ~35 minutes are required to check licence/deposit requirements of the journal
- If ORCID could enable the provision of metadata, including the DOI and embargo period, from the publisher to the College, it is estimated that this would save 40 minutes of time per article. This alone would amount to around 760 staff days or about 3 FTE for an institution of Imperial's size
- If the article metadata also included funder information and OA licence, the College would expect to save further time spent adding funder information per article and checking that it has actually received the OA licence it has paid for. In this scenario, the potential saving could be as high as 1,000 staff days and 4-5 FTEs

Delivering this level of saving is dependent on a number of other initiatives (such as FundRef, CrossRef and the NISO open access metadata standards) in addition to ORCID, and would require an increased level of co-operation between institutions and publishers. Nevertheless, it demonstrates the potential savings that can be achieved through improvements in the scholarly communications infrastructure, and for which ORCID is a prerequisite.

24 http://www.hefce.ac.uk/pubs/year/2014/201407/

Appendices

Appendix A: Interview Questions for ORCID Pilot Institutions

1. Please tell us what you have achieved during the pilot so far
2. What has been easily achieved?
3. What has been difficult?
4. What haven't you achieved but expect to do so by the end of the project?
5. What form of institutional approval process was required for you to initiate the implementation of ORCID?
6. Did you encounter any difficulties in obtaining institutional approval to adopt ORCID? If so, how did you overcome these?
7. Did your institution require you to prepare a business case or formal proposal for the project, and if so may we have a copy?
8. What issues and barriers have you encountered during the project? Were these primarily cultural, technical, logistical, political, etc.?
9. What approach have you taken to project management of the ORCID implementation, and how has this worked in practice? For example, is there a designated project manager, project chair and project board/steering group? Which departments within your organisation have been involved in the pilot and how have you worked together?
10. Have you consulted with your human resources or legal departments in the course of the project? If so, what advice did they give?
11. Have you issued ORCID iDs automatically to your staff members, or encouraged them to sign up voluntarily? If the latter, what advocacy and communications strategies have you adopted to promote ORCID? Have any of these been particularly successful?
12. What benefits have you seen already in your organisation?
13. What further benefits do you anticipate?
14. Please tell us which system suppliers you have worked with and your experience of interacting with them.
15. Can you see any downsides to the greater use of ORCID for your organisation, or for the research ecosystem more broadly?
16. Please tell us your thoughts on whether ORCID membership meets your requirements? What do you feel about the basic versus premium membership?
17. What will be your next steps after the Jisc-ARMA project has ended? For example, will you continue your ORCID membership?
18. Once the project has ended, would you be interested in joining a national arrangement for ORCID?

Appendix B: List of interviewees

First name	Surname	Role	Organisation
Janette	Colclough	Research Support Manager	University of York
Isobel	Stark	Academic Liaison Librarian	Southampton University
Simon	Coles	Senior Lecturer & Director, UK National Crystallography Service	Southampton University
Michael	Whitton	Academic Liaison Librarian	Southampton University
Ellen	Cole	Scholarly Publications Librarian	Northumbria University
Nick	Woolley	Head of Academic Library Services	Northumbria University
Alexander	Roberts	Head of Web Services	Swansea University
Erica	Wine	Research Archive Specialist	Aston University
Torsten	Reimer	Open Access Project Manager	Imperial College London
Sally	Rumsey	Digital Research Librarian/ Project Manager	University of Oxford
Eugenio	Barrio	Research Services	University of Oxford
Kirsty	Wallis	Project Officer	University of Kent
Simon	Kerridge	Director of Research Services and Chair of ARMA	University of Kent
Peter	Tinson	Executive Director	UCISA
Dan	Cook	Head of Collections Development	HESA
Andrew	MacEwan	Authority Control Coordinator	British Library
Ben	Johnson	Research Policy Adviser	HEFCE
Steven	Hill	Head of Research Policy	HEFCE
Geraldine	Clement-Stoneham	Knowledge and Information Manager	MRC
Gavin	Reddick	Senior Information Analyst	MRC
Ben	Ryan	Senior Evaluation Manager	EPSRC
Liz	Allen	Head of Evaluation	Wellcome Trust
Jonathon	Kram	Research Assistant (Strategic Planning and Policy Unit)	Wellcome Trust
Jonas	Gilbert	Deputy Library Director	Chalmers University of Technology
Torulf	Lind	Chief Information Officer	Swedish Research Council
Thomas	Vestdam	Head of Product Technology	Elsevier/PURE
Jonathan	Breeze	CEO	Symplectic

Thorsten	Hoellrigl	Head of Product Development	Thomson Reuters/Converis
Lyndon	Holmes	CEO	Aries/Editorial Manager
Alexandra	Bash	Director of Product Management	HighWire Press/Bench Press
Richard	O'Bierne	Electronic Publishing Manager	Oxford University Press
Genny	Early	Global Production Director, Journals	Taylor & Francis
Volker	Boeing	Director, Process & Content Management	Springer Science+Business Media
Rachel	Craven	Senior Product Manager, Publishing	BioMed Central
Will	Russell	Manager – New Technologies & Incubation	Royal Society of Chemistry
Sally	Hardy	CEO	Regional Studies Association
Gerald	Lowe	Electronic Publications Officer	Modern Humanities Research Association
Melinda	Kenneway	CEO	Kudos
Josh	Brown	ORCID Regional Director, Europe	ORCID

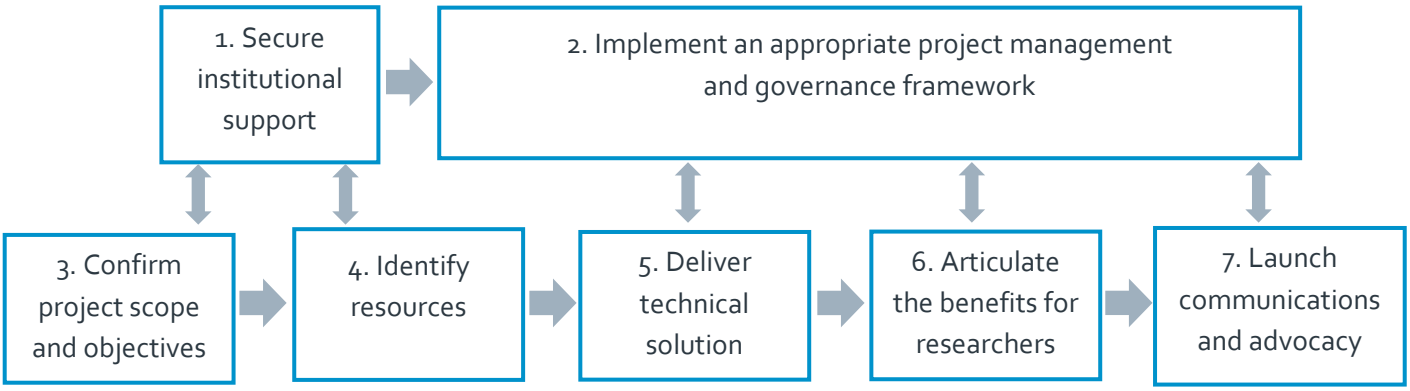
Appendix C: ORCID checklist for Higher Education Institutions

ORCID is an open, non-profit, community-based effort to provide a registry of unique researcher identifiers and a transparent method of linking research activities and outputs to these identifiers.

In May 2014, to support the broader use of ORCID identifiers in higher education, Jisc and the Association of Research Managers and Administrators (ARMA) commissioned eight ORCID pilot projects at UK higher education institutions to enable further practical exploration and to disseminate best practice in the adoption of ORCID. Each of the funded institutions is implementing ORCID identifiers in institutional systems and processes and has produced a case study report. The pilot projects ran from May 2014 to January 2015.

This document summarises the lessons learned from the Jisc-ARMA ORCID pilot project with regards to the implementation and promotion of ORCID within UK Higher Education Institutions (HEIs). It accompanies the full project report, available at **http://orcidpilot.jiscinvolve.org/wp/**, and is designed as a practical aid for institutional managers, typically in the library or research office, who are considering whether and how to implement ORCID.

This document follows a logical sequence of strategy and decision-making, summarised in the diagram below.



For technical guidance and further information about how member institutions interact with ORCID, institutions should refer to the ORCID website and Knowledge Base at **http://support.orcid.org/knowledgebase**.

1. Secure institutional support for ORCID

Observations and lessons learned from the pilots	
Senior managers were generally found to be supportive of ORCID once its purpose and implications were explained. Their involvement was often key to subsequent communication efforts promoting the adoption of ORCID by academic staff.	
Institutional approval processes for the adoption of ORCID varied widely. In some institutions no formal approval process was required, in others a formal business case was prepared and subject to approval by an institutional committee.	
The involvement of a number of different university departments is necessary to the successful delivery of the project, most notably the library, research office and information services.	
HEIs often found it helpful to secure advice from human resources and/or legal services departments at an early stage, in order to develop a clear institutional position on storage and ownership of information, privacy and data release.	
Recommendations	
1. Secure in principle support from the library, research office, information services and a senior academic leader (e.g. Pro-Vice-Chancellor Research or equivalent) before seeking to initiate an implementation project. You should refer to the full Jisc-ARMA pilot report and ORCID's guidance for research organisations[25] for information on the benefits to HEIs of adopting ORCID.	
2. Prepare a formal business case and project plan for the implementation of ORCID, following the approval process appropriate to your institution.	
3. Share your project plan with the ORCID support team at an early stage if you have any concerns about its technical feasibility or if the project will cover a broader scope than previous projects.	
4. Seek advice from Human Resources and/or Legal Services staff at an early stage on how the institution will respond to questions over the privacy or data protection implications of ORCID. The ORCID privacy policy provides guidance to address the most common questions and concerns in this area[26].	

25 http://orcid.org/organizations/institutions
26 http://orcid.org/footer/privacy-policy

2. Implement an appropriate project management and governance framework

Observations and lessons learned	
The majority of the pilot projects were managed on a day-to-day basis by institutional libraries, often through a designated project manager, though in a small number of cases research support offices or information services led the project. In all cases these three departments each had an important role to play in project delivery.	
The pilot institutions typically adopted a light-touch approach to project management, but larger institutions tended to convene a formal Project Board or Steering Group to oversee progress.	
Institutions where academic representatives either chaired the project board or served as members of the steering group found this to be very valuable.	
Recommendations	
5. **Consider establishing a project board or steering group to oversee the implementation of ORCID, including representatives from the library, research office, information services and the academic community.**	
6. **The implementation of ORCID should ideally be managed in accordance with a recognised project management methodology (e.g. Prince 2), but with a relatively light touch.**	

3. Confirm project scope and objectives

Observations and lessons learned from the pilots	
The scope and objectives of the pilot projects varied widely, reflecting the fact that 'implementing' ORCID can mean different things, but most involved: » A feasibility process associated with the adoption of ORCID, which entailed consideration of the technical implications, and of any legal and regulatory factors that might affect the introduction and operation of ORCID in the institution » Technical development of institutional systems to allow an ORCID iD to be recorded and associated with existing staff records (whether in the institution's HR system or a CRIS) » Development of promotional materials, websites and delivery of advocacy activities to encourage researchers to sign up for an ORCID iD and/or record it in institutional systems	
Several pilot institutions set a target for the number of ORCIDs associated with their researchers, and were able to monitor progress against this over the life of the project with help from the ORCID support team. However, the quality of data on researchers affiliated to a given institution is variable and often incomplete, because many researchers sign up with a personal email account and do not record their institutional affiliation.	
The majority of pilot institutions chose to promote voluntary adoption of ORCID by researchers (via 'Trusted Party' membership), but one institution, Imperial College London, opted to bulk-create ORCID iDs for their staff (via a 'Creator' membership). Further detail on these two options can be found in the full report and on the ORCID membership pages[27], while Imperial's final report provides further information on their experience of bulk creation of ORCID iDs[28].	
ORCID implementation projects were often aligned to existing projects and activities associated with open access or planning for the Research Excellence Framework. This was found to be helpful in embedding the ORCID project within existing institutional initiatives and governance structures.	
The ability to use ORCID as a hub to connect an institutional profile to external sources was a potential source of confusion amongst researchers at the pilot institutions. It is important for institutions to decide early on whether and how they wish to make use of this functionality.	
Recommendations	
7. Set clear objectives for your ORCID implementation which will usually involve both technical development of systems and a programme of advocacy activities. The document 'Institutional ORCID implementation options' prepared by the Australian National Data Service may help with this[29].	
8. Contact the ORCID support team to discuss what data is available on existing ORCID users associated with your institution, and how this might be used to track project progress.	

27 https://orcid.org/about/membership
28 https://repository.jisc.ac.uk/5876/1/Imperial_College_ORCID_project.pdf
29 http://ands.org.au/discovery/orcid-implementation-options20150414.pdf

9.	**Institutions are advised to adopt the 'Trusted Party' membership option in the vast majority of cases, and should discuss their requirements with ORCID support before opting for a 'Creator' membership**	
10.	**Review existing institutional projects and initiatives in the field of research information management, open access and open data, and consider opportunities to align your ORCID implementation with these.**	
11.	**ORCID's primary role is as a unique, persistent identifier, but institutions should also decide whether they expect to use ORCID as a hub to connect institutional profiles to external data sources.**	

4. Identify resources for project delivery

Observations and lessons learned from the pilots	
The time taken to implement ORCID depended on the project scope and institutional size, but on average projects required approximately 300 hours of staff time, over a period of six to nine months. The majority of input came from library staff (55%), with additional support from information services/technical staff (29%), the institutional research office (8%) plus other departments and academic staff (8%).	
The direct impact on academic and research staff of implementing ORCID is negligible, with the average time to create or claim an ORCID iD estimated at three minutes per researcher.	
In most cases, staff involved in the implementation of ORCID devoted less than a day a week to the project, alongside their existing responsibilities. Typically there was no need to secure additional staff resource or appoint dedicated staff to the project. However, implementation at the very largest pilot institutions did require full-time input from some technical staff for a period of several weeks.	
The average cost of the implementations was £12,500, the majority of which related to the time of existing staff members. The incremental cost of implementation was limited to ORCID membership ($4,000 at present) and a small amount of expenditure on travel and promotional materials (£500-£2,000).	
The recurrent costs of maintaining ORCID post-implementation were considered to be minimal, with the annual ORCID membership the only significant cost. Ongoing demands on staff time were estimated at no more than a few hours per week across the institution.	
Recommendations	
12. **Most institutions can manage the implementation of ORCID internally, with no need to recruit additional staff or engage external consultants. However, institutions should plan for a designated project manager and technical lead to spend up to one day a week on the project for a period of six to nine months.**	
13. **Institutions should budget for the costs of ORCID membership (currently $4,000) and a small amount of expenditure on promotional materials (£500-£2,000, depending on the institution).**	
14. **There will be a need to manage the relationship with ORCID and continue to promote its uptake within the institution once the initial implementation is complete. Responsibility for this should be clearly identified, but should not prove a significant burden in practice.**	

5. Deliver technical solution

Observations and lessons learned	
The pilot institutions took several different approaches to storing ORCID iDs within institutional systems. In some cases ORCID iDs were recorded initially in a CRIS, in others the institutional HR or student records system, and there was often a need subsequently to populate other systems with the iD, such as institutional repositories and content management systems for the web.	
The level of technical development required depended on whether institutions simply wished to record existing ORCID iDs in their systems, or whether they wanted to give researchers the ability to create (or link an existing) ORCID iD from within internal systems.	
Technical issues associated with the implementation of ORCID did not prove to be a major issue for most pilot institutions, but did cause unforeseen delays in a small number of cases.	
HEIs using third-party current research information systems (CRIS), such as Pure, Symplectic and Converis, had to work closely with their systems provider in the early stages of the project. In some cases the functionality required to make use of ORCID in these systems was only available in later software releases, and thus timings were dependent on an institution-wide upgrade of the software.	
Most institutions used the ORCID application programming interface (API) to exchange data with the ORCID servers. Institutions are likely to be using existing cloud services that operate in a similar fashion, and should expect to manage the ORCID API in accordance with their existing protocols for these services.	
Recommendations	
15. Institutions using third-party CRIS systems should discuss their proposed implementation with their software vendor at the earliest opportunity. Speaking with other institutions using the same system who have already adopted ORCID is also likely to be beneficial.	
16. If your institution is already planning to replace or upgrade its research information systems, the implementation of ORCID should be incorporated into or aligned with the objectives and plan for this project (and should form part of the tender specification where an entirely new system is being procured).	
17. Institutions should decide early in the implementation process which institutional system is most appropriate to store ORCID iDs (typically a CRIS or HR system) and what other systems will also need to be populated with this data.	
18. The exchange of data via the ORCID API should be managed in accordance with existing institutional arrangements for cloud services, using the ORCID member API and OAuth 2.0 protocols. Further information on ORCID's data protection, privacy and information security arrangements can be found within the ORCID privacy policy[30].	

30 http://orcid.org/footer/privacy-policy

6. Articulate the benefits for researchers

Observations and lessons learned	
Senior managers were found to be receptive to the institutional benefits of ORCID, which makes them an ideal starting point in setting up and delivering successful advocacy strategies.	
Generally, academics may see ORCID as 'another level of bureaucracy', resulting in a degree of resistance to using it. Early career researchers tended to see the benefits of ORCID and embrace them more positively than established researchers and senior academics.	
Academics at some pilot institutions expressed concern about duplication of effort in entering their information into numerous different systems. They often questioned what benefits ORCID offered over existing proprietary identifiers, such as Thomson Reuters ResearcherID and Scopus author ID, or profiling services such as Academia.edu and ResearchGate.	
Researchers' attitudes to ORCID were found to differ both across and within HEIs: for instance, researchers in science, technology, engineering and medicine (STEM) disciplines are more used to automation in research information workflows, and are more likely to recognise the potential benefits of adoption than those in arts, humanities and social sciences (AHSS).	
Recommendations	
19. **HEIs should be aware that articulating the benefits of ORCID to researchers can be challenging at the present time, and aim to develop a narrative that resonates with researchers (e.g. 'Distinguish yourself with an ORCID').**	
20. **HEIs should be prepared to address researchers' view that existing identifiers and profiling services already provide them with an adequate online presence, noting that: (a) ORCID has a unique status as a community-owned, non-proprietary, open-source and international persistent identifier; and (b) ORCID is the only ID that is embedded into research workflows, thereby providing a bridge between existing IDs and allowing a researcher's records to be automatically updated across platforms.**	

7. Launch communications

Observations and lessons learned	
Effective communication emerged as one of the most important elements of the project for each of pilots, and early engagement with stakeholders was felt to be vital to success.	
Several institutions adopted a staged approach to the roll-out of ORCID, piloting it with a small number of departments to test approaches and incorporate feedback before proceeding with an institution-wide implementation.	
A dedicated webpage and the integration of ORCID within the University website and CRIS (where available) were considered to be very important to effective communication.	
Promotional materials which are eye-catching, clearly branded, and contained simple, succinct messages were found to be most effective by the pilot institutions.	
Involvement of academic staff itself is particularly helpful to increase dissemination of the service for instance, and using PhD students and early career researchers as advocates to deliver the ORCID message can be an effective strategy.	
Where the adoption of ORCID was underpinned by a formal university policy (e.g. a 'Policy on the Publication of Research') this was found to be helpful in encouraging uptake by researchers.	
Some HEIs found it helpful to create a dedicated ORCID email account monitored by staff within the library or research office in order to respond to researchers' queries and concerns.	
Recommendations	
21. Communication should focus on clear and effective messages (as short and precise as possible) that are endorsed by senior management, create a well-defined brand for ORCID and are targeted to specific audiences.	
22. A clear communication plan for rollout of ORCID should be developed, involving a multi-channel approach involving email communication, web-based guidance, training sessions and other advocacy approaches. See for example the ORCID Advocacy Toolkit prepared by the University of Kent[31].	
23. HEIs should consider adopting an institutional policy encouraging ORCID registration, which is very helpful to articulate the benefits.	
24. HEIs should ensure that concurrent communications on open access (OA), REF and ORCID are clearly articulated and co-ordinated.	

31 http://blogs.kent.ac.uk/orcid/files/2015/02/ORCID-Advocacy-Toolkit-BLOG-VER.pdf

25. **HEIs should consider creating an ORCID information webpage and a dedicated email address to which researchers can direct queries about the institution's implementation of ORCID. The ORCID support team should be notified of this address so they can refer queries to the institution where appropriate.**	