Oxford University ORCID Scoping Study

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1. Executive Summary

The ORCID scoping study originally intended to define how ORCIDs could be implemented under a variety of systems at the University of Oxford where ORCIDs would support interoperability, unique accurate identification of individuals and their outputs and research awards, and more efficient research information management. However, the research resulted in unexpected findings around a lack of common standards, protocols and dataflows at national and international scale (for example by funders, by aggregation and repository and other systems). The resulting internal recommendations are therefore pitched towards early steps for readiness across the University, primarily around support and advocacy, plus initial suggestions for central identity management, ORA, Symplectic Elements, theses, and service support.

In the short term at Oxford, we need to continue the current technical trajectory, updating the integration of ORCIDs into our central Identity Management infrastructure and enabling ORCIDs support in Symplectic Elements, ORA and ORA-Data. However, it is not worth investing significantly in further systems and integration without ensuring that the necessary standards and protocols have been defined. Fortunately, Oxford is well regarded in this area and is in a good position to take a leadership role in driving this process forward in a manner that meets our needs. This will require time and effort to be spent on standards development and review rather than technical development, but this is an essential precursor to realising the efficiency and cost saving benefits that ORCID and relating services can offer.

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Neil Jefferies & Sally Rumsey
The Bodleian Libraries, June 2016

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2. Introduction

This is the final report of the ORCID Scoping Project, a University of Oxford internal project funded by RIMTS (formally RIMSC), and led by the Bodleian Libraries. It aims to summarise the current state of the ORCID environment in the UK and more widely, with reference to research carried out over the past four months, with a view to providing a series of recommendations for further investment in ORCID-related activities at Oxford. A detailed introduction to ORCIDs can be found in Appendix A.

It is important to remember that an ORCID and the associated data are, by design, controlled and managed by the researcher themselves. This enables the ORCID to be independent from institutions, publishers and funders and thus capable of persistence beyond any particular affiliation. Consequently, the extent to which institutions can query and update ORCID records depends on permission being granted by the research to do so.

An unintended but strategically useful outcome of this study has been that Oxford (represented by Neil Jefferies) has been invited to participate in the strategic planning process for Jisc and the UK ORCID Consortium. As a result, the final recommendations from this project were produced after a key UK Consortium Meeting on 25th May 2016.

Following on from the Consortium Meeting, Oxford continues to be involved at a high level with both the development of the Consortium and Jisc's own plans to support the UK HE community is this area. At the ORCID UK Consortium meeting, the approach to ORCID implementation chosen by the University was widely seen as a sound strategic option endorsed by ORCID, Jisc and other consortium members.

We are grateful to individuals, particularly from external organizations who offered insight and experiences to this report. Those who participated are listed in Appendix D.

Thanks are also due to RIMTS (Oxford's Research Information Management and Technology Sub-Committee) who approved funding this project and offered comments on the draft report.

3. ORCIDs at Oxford

Jisc/ARMA ORCID Pilot

Oxford was one of the institutions that participated in the Jisc/ARMA funded ORCID Pilot project (https://orcidpilot.jiscinvolve.org/wp/) that ran from May 2014-January 2015 with a view to seeding ORCID implementations, but also generating a cost benefit analysis (http://repository.jisc.ac.uk/6025/2/Jisc-ARMA-ORCID_final_report.pdf) and reusable advocacy materials, such as Oxford's ORCID Libguide, for other institutions. The other HEI partners were Aston University, Imperial College London, University of Kent, Northumbria University, Southampton University, Swansea University and the University of York.

At the outset, Oxford already had a library-led Identity Working Group that included representation from IT services, Research Services and the wider University looking at a broad range of identity issues. As a consequence, this group took on ownership of the ORCID Pilot Project.

A decision was taken to integrate ORCIDs in a central identity system (IT Services' Registration Database) so that an authenticated user's ORCID would be potentially available to all systems that relied on the institutional WebAuth single sign-on system, greatly simplifying subsequent implementations. The ability to request an ORCID, or link an existing ORCID to your University account, is thus available from the same central self-service Website where users maintain their Eduroam and VPN access details. This facility makes use of the ORCID API so that users' affiliation with Oxford in their ORCID record is shown as validated by the University, rather than the users own, less authoritative, assertion.

The work of the Identity Working Group has been taken on by the Steering Group for a broader IAM (Identity and Access Management) project funded by the IT Capital fund which includes physical access control and card issuing as well. The ORCID specific advocacy and ongoing development has been largely subsumed by the ORA and Open Access teams within the libraries who initiated this study.

Symplectic and ORA

Both Symplectic and ORA/ORA data have the ability to capture and record ORCID information about research outputs.

ORA integrates with the university single sign-on system and can therefore retrieve ORCID information from the Registration Database via the Core User Directory Service that provides and controls access to user information from a number of University sources. However, the Symplectic service is provided by a third party and uses its own authentication methods and identity management. As such, a user is required to link their ORCID to their Symplectic account separately. It was felt that this requirement for double entry of data, albeit relatively simple, was potentially confusing and needed careful communication (although this view is under review). There are also

developments in the ORCID platform that may provide a more elegant solution which will be covered later in this document.

ORA and a number of related services are undergoing migration to the new VIPR hosting infrastructure at Oxford so any updates to the platform are on hold until that is complete. Implementing ORCID functionality will be factored in as part of ongoing technical work.

Libguides

Much of the information and advocacy material developed as part of the Jisc ARMA pilot is drawn together in a Libguide (http://ox.libguides.com/orcid) which is maintained and updated by Libraries (with input from Research Services and IT Services) as needed. This, along with other materials produced by Jisc ARMA Pilot institutions, has been made freely available to others, and the Libguide has been widely re-used and linked to.

4. Methodology

This exercise involved discussions with a large number of internal and external stakeholders so a number of different approaches were adopted to most efficiently collect data in a short timescale.

- Institutional partners were sent an email questionnaire (Appendix B) which aimed to get an overall view of institutional activity with the option to comment with any specific observations. This was more highly structured and formulaic in order that comparisons could be drawn.
- Internal stakeholders were interviewed (face-to-face or via phone/Skype) with a standard set of questions (Appendix C) but with the aim of allowing discussion to proceed to draw out more information.
- Other external stakeholders were engaged in freeform discussions at meetings and conferences since their interests differed widely.

5. Institutional Comparison

In this paper, comparisons at an institutional level focus on the academic body and institutional services as a whole rather than detailed breakdown by department. The institutions surveyed were Oxford, Cambridge, Glasgow, Imperial, UCL, KCL, LSE and Manchester. It should therefore be borne in mind that the findings and conclusions of this comparison are valid only for institutions of comparable size, complexity and operational behaviour as Oxford.

ORCID Adoption

The original impetus for the development of ORCIDs was the desire of libraries and publishers to improve the quality of author metadata for publications. As a consequence, initial implementations within academic institutions were predominantly library led. However, as the wider potential benefits of ORCIDs have developed and become recognised, they have started to be taken up and have an impact in other systems.

Start of Adoption

Logically, the earliest adopters of ORCID in the survey were Oxford University and Imperial College who were members of the Jisc/ARMA Pilot project in early 2014. Other institutional initiatives started at various point in the intervening time. It is worth noting that, in the absence of an institutional mandate, there is not a strong correlation between how early an institution started ORCID related activities and how much penetration ORCIDs have into the academic community of that institution.

This tends to suggest that external factors common to the scholarly community as a whole rather than institution-specific activities are a significant factor in adoption. However, by starting early, some institutions were able to adopt what can be considered more "strategic" approaches in terms of systems development which are likely to result in efficiency savings in the medium term.

Technical Integration

The current and immediate future levels of technical integration of ORCIDs across the surveyed institutions highlights a couple of factors:

- Technical deployments are at an early stage so there are still lots of plans for future development in most institutions.
- The CRIS/RIM systems at the institutions (Pure and Symplectic) are commercial products whose vendors were very quick to integrate ORCIDs since they have the potential to significantly improve data quality and thereby enhance both internal and external reporting
- Repositories of all types are typically internally managed and maintained so while there are good reasons to integrate ORCIDs, most institutions are resource constrained in this area – especially with active OA (Open Access) and AoA (Act on Acceptance) initiatives already occurring.

- In many cases, repositories (especially IRs – institutional repositories) receive data feeds from CRIS/RIM systems so their IR ORCID implementations are, to an extent, dependent on prior adoption in those systems.
- In both cases mentioned, the "other" systems were departmental-level integrations
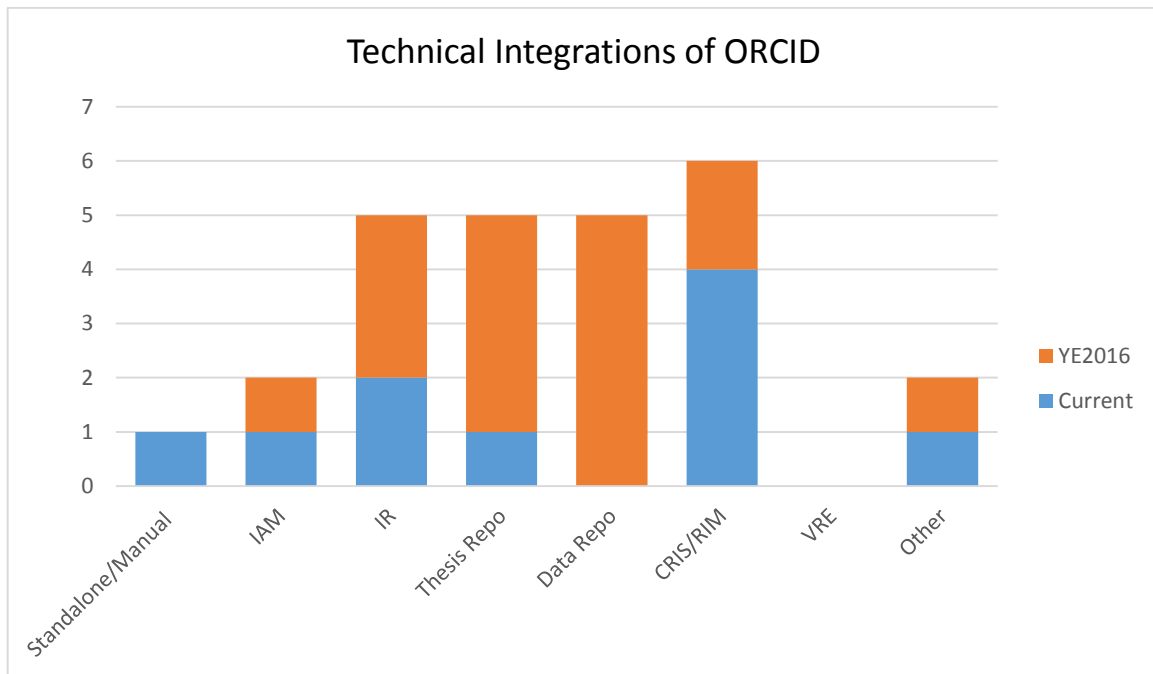
Measuring Adoption levels

Paradoxically, many of the key design features of ORCIDs mean that deriving meaningful and measurable metrics at an institutional level is not a simple process:

- ORCIDs are institutionally independent. A scholar can obtain an ORCID without notifying their institution or registering any particular institutional affiliation within the ORCID system. Even if an institution assigns an ORCID to an individual it is up to them whether to claim and use it subsequently, or use another.
- Much of the value of ORCIDs derive from their use in systems outside the institution – publishers, funders and external repositories. These systems do not necessarily produce statistics at an institutional level of granularity and may not make such information available in any case.
- Institutions are currently only tracking ORCIDs adoption by academic staff rather than undergraduates/postgraduates and other staff.

Adoption levels therefore represent figures derived from a number of possible sources which are not strictly comparable and are likely to under-report ORCID holders for the reasons given above. However, institutional systems figures are more likely to give a more accurate impression of ORCID *use*:

- Estimates based on knowledge of the respective scholarly community
- Figures from ORCID where an institutional email address or other evidence of affiliation has been used in an account
- ORCIDs registered with a relevant institutional system

As an illustration, Imperial College took the approach of pre-registering ORCIDs for those academic and research that did not already have them and then asking staff to claim them. At the end of the exercise, approximately 75% of staff either had an existing or a claimed ORCID – however, only 60% of those ORCIDs (45% of total eligible staff) ended up linked to institutional Symplectic accounts.
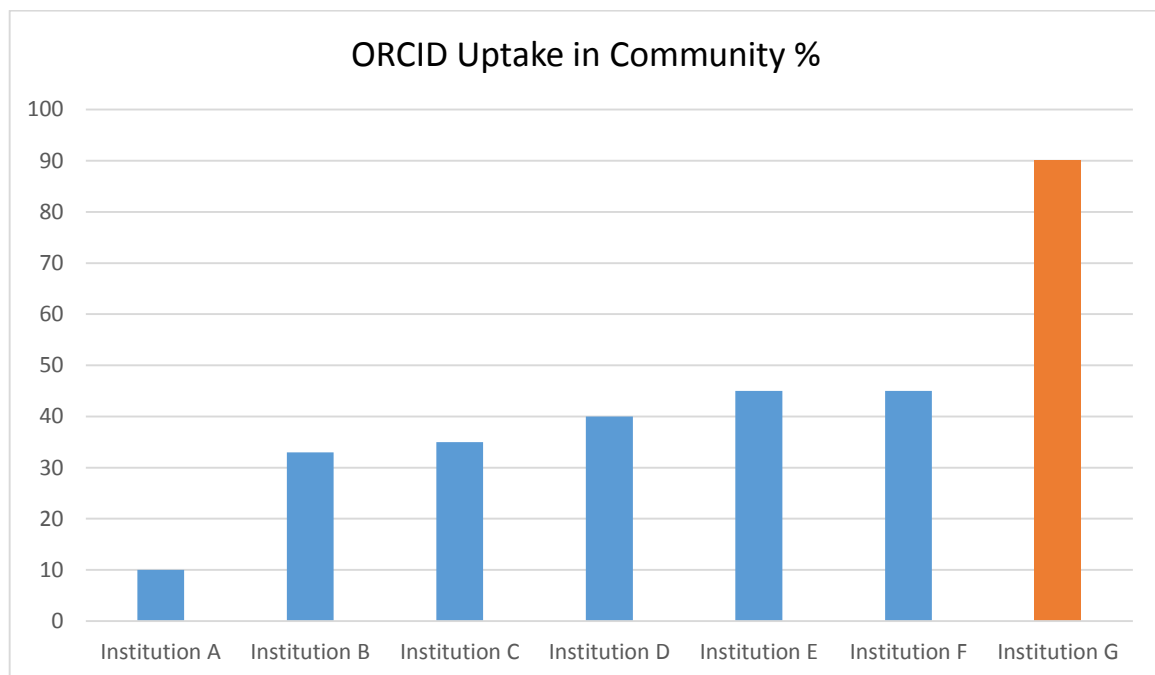
The University of Manchester (orange) achieved very high takeup (90%) as a result of a University mandate in addition to making ORCID registration a part of the standard employee review process. However, a measure of subsequent usage was not available so the figure is subject to the caveats mentioned above.

Approaches to driving Adoption

Policy/Mandates

Funder mandates were observed by a number of institutions to have a very strong effect on ORCID uptake. The Wellcome Trust is one of the leaders in this area in the UK environment and the results of the announcement of their mandatory adoption of ORCIDs (https://wellcome.ac.uk/funding/open-researcher-and-contributor-id-orcid) for funding/publication after August 2015 can be clearly seen on the uptake graph below. While there is steady background growth in adoption, the sharp increase over September 2015 in accounted for largely by Medical Sciences and, to a lesser extent,

Life Sciences scholars. The NIHR also announced its mandate on 23rd Sept 2015 (http://www.nihr.ac.uk/newsroom/featured-news/nihr-begins-roll-out-of-mandatory-orcid-id-requirement/3024). However, it is incumbent on Research Support and other advocacy groups to ensure that such announcements reach the relevant communities.
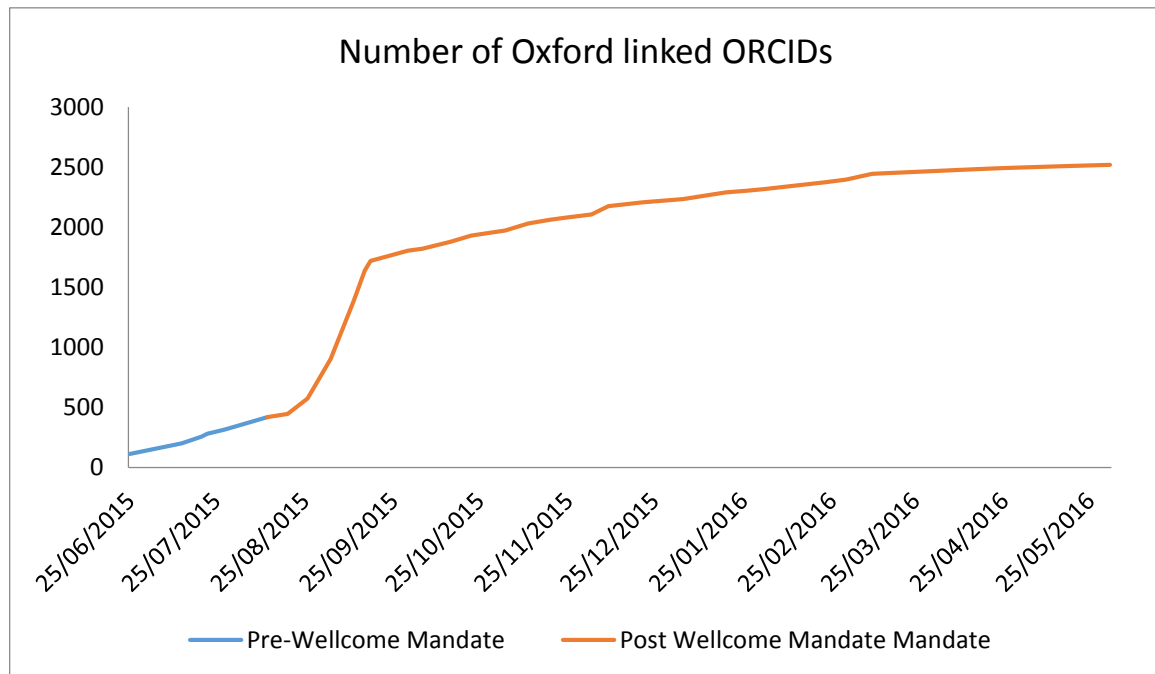
Institutional mandates are a quite different matter however, and can be a problem for more devolved bodies where such decisions might be made at the departmental or faculty level. Newer, and more centralised, institutions may be more successful. If there is a high level policy, it will take the form of favouring investment in ORCID integration and encouraging uptake. One institution with no current policy did indicate that awareness of the need for a policy was growing.

As noted in the previous section, Manchester effectively mandated the acquisition of ORCIDs going forward and strongly encouraged adoption by existing staff by making it part of the standard employee review process. However, the actual process of ORCID acquisition was left up to individuals.

Imperial College, on the other hand, pre-issued ORCIDs to staff who did not already have one and then asked them to claim them without a specific mandate to do so.

The most common approach, at an institutional level, is to leave it to individuals to acquire an ORCID but support them with policy or advocacy that falls short of a mandate. The consensus of institutional legal advice (though a majority rather than unanimous opinion), is that ORCID accounts can contain personal information, even if some is derived from institutional sources, and therefore the acquisition and control of an account should remain with the individual. This user-led acquisition of ORCIDs has been adopted by the UK ORCID Consortium as the default approach for members. A key

element of the advocacy is, however, to ensure that funder and publisher mandates *are* effectively communicated to the relevant communities.

Publisher mandates (and the related activity of reporting publications to funders via systems such as ResearchFish) have not, to date, been that common although many larger publishers do encourage the use of ORCIDs for a primary/submitting author at least. Where this is the case, users tend acquire an ORCID at the point of submission if they need to.

Institutional Policy/Mandate Types

■ None ■ Policy of Encouragement ■ Full Mandate
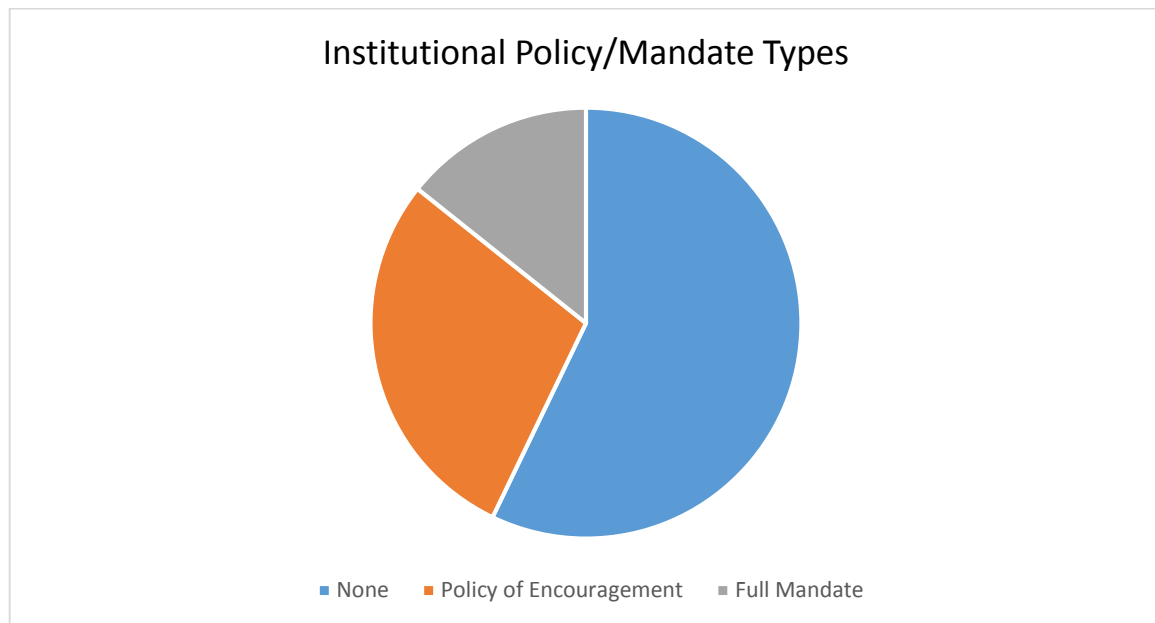
Training and Advocacy

In the absence of a full mandate, training and advocacy are the key routes for driving ORCID adoption in the institutions. Across the surveyed institutions much of the activity is library-led with the Research Services/Support functions also playing a significant role in publicity and events. Partly this is a result of the origins of ORCID in the publishing realm but also reflects the probability that scholars will first encounter ORCIDs during publication submission or other research output related activity.

It appears that most institutions are maintaining their current mix of approaches since there are relatively few new additions in the coming year. The exception is Doctoral Training which required the development of a slightly more formal curriculum but can (and does) consequently re-use materials developed for other audiences to some extent.

Training/Advocacy Approaches

(Chart: No of Institutions, categories — Induction, Doctoral training, Open Access, Research Assessment, Ad hoc training, Publicity, Events, External; legend: YE2016, Current)
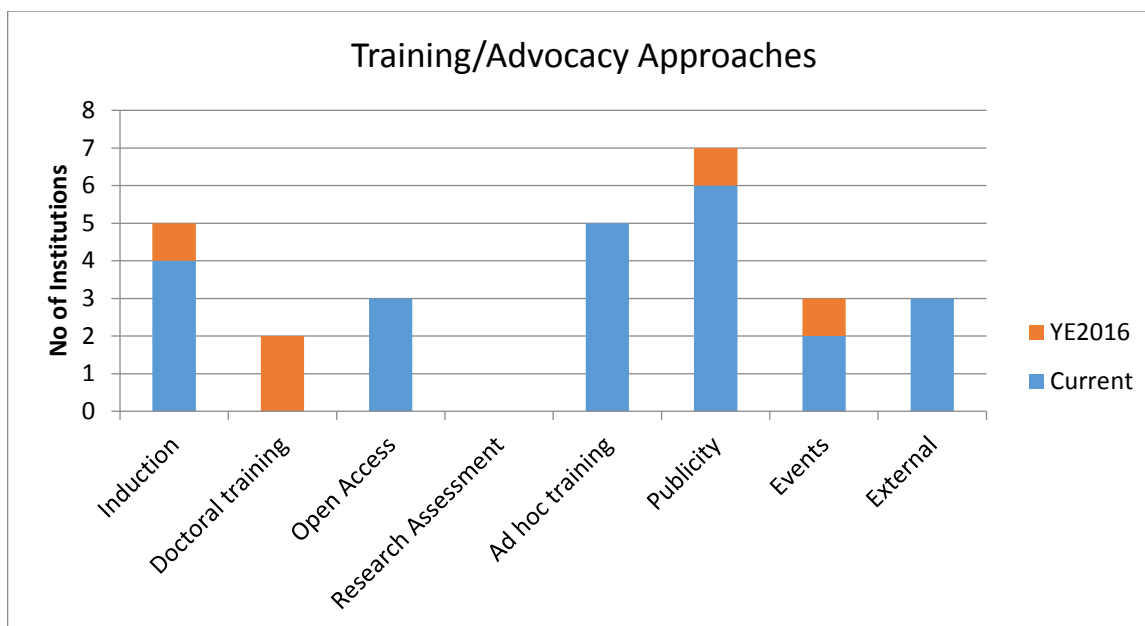
Inter-institutional use of ORCIDs

In general, respondents had relatively little to say about potential usage of ORCIDs in shared activities with other institutions. At this phase of the adoption cycle, deployments are focussed on internal institutional systems. Mention was, however, made of adoption by individual research groups for shared bids to funders that required it, although this still relied on manual entry of ORCIDs. As a future goal, some repositories are looking at capturing ORCIDs for external co-authors/contributors.

Funding for ORCID activities

In general, ORCID activities have not received specific finding and have been covered by the existing operational budgets of libraries and various research support functions. This is expected to remain the case for all the institutions surveyed. In some cases, ORCID support came as a by-product of CRIS system updates rather than any specific activity. The primary exceptions are the two institutions that took part in Jisc-ARMA pilot projects.

ORCID Activity Funding Sources

No of Institutions

<chart>
ORCID Activity Funding Sources
- Legend: YE2016 (orange), Current (blue)
- Reallocation of Project Budgets: 0
- New Internally Funded Initiatives: 1 (orange)
- New Externally Funded Initiatives: 2 (blue)
- Reallocation of Operations Budgets: 4 (blue) + up to 11 (orange)
- Operation Budget Uplift: 0
</chart>
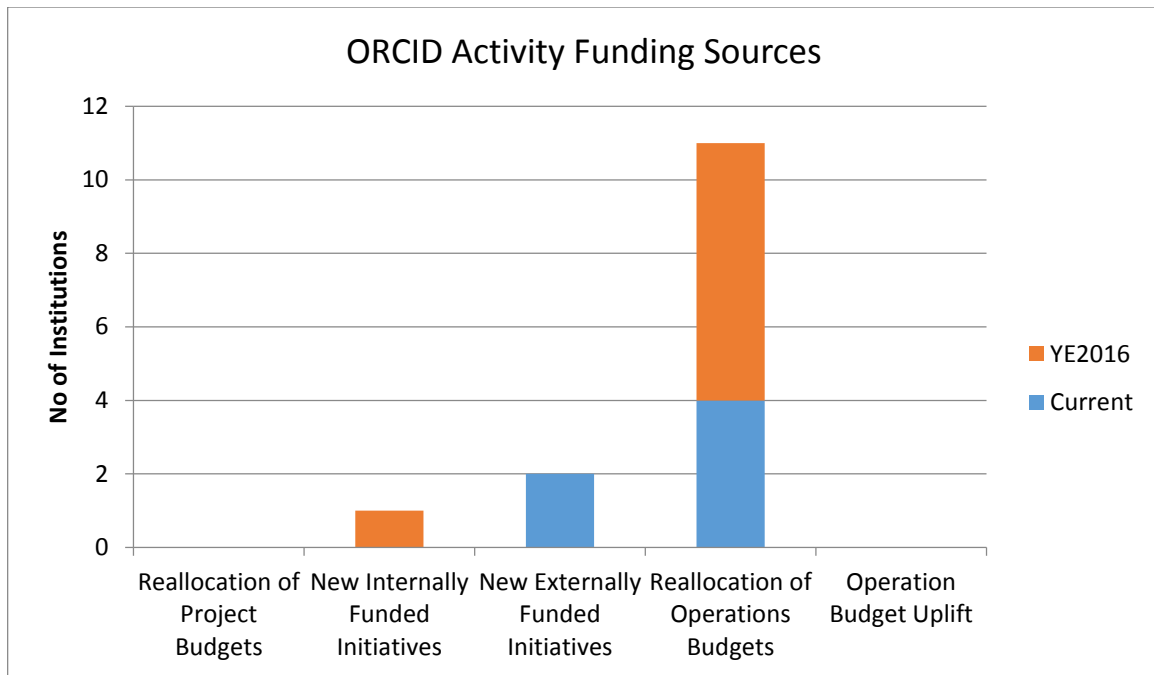
ORCID Service Transition

Observing that funding for ORCID activities is primarily drawn from existing operational envelopes, it makes sense to consider the extent to which ORCIDs are covered by normal operational duties. The technical implementation of ORCIDs in institutional systems can only be successful if the "soft" side of operations is also in place in the form of suitable end user training and technical support. However, given the nature of the business, embedding ORCID awareness in the various research support functions is also a critical component.

All of the institutions surveyed had or aimed to have their ORCID-related technology platforms, user support and research support covered by normal line-of-business operations. It is noteworthy that two respondents did not have any specific plans for training however.
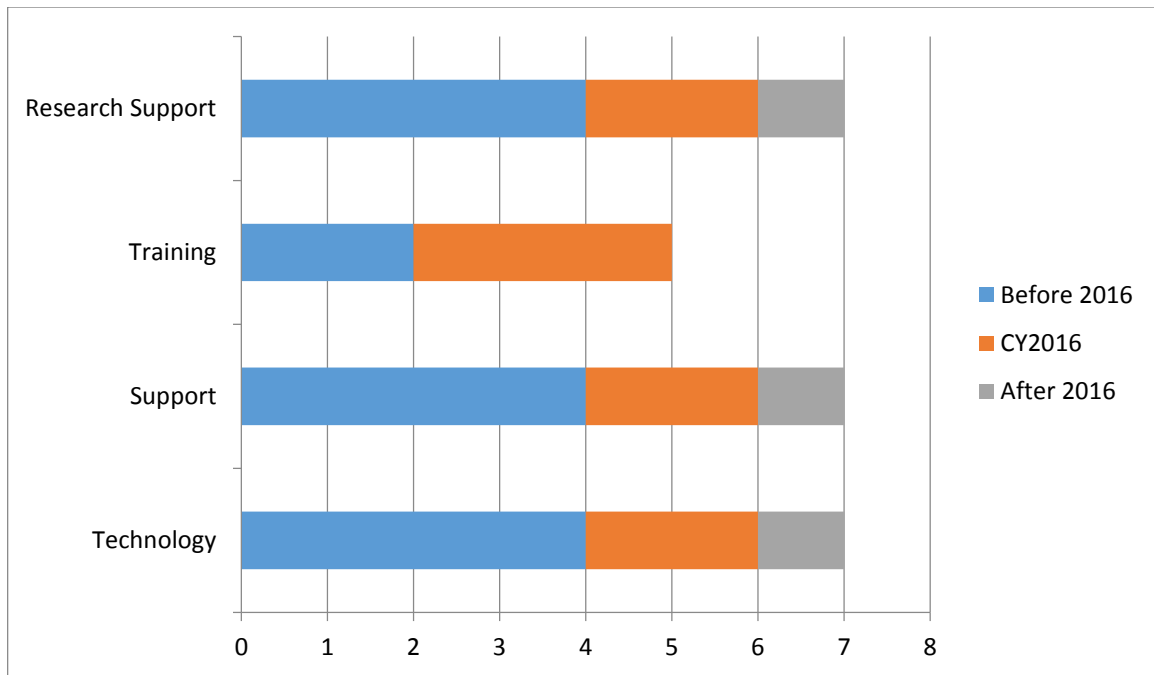
Other Observations

The key role of Jisc, the UK ORCID consortium and the related sub-communities based around specific repository or CRIS platforms was noted by many. These were recognised both as valuable channels for communication between various stakeholder groups but also as potential focal points for organising standardisation efforts or devising common policy approaches.

There was also a feeling that ORCIDs would become more pervasive in HE, funder and publisher systems in the longer term.

6. Internal Stakeholders

Internal stakeholder interviews targeted representatives from centralised service providers in Libraries, IT Services, Administration and Research Services as well as departmental Research Support staff. Interviewees were asked not only about their own opinions but those of the communities that they served in order to gain as broad a perspective as possible within the time and resource limits of the study.

General Observations

Interviewees Awareness of ORCIDs

All the interviewees were aware of ORCIDs and identified the following key features without prompting. As interviews progressed, other features were often identified but this chart clearly indicates that the dominant mindset still reflects the author/library/publisher origins of ORCID.
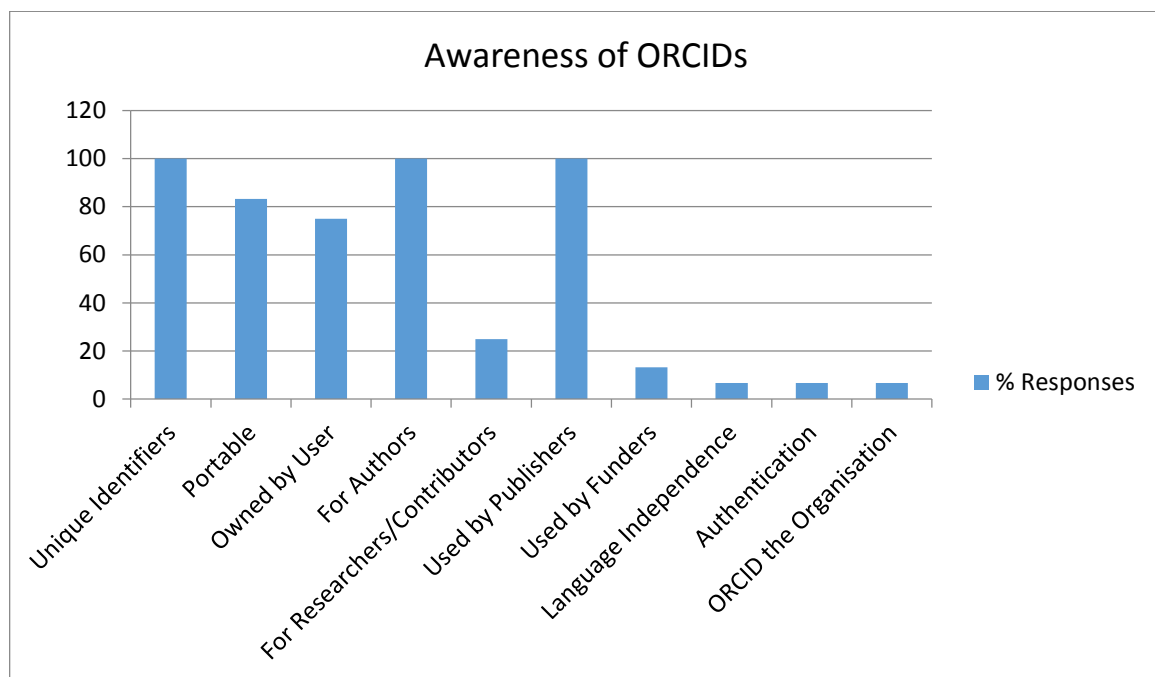
- Unique Identifiers – no-one can have the same ORCID

- Portable – ORCIDs are not tied to an institution and remain when you change institution (one interviewee noted the consequent dependence on "ORCID the Organisation")

- Owned by User – ideally each person has one ORCID that identifies them but they control the data attached to it and the release of that information

- For Authors/Used by Publishers – Reflects the use of ORCIDs by publishers to disambiguate authors and streamline downstream bibliometrics. Particular reference was made by one respondent that it solves the problem of variant translations/transliterations between languages.

- For Researchers/Contributors – Reflects the use of ORCIDs to tag a wider set of contributions to publications, such as acknowledgements, but also a wider range of outputs such as data, software and peer review.

- Used by Funders – Although the Welcome mandate was mentioned by many in the main body of the interview, use by funders was not often mentioned up front

- Authentication – One person noted that you *can* use ORCID to authenticate to other systems

Community Awareness of ORCIDs

This varied widely and will be analysed in more detail later. However, some of general observations can meaningfully be made:

- Whilst the key stakeholder representatives who were interviewed had good ORCID awareness, the extent to which this has permeated into the community via regular communication channels such as meetings and workshops is somewhat limited. However, basic awareness of the existence of ORCIDs and the location of internal sources of information does seem reasonably widespread.

- Communities and individuals that have strongly engaged with ORCIDs, to the extent of obtaining *and* using them, have generally done so in response to a funder or publisher requirement which directly impinges on their activities.

Awareness of External ORCID-related Activities

A common observation was that most interviewees could not recall having encountered a significant amount of ORCID-related communications outside the institution. On further discussion however, a number of sources did emerge, of which ARMA (the Association of Research Managers and Administrators) and the Associated Jisc-ARMA Pilot Projects emerged as a significant source, perhaps in part because of Oxford's involvement in a pilot.

Other noteworthy points are:

- The Wellcome Trust mandate meant that it has attracted as much attention as RCUK as a whole in this area

- The policies/communications of individual journals and their editors have more impact than publishers as corporate entities

- Academics are starting to raise the issue of ORCIDs in general line-of-business interactions such as committee meetings as a result of encountering ORCIDs externally at conferences and on websites

- Eduperson refers to discussion in Internet2 circles about federated identity management for academics for access to shared services or services in collaborating institutions. Current examples of such systems would include Eduroam wireless access and access to scholarly resources via the UK Access

Management Federation (formerly ATHENS).

External Communications and Activties
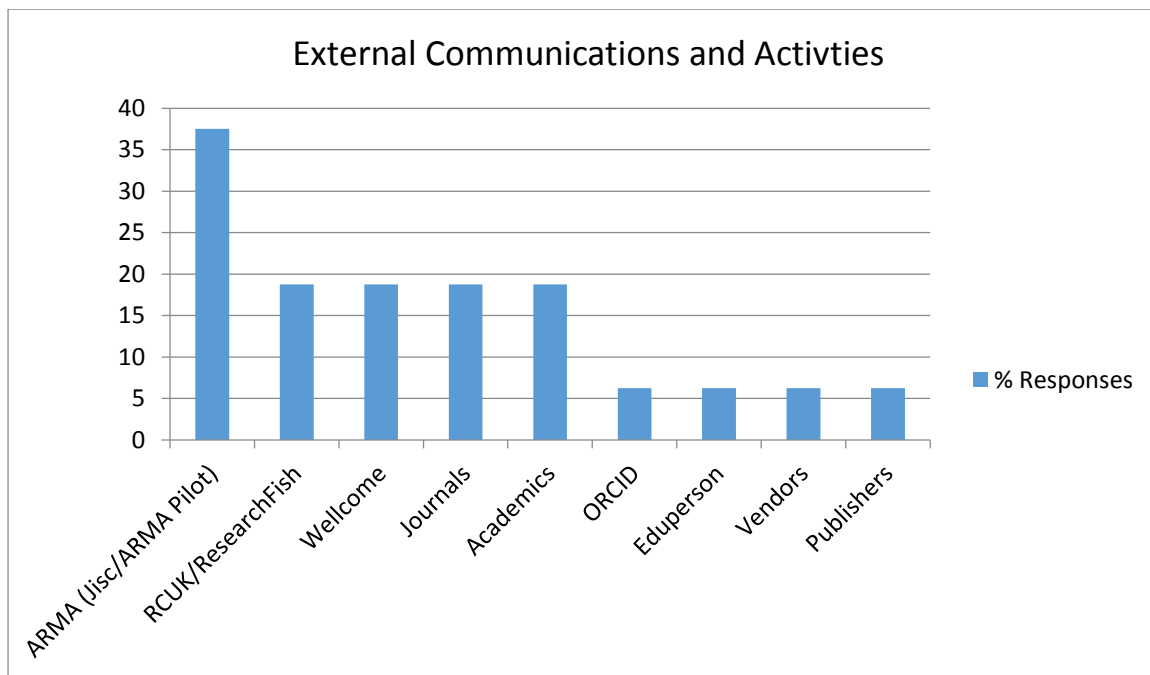
Awareness of Institutional (Oxford) ORCID-Related Activities

There was a general perception (noted by more than half of respondents) that researchers are being bombarded with a lot of similar, somewhat interrelated messages which detracts from the clarity of communication. In addition to ORCIDs, Open Access, Act-on-Acceptance and funder Data Archiving mandates are all themes that are the subject of current advocacy initiatives that revolve around the nexus of libraries, funders and publishers. It was felt that there is a risk that information will be overlooked because the recipient believes that they are already aware of something similar.

Nevertheless, within Oxford, the advocacy, support materials and technical development (link to single-sign-on) carried out as part of the Jisc-ARMA pilot seem to have been picked up by key members of the stakeholder community (90%+ awareness) and the number of single-sign-on accounts with linked ORCIDs appears to be growing steadily. In particular, the ORCID postcards were mentioned a number of times and appear to have been widely distributed.

As noted earlier, ORA and Symplectic have not yet gone live with ORCID support for logistical reasons. While there was the awareness and expectation that this will be the case in due course, there was some reticence among the interviewees about prematurely promoting ORCIDs until something more concrete was available for academics to engage with.

Impact of ORCIDs

When the discussion moved on to the potential impact of ORCIDs on the day-to-day

activities of key stakeholders and their communities, it was acknowledged that we are still very much in the early adoption phase for ORCIDs. Substantial benefits would only accrue once a critical level of take-up been achieved in a number of areas:

- A sufficient number of contributors have actively maintained ORCID profiles so that their use in collaborative activities, such as bid writing, becomes feasible and commonplace. There is thus an incentive to maintain an ORCID profile as it is easier to attach to a proposal or share with colleagues than a manually curated publication list.

- A sufficient number of the systems that a contributor will typically interact with support ORCIDs so that it becomes a reasonable surrogate for the contributor's identity within and across institutions. Even if the systems do not interoperate, it is possible to aggregate information from multiple sources to provide useful services – as ORCID demonstrates (in a limited form) by pulling together article information from CrossRef and SCOPUS.

- A sufficient number of institutional and external systems exchange ORCIDs and data tagged with ORCIDs so that multiple entry of data is minimised. At this point, ORCIDs actually become less visible as they act as a behind-the-scenes enabling technology.

In the short term, there was a consensus that there was still a requirement for up-front investment of resources in advocacy, training and systems development to build take-up. However, with the appearance of funder mandates, and with other funders such as RCUK supporting ORCID use (though the submission system, JE-S, https://www.admin.ox.ac.uk/researchsupport/sponsors/jes/), some benefits in terms of improved grant application workflow are beginning to be realised and, importantly, appreciated by members of the scholarly community.

Longer term, as ORCIDs become more pervasive, the balance shifts towards more transformative impacts on various aspects of the research lifecycle:

- There is the potential for much better data integration between technological components of the research ecosystem (grants, finance, publications, repositories etc.). This should not only reduce duplicate data entry but also produce more consistent data and metadata since information derived from a single source that can more easily be targeted for checking and curation than multiple variant versions in different systems.

- As the focus of research metrics shifts from publication-based bibliometrics to a broader range of impact measures, ORCIDs provide a simple method for tagging this broader range of outputs for later aggregation and evaluation. This also has the effect of making an ORCID profile potentially a much richer and complete picture of a researcher's activity and thus a more useful tool both for identifying potential collaborators and as part of the grant evaluation process.

- Increased integration allows better reporting – both for internal operational use but also for external bodies that have compliance requirements. Open Access and Act-on-Acceptance are examples of reporting requirements that are hard to meet with a good degree of confidence without significant manual work in the

current data environment.

- The improved quality and collectability of data opens up opportunities for the application of analytics and visualisation techniques over and above conventional reporting. This should both improve the visibility of research activities and outcomes but also allow interesting research into the research process itself – looking at activity patterns or whole career evaluation, for example.

Domain-specific Observations

Individual researchers

Oxford Researchers must be reassured that their ORCID account is owned and managed by them. Release of any information within their account is achieved only with the account holder's approval. This can result in a tension: many researchers want services to be seamless without effort on their part (ie their data are used), whilst many are cautious about free access to their personal data. The University has adopted the view that data held in individual accounts remain under the control of the individual.

The benefits for an individual researcher of having an ORCID include:

- Uniquely identifies the individual

- Avoid confusion with others with similar names

- Stays with the individual wherever they are based

- If adopted early on, will offer maximum benefit throughout a research career

- Avoids confusion when names change or if there are alternative spellings or different forms of the name.

- Accurate and wider attribution for publications, grants and other outputs

- Improve credit and citation for work, particularly if all co-authors are related to their ORCID

- Increasingly required or recommended by funding agencies (grant application) and publishers (article submission)

- Common adoption will enable automated data flow between publisher, funder and institutional systems reducing data entry (typing) for the researcher

- Likely to be required for post-2014 REF

Oxford Libraries

Subject librarians have been a key part of the ORCID advocacy and communication activity and thus, as a community, are quite well informed about ORCIDs and related developments. This is likely to remain the case but the librarians themselves need to keep up-to-date in this rapidly moving field. The services that ORCID and partners provide are developing all the time and new journal mandates need to be communicated to the relevant communities.

Libraries hold many types of research outputs besides journal articles in an institutional

repository. Theses, data, grey literature and annotated surrogates are all research outputs that are held in some form. ORA, ORA-Data and even some Web resources should therefore have the capacity to store ORCIDs for contributors and ORCIDs will thus have to become part of the metadata curation workflow. Data feeds from other systems within the University such as Symplectic or ORDS (Oxford Research Data Service) should also supply ORCIDs where appropriate.

New researchers will derive the most benefit from ORCIDs over their entire career. However, ORCIDs should ideally be captured for authors and examiners of research dissertations and theses by the submission/examination system then fed into ORA automatically. Libraries should contribute their advocacy and training materials to Doctoral Training Centres to support this.

Oxford IT/Admin Services

ORCIDs are currently captured by linking them to a University member's single-sign-on (SSO) ID. They are then made available to other systems via the Core User Directory service (CUD). This service will have to be maintained and supported in its current form but the requirement should also be maintained as the University reviews and updates its Identity and Access Management (IAM) systems. Some issues have been encountered when ORCID updates their systems and APIs with new features or behaviour in a manner that causes a problem for Oxford's integration. This is likely to be a diminishing problem as the ORCID service matures.

When a link to their SSO ID is made, the University has the ability to certify a user's affiliation in their ORCID profile to provide a higher degree of authenticity than self-assertion. However, there is currently no mechanism to subsequently add an end-date to that affiliation when a user ceases to have an active affiliation. In addition, at the moment, the only affiliation that is currently supported is that of employment which is, of course, not applicable to research students even though they are potentially valid ORCID holders. These enhancements to the current system needs to be worked on, in conjunction with ORCID.

The current ORCID linking system depends on an underlying database that only supports University members. There are obvious use cases for providing general identity-related services for non-university members (such as the tens of thousands of external library card holders) so this limitation will not be a feature of any new IAM system. This would enable ORCID support for co-authors, collaborators and external examiners, for example.

A number of other systems such as student systems, finance systems and components in the Research management workflow, have been potential targets for ORCID integration – however, in all cases, it is expected that ORCIDs would be handled by reference to central IAM services rather than implementing any separate registry or store.

IT Services provides the first line help desk for most centrally provided University

services but ORCID support is complicated by the fact that it is actually a number of different services with different providers. The subsequent handling of a query depends on where the ORCID problem lies.

Oxford Research Services

Research Services provides central support for the grant application process and is therefore concerned with ORCID use with respect to compliance with funder requirements, either as part of the application process or downstream reporting (insofar as it may have an impact on future funding prospects).

ORCIDs have the potential to improve the efficiency of the grant application process both through the existence of sharable profiles to inform the grant preparation process and through the unambiguous identification of personnel between University, collaborator and funder systems. The RCUK shared application platform JE-S already supports ORCIDs for submissions, as does Researchfish for reporting publications. However, if ORCIDs required for external collaborators, co-authors and partners as well, there is the requirement that these parties support ORCID themselves so it cannot be a purely local endeavour.

Oxford Departmental Research Managers and Facilitators

Departmental Research Managers and Facilitators have the most day-to-day contact with the research community in their respective departments and are therefore best placed to assess levels of awareness and adoption. Domain-specific variations strongly reflect the differences in impact that various drivers have on research activities.

Across the board, research administrators all expressed the hope that wider ORCID adoption would permit the development of better reporting and metrics around the research process and research activity.

7. External Stakeholders

ORCID

ORCID Inc. is a non-profit 501(c)(3) organisation that has no shares and cannot be acquired by a commercial entity. Consequently, the ORCID organisation continues to develop its service offering in response to its stakeholders' requirements.

- Institutionally validated affiliation information was felt to be a crucial part of establishing the credibility of ORCID records. This validation can be asserted automatically by University identity management systems using the ORCID API and is, in fact, the only significant piece of personal information that the University supplies to ORCID. However, this does need further development since ORCID now supports different types of affiliation and the integration between Oxford and ORCID systems only handles employee status – which does not necessarily apply to students. In addition, there is also the need to handle specifying an end-date for an affiliation when someone leaves or changes status.
- ORCID now supports authentication using institutional credentials (logins) for institutions that are part of various identity federations including that of the UK. Linking ORCID identities to credentials in this way has potential to further expand the reach and usefulness of these federations. More locally, it may provide a way to resolve Oxford's issue of having to link ORCIDs in Symplectic Elements and ORA separately.
- In order to track the emerging and expanding definitions of "impact" with respect to scholarly profiles, ORCID is looking to pick up other forms of contribution to the scholarly process where publishers make this available. Examples would include, carrying out peer reviews, with suitable limitations in the case of anonymous review, and the compilation/editing of editions.
- More widely ORCID is also developing support for badges in conjunction with Mozilla Science Labs (https://science.mozilla.org/blog/contributorship-badges-a-new-project) which aim to capture a much broader and more varied set of contributions to research. Currently, BioMed Central (https://www.biomedcentral.com/) and the Public Library of Science (https://www.plos.org/) are trialling the badges using a contribution taxonomy that is being submitted to NISO for standardisation (http://www.nature.com/news/publishing-credit-where-credit-is-due-1.15033).

ORCID has a considerable number of partners and integrators internationally and not all of them could be examined within the constraints of this study. A complete list with some relevant details is available on their website (https://orcid.org/organizations/integrators/current).

Jisc & UK ORCID Consortium

The creation of the UK ORCID Consortium (https://www.jisc.ac.uk/orcid) was initiated by Jisc partly in response to a key finding of the Jisc-ARMA pilot, and associated surveys,

which identified the cost of ORCID membership to be a significant barrier to entry (around USD 20000 per annum for premium membership at the time). Similar findings were emerging in parallel initiatives in other countries. As a result, ORCID introduced consortium pricing which essentially provided premium membership for basic membership prices (around 20% of the cost for larger consortia), which also had the advantageous side effect of driving membership up since discounts depended on consortium size. Subsequently, costs have continued to trend downwards as membership volumes grow.

As part of the consortium arrangements, Jisc provides a national support service for ORCID with the ability to handle many issues itself before escalating to ORCID Inc. Jisc has also allocated some resources to support the adoption of ORCIDs within the UK and is looking for suitable projects to advance this agenda. To a large extent, it is expected that these initiatives will originate from community consensus, whether from the UK Consortium as a whole or from other relevant groups such as the respective user groups for EPrints, DSpace and Fedora repositories. In particular this can include re-usable software development. If required.

Jisc has also expressed a strong interest in expanding its portfolio of shared services provided to the HE community, building on Jisc collections (https://www.jisc-collections.ac.uk/) but including services such as the Publications Router (http://broker.edina.ac.uk/).

Funders

HEFCE

With HEFCE's support, the Independent Review of the Role of Metrics in Research Assessment and Management was set up in April 2014 to investigate the current and potential future roles that quantitative indicators can play in the assessment and management of research. Its report, 'The Metric Tide', was published in July 2015. Recommendation 10 (of 20) states:

> "The UK research system should take full advantage of ORCID as its preferred system of unique identifiers. ORCID iDs should be mandatory for all researchers in the next REF. Funders and HEIs should utilise ORCID for grant applications, management and reporting platforms, and the benefits of ORCID need to be better communicated to researchers. (HEIs, UK HE Funding Bodies, funders, managers, UUK, HESA)"

However, at the current time – ORCIDs are not required for REF submissions and adoption elsewhere has not been mandatory.

HESA

The Higher Education Statistics Agency (HESA) has been an early supporter of ORCIDs and supports them for both student and researcher records that it holds. As an information gatherer it is not in a strong position to influence policy in institutions.

However, ORCIDs do have the potential to improve the quality of the data that it can collect and this information is used to inform government decision making.

RCUK

RCUK stated at the UK ORCID Consortium meeting that it did not feel that it could mandate ORCID use at this time. However, both the Joint Electronic Submission System (Je-S) for grants and Researchfish (https://www.researchfish.com/) for reporting research outputs do support the entry of ORCIDs. Researchfish does have the capacity to bulk ingest tabular data from a number of sources but encounters problems with duplicate entries with data quality. A research output may be reported by each of the collaborators in a project, grant numbers not validated with funders etc. As with HESA, the widespread use of ORCIDs and other unique identifiers such as DOIs (https://www.doi.org/) can improve the situation.

Je-S will be replaced by a new system from the Department for Business Innovation & Skills to be used for all funding bids of any kind. Improved automation, interoperability and reporting are all design goals of the new system and ORCIDs will contribute to achieving these. The timescale for beginning the transition to the new system is around the end of 2017 but it is being developed in an agile (http://agilemethodology.org/) manner so that full functionality (and therefore the possibility of a full changeover) may not be available in the first instance.

STFC, in particular, operates a number of large research facilities for the UK research community but also frequently stores the outputs from the use of these facilities. They are interested in using ORCIDs to tag these resources to relate them back to the researchers and projects, especially when funder data mandates may come into play. The THOR project (discussed later) is looking at identifiers for experimental facilities, instruments and organisations, in addition to ORCIDs, is particularly relevant to STFC.

Other Funders

The enormous influence of the Wellcome Trust mandate has been noted several times in this report. However a number of other funders have instituted mandates, some at a national level:

- Autism Speaks, USA (2014)
- (National) Fund for Science and Technology (FCT), Portugal (2014)
- Qatar National Research Fund, Qatar (2014)
- Swedish Research Council, Sweden (2014)
- Department of Transportation, US (2015)
- National Institute of Health Research, UK (2015)
- Austrian Science Fund (FWF), Austria (2016)

Many others, such as the US National Science Foundation (NSF) are looking at the use of ORCIDs to streamline grant applications by making use of ORCID profiles to access publication profiles. In these cases, while an ORCID may not be mandatory they may be advantageous.

Repositories

Repository Software Providers

EPrints (http://www.eprints.org) is the most common repository platform in use in the UK and as well as installing and running locally, institutions can take advantage of managed EPrints instances provided by the University of London Computer Centre (ULCC) or the University of Southampton. However, the implementation of ORCID support in EPrints has not progressed smoothly, and at least three separate and different implementations emerged at the UK ORCID Consortium meeting. None of the implementations had been merged into the code base used to provide the managed service instances so those users remain without ORCID support. This needs to be addressed by the EPrints User Group.

There is a small DSpace (http://www.dspace.org/) community in the UK, but DSpace 5.X has supported the recording of ORCIDs since late 2014. Some more sophisticated interactions with the ORCID API are covered in later releases. Many DSpace users in the UK do not have the resources to carry out DSpace development in house so, although it is an open source project, they are largely dependent on (primarily) US-based developers for updates. This is not unexpected since one of the design goals for DSpace was to be a turnkey solution that would not require local technical expertise to deploy.

Fedora (http://fedorarepository.org/) is a repository platform rather than a complete solution in its own right. It requires additional code to provide a user interface and workflow functionality, and consequently many Fedora users have access to some development resources. The two most common Fedora-based repository systems are Hydra (https://projecthydra.org/) and Islandora (http://islandora.ca/). Islandora is available as a managed service through Discovery Garden (http://www.discoverygarden.ca/). Hydra currently supports ORCID as a module that must be explicitly included in a repository instance. Islandora support is still in development.

Third Party Repositories

Dryad (http://datadryad.org/) is a repository for scientific data hosted by North Carolina State University. It is run as a non-profit organisation that covers its costs through a mixture of deposit charges and stakeholder memberships for organisations such as publishers who do not deposit. The underlying software is DSpace which provides its core ORCID functionality. More functionality is planned (http://wiki.datadryad.org/ORCID_Integration) but depends on the availability of development resource from Dryad or DSpace.

Figshare (https://figshare.com) is a general purpose repository (now owned by Digital Science) that supports a variety of research outputs (data, video etc.) and issues DataCite DOIs (https://www.datacite.org/) to them. It is available as a public free service, but institutions can buy a managed instance to provide an institutionally-branded repository for their own use. Figshare was a launch partner with ORCID and so has a high level of integration – ORCID profiles can be updated with details of content in

figshare via DataCite. Figshare also supports the creation of curated collections as citable and ORCID tagged entities.

ArXiv (https://arxiv.org/) started life as a physics oriented pre-prints repository but has expanded to include mathematics, computer science, quantitative biology, quantitative finance and statistics. It is hosted by Cornell University and operated as a non-profit supported by direct contributions from libraries, research institutions and the Simons Foundation. Currently, it operates on a home grown software platform but this is under review. ArXiv uses its own identifiers for authors but these are being deprecated in favour of ORCIDs to promote interoperability.

Mendeley Data (https://data.mendeley.com/) is a relatively new data repository from the same organisation that produces the Mendeley (https://www.mendeley.com/) citation management and annotation service. Like Figshare it issues DataCite DOIs and uses DataCite to integrate with ORCID. Mendeley and Mendeley Data are owned by Elsevier.

Zenodo (http://zenodo.org/) is an Open Access data and publications repository hosted at CERN and funded by the European Commission's FP7. It is based on Invenio (http://invenio-software.org/) which is CERN's home grown repository system. It stores ORCIDs and uses the ORCID public API to help create user profiles within the system but does not appear to feed any information back.

Publishers

Large publishers, such as Elsevier and OUP, have typically approached mandates slightly cautiously since they may have a diverse collection of journals and associated communities to deal with. The commonly used submission platforms such as Scholar One (http://ipscience.thomsonreuters.com/product/scholarone/) all support the entry of ORCIDs, but in many cases it has been up to an individual journal to make an editorial decision to require ORCIDs. This is likely to change once a critical mass of journals has made the transition. The following publishers (with well-defined constituencies) have expressed the intention to transition to requiring ORCIDs for all submissions during 2016:

- The American Geophysical Union (AGU)
- eLife
- European Molecular Biology Organisation (EMBO)
- Hindawi
- The Institute of Electrical & Electronics Engineers (IEEE)
- The Public Library of Science (PLOS)
- The Royal Society (as of Jan 1st 2016)

Current Research Information Systems (CRIS)

CRISs (Symplectic, Pure, Converis) in common use are all commercial systems aimed at automating and managing the operational aspects of the research process and the

accompanying data. They have integrated with ORCID itself in order to push publication and grant award information to a user's ORCID profile. However, integration with other systems to exchange ORCID tagged data is limited, partly because the standards for such interchange do not exist and therefore making such links becomes expensive bespoke development. In the longer term, ORCID should really obtain this information direct from source (i.e. publishers and funders) otherwise there is the risk of duplicate entries – collaborators and co-authors could upload slightly different entries.

Symplectic

Symplectic Elements, although commonly labelled a CRIS, does not aim to be a complete research management system but is focussed on collating an accurate publication list culled from many sources, including manual entry. This focus means that it has developed interoperability with the common repository platforms (Eprints, DSpace, Fedora) which can actually store publications. It is gradually developing more CRIS-like functions. Symplectic is owned by Digital Science.

Pure and Converis

Pure, owned by Elsevier, and Converis, owned by Thomson-Reuters, are fully fledged CRIS systems that aim to track and manage the research process from end-to-end. As such, they are a good choice for ORCID implementation since they have contact with many of the research-related artefacts (proposals, grants, publications etc.) that would benefit from ORCID tagging. They are thus a good strategic implementation choice for the organisations that choose to centralise their research management with the caveat noted above that current data flows to ORCID represent a short-term tactical fix in the absence of more widespread adoption. It is expected that product updates will revise these flows as the ORCID ecosystem develops.

Sector Initiatives and Standards

There is widespread recognition that ORCID is part of a bigger picture that requires additional identifier schemes and data standards to realise its potential. This section highlights a few key international activities in this area but is by no means exhaustive.

Technical and Human infrastructure for Open Research (Project THOR)

> "It will establish seamless integration between articles, data, and researchers across the research lifecycle. This will create a wealth of open resources and foster a sustainable international e-infrastructure. The result will be reduced duplication, economies of scale, richer research services, and opportunities for innovation."

In practical terms, THOR (https://project-thor.eu/) is an EU FP7 funded initiative which aims to define a framework of identifier schemes for research-related entities (for example: ORCID for researchers, DataCite DOI for datasets, RRIDs for facilities, FundRef/OrgIDs for funders) and then work on standards and protocols for interoperability. It is working closely with other industry groups to achieve sustainable outcomes.

Research Data Alliance (RDA)

> "The RDA vision is researchers and innovators openly sharing data across technologies, disciplines, and countries to address the grand challenges of society."

The RDA (https://rd-alliance.org/) is an international group with widespread membership and many Working Groups, Interest Groups etc. looking at various aspects of data management and interoperability. THOR, ORCID and many other projects are represented on these groups as well as stakeholders such as institutions and publishers. RDA tends to fund conferences and workshops, and commission papers, with an aim to bringing stakeholders together to discuss key issues, and subsequently to help coordinate the resulting activities (which will probably be funded from elsewhere).

Consortia Advancing Standards in Research Administration Information (CASRAI)

> "CASRAI is an international non-profit membership initiative led by research institutions and their partners. Our mission is to adapt the principles and best practices of open standards and data governance to lead and facilitate key stakeholders in annual deliberations to develop 'standard information agreements' that serve as bridges between research information users."

A UK chapter of CASRAI (http://casrai.org/) has recently been convened with support from Jisc and RCUK. CASRAI takes a slightly different view of the research information landscape and looks at defining taxonomies that can help to structure data from diverse sources (for example, the CRediT taxonomy for contributors that ORCID is using) and defining reports formats that would be useful to research administration.

Crucially, CASRAI-UK is also seen as the logical steward for the output of the Snowball metrics initiative (https://www.snowballmetrics.com/) which aims to establish a common baseline for institutional benchmarking. Although originating in the UK, it has generated significant interest in the wider community and now has working groups established in the USA and Australasia.

8. Summary of Key Findings

Mandates work

Funder mandates are extremely effective at driving uptake as illustrated by the Wellcome Trust example. The lack of a mandate, or even a strong policy direction, from RCUK and HEFCE/REF is not particularly helpful. Journal mandates are less immediately effective since they affect a smaller number of people and only towards the end of the research process.

Too many messages

Open Access, REF Act-on-Acceptance and Funder Data Archiving mandates all have much stronger messages which are crowding into the same conceptual space as ORCIDs. Adoption will stall, in the absence of further mandates, unless a clear articulation and demonstration of the benefits of ORCID adoption can be made.

Tactical vs strategic

A high level overview of ORCID implementations at HE institutions reveals a tension between short-term tactical deployments in a single system and more central strategic approaches. Many institutional repositories can now record ORCID information but this must be manually entered and is stored in the user's repository profile where it is relatively inaccessible to other administrative systems. It does mean that ORCIDs can be added to research output reporting for OA and AoA/REF activities. Adding support to central systems such an identity management system is typically more difficult since it involves core IT systems but allows single entry of an ORCID to propagate to grant systems for funders, IRs and data repositories. CRIS systems fall somewhere in between since they aggregate many research management functions.

Within the EPrints community there was a delay in introducing a full ORCID implementation in the main-line codebase and, as a result, at least three different ORCID implementations arose in the community. While this should resolve in time, the current situation means that EPrints customers using the hosted services provided by ULCC and Southampton do not have ORCID support.

Lack of Standards

Many of the benefits of ORCID use accrue when it is used to tag information exchanged between systems in order to improve the accuracy of the exchange and ensure that the correct information is linked together, minimising re-entry of data. However, many data interchange standards in common use have not been updated to accommodate ORCIDs which severely limits the realisation of any benefits. OAI-PMH (the Open Archives Initiative Protocol for Metadata Harvesting) is commonly used by harvesting services such Europeana and Ethos (the UK national thesis service managed by the British Library) to extract bibliographic metadata from repositories but does not have a defined way of including ORCIDs. On the other hand, DataCite does include ORCIDs.

Islands of Implementation

In the absence of standards for ORCID data interchange, linking between systems becomes an expensive bespoke software development exercise on both sides. If a requirement is common, for example, Symplectic Elements linking to repositories, then it may still be worthwhile but remains expensive to maintain as source and destination software platforms develop. Users may still find that they end up entering ORCIDs and associated data multiple times in different systems and the promise of data mobility and single entry remains unfulfilled.

Besides the development of exchange standards, integrating ORCIDs with authentication systems, as Oxford has done, goes a long way to solving this at an institutional level since ORCID information is thus available to any system that a user is logged in to. More widely, ORCID has recently introduced support for logging in using institutional credentials via national and international identity federations (in the same way they are used to access electronic resources).

Unclear Dataflows

Another outcome of the lack of standards is that there had been a proliferation of links between pairs of systems without regard to the wider picture and, of particular concern, the sourcing of information from its proper source. One example would be CRISs feeding grant and publication information to ORCID and Researchfish when the data should really be pulled from funders and publishers themselves. This creates the problem of duplication of data, especially when the secondary information is not an exact copy of the canonical original and therefore harder to identify as a duplicate.

Market Consolidation

An additional observation when examining the commercial side of this ecosystem is that the marketplace is much less diverse than it would first appear.

- Elsevier owns Pure (CRIS), Mendeley (Citation Manager), Mendeley Data (Data Repository), SSRN (Social Sciences Repository)

- Thomson-Reuters owns Converis (CRIS)

- Digital Science owns Figshare (Data Repository), Symplectic (CRIS), Altmetrics (Metrics)

There will be strong commercial pressure to interoperate and vertically integrate within a vendor stack rather better than externally since there is the potential for an institution to become "locked-in" to a stack when the cost of migration become prohibitive.

9. Recommendations

Recommendations for the ORCID Community

1. Advocacy and training needs to continue although the message may need clarification with benefits statements keyed to the relevant audience. Researcher case studies and quotes should be used where possible to make the case that ORCIDs simplify the management of their own Research Information. Clear and timely transmission of funder and publisher mandates to the relevant researchers where they exist is vital.
2. Early career researchers have the most to gain from ORCID use as their research careers will develop largely in the digital domain. Resources such as Doctoral training centres and materials are thus an essential part of the communications mix.
3. In the absence of mandates, we should be lobbying for clear policy statements or roadmaps both internally and externally.
4. Standards are critical to the full realisation of ORCID benefits. The community needs to engage with the various initiatives outlined earlier to select and define interoperability standards. Open, pervasive standards are the best defence against vender silo-isation and lock in.
5. User communities can get together and co-operatively plan and fund (or bid for funding) work to get ORCID implementations that suit their needs. The EPrints community has already begun to work towards a common ORCID approach after being made aware of the fragmentation that currently exists. Other communities include 'Snowball' metrics community and CASRAI.
6. The potential for improved metrics is, as yet, unrealised. In anticipation of the Stern review, the community needs to expand on and adopt Snowball metrics to clearly define, in quantitative terms:
   a. The metrics that are of use, which probably requires clearer, agreed definitions of what impact means to all concerned
   b. How they are to be collected (and who by)
   c. How they are to be expressed and compared in a standardised way

High level recommendations for Oxford

1. RIMTS, as the University's body responsible for advice for strategic and effective management of research information, and oversight of the strategy and implementation policy for the collection and organisation of data, to take **ownership** of the *ORCIDs at Oxford* initiative.
2. RIMTS to develop a **high-level recommendation** to encourage adoption and use of ORCIDs across the University.
3. RIMTS to initiate and oversee **advocacy** to engender maximum uptake of the *ORCIDs at Oxford* service and habitual use of ORCIDs by researchers at every available opportunity, in readiness for future integrations.
4. RIMTS to clarify and embed **operational support arrangements** for ORCID related matters. This is complicated by the fact the ORCIDs by their nature are distributed across several systems and thus the issue handling is not necessarily

straightforward.

    a. Queries about external systems are handled by the Jisc/UK Consortium Helpdesk who will forward queries to ORCID if they cannot be resolved internally

    b. ORCID should be contacted directly only in extremis. However, this is only for operational issues. We expect to work with ORCID technical contacts when developing the registration code.

5. The next stage of the *ORCIDs at Oxford* initiative to be run as a **programme** with a single programme manager overseeing, in the first instance, planning and analysis for integration within the variety of units across the University (in line with accepted standards and protocols).

6. To continue to work with **Jisc and the UK ORCID consortium** and others to define and recommend ORCID standards, protocols and dataflows. Oxford is in a very strong position to drive interoperability and standardisation initiatives efforts in the community. Our approach to ORCIDs is highly regarded and the UK as a whole is perceived as leading in the construction and operation of national consortia. In doing so we need to ensure that we work with all stakeholder communities, and avoid becoming too repository- or UK-centric in our approach since we have substantial international interests and responsibilities. This will require more substantial engagement with groups such as RDA, Force11 and CoData than is currently the case.

10. Appendix A: ORCID

What is ORCID?

ORCIDs (Open Researcher and Contributor ID) are unique, persistent alphanumeric identifiers for academic authors and other contributors to research outputs. They are designed to persist across institutions and provide a robust method of linking outputs and activities to researchers that is not subject to the vagaries of name, language or citation style variations. ORCID can also refer to the not-for-profit organisation that maintains ORCIDs and the web site (http://orcid.org) where a researcher can request an ORCID and control the level at which information that is released

How does it work?

ORCID accounts are owned and controlled by researchers since they are, by definition, institutionally independent. The user can decide what information is added to their profile and whether that information is shared publically or with specific users. ORCID profiles can hold a variety of information that can effectively be used to construct a scholarly CV. Education, employment, grants awarded, publications, web pages and research data can all be included.

Crucially, unlike many other services, ORCID is developing the capability for profiles to be updated automatically by external systems that can be considered the canonical sources for particular items for information. As sources are always included with entries in the profile this makes ORCID profiles more authoritative than if it contained just a user's own assertions. However, as final control of the account ultimately rests with the user, each source must be given explicit permission to update the profile automatically.

Currently, ORCID can handle updates from CrossRef (for publications) or DataCite (for datasets). Additionally, the same mechanism is also available to institutions accessing ORCID programmatically so that a researchers institutional affiliation can be validated by institutional systems subject to access being granted, as noted above. Affiliations can also be given start and end-dates so that past relationships can be recorded.

11. Appendix B: Institutional Questionnaire

Oxford ORCID Benchmarking Exercise

On behalf of the University of Oxford, the Bodleian Libraries are conducting a small benchmarking exercise to look at ORCID adoption, integration and immediate plans in similar institutions. We would like to ask if you would be willing to participate - in return, we would share the results with the participating institutions on a confidential basis. At the end of the exercise, we would also like to circulate a summary report, subject to your approval, for the wider ORCID community.

At this stage, the exercise consists of the attached questionnaire which we may wish follow up with some further queries if we need further clarification. In the interests of transparency, the comparator institutions that are being invited to participate in this exercise are: Oxford, Cambridge, Imperial, KCL, UCL, Manchester, Glasgow and LSE.

We will also be contacting other organisations with an interest in ORCID in the UK - such as ORCID themselves, HEFCE, RCUK and RIM/CRIS providers such as Symplectic with questions specific to their role in the ORCID ecosystem in order to get the fullest picture for the final report.

Thank you for your contribution.

Benchmarking questionnaire

1. When did you start ORCID implementation efforts within your institution?

2. Which Institutional systems are integrated with ORCID? For each item below, please check the box to indicate if it is a current integration (already done or planned for calendar year 2016) or a future objective.

	Current	Future	Comments
Standalone or Manual ORCID Management			
Identity and Access Management			
Institutional Repository			
Thesis Repository			
Data Repository			
RIM/CRIS Systems			
VRE Systems			
Other (Please specify)			

3. What is the current uptake of ORCIDs in the academic community (%age)? Can you estimate how much you think this will increase in the current calendar year? Please indicate in the comments if this data is not available.

	Current (end 2015)	Future (end 2016)	Comments
Undergraduates			
Postgraduates			
Academic Staff			
Other Staff			

4. What mechanisms are in use to drive ORCID adoption? For each item below, please check the box to indicate if it is currently being used (already in place or planned for calendar year 2016) or a future plan.

	Current	Future	Comments
Mandates			
Identity systems for access to University Services			
Policy (Please indicate Institutional or departmental)			
Internal Assessment			
REF			
Other (Please specify)			
Training/Advocacy			
Induction			
Doctoral training			
Open Access			
Research Assessment			
Ad hoc training			
Publicity			
Events			
External drivers (Please specify)			

5. How are ORCIDs being used externally currently, and in the future (more than a year from now)?

	Current	Future	Comments
Including external co-authors in Repositories			
Use in shared VRE's			
Use in other shared services			
Use in shared Bids and Proposals			
Other (Please specify)			

6. How have ORCID-related activities been funded? Please check all that apply and indicate which activities were funded by each method, if possible. However, only include activities where you consider that ORCID is a significant driver or deliverable.

	Prior to 2016	Calendar Year 216	Future	Comments
Reallocation of existing operational budgets				
Reallocation of existing project budgets				
New Internal funded initiatives				
New externally funded initiatives				
Operational expenditure uplift				

7. Are ORCIDs supported as part of normal operational duties? Have ORCID services made the project to service transition?

	Prior to 2016	Calendar Year 216	Future	Comments
Technically				
Support				
Training				
Research Support				

8. Are you aware of ORCID related activities in other institutions/internationally that are of interest to you?

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9. Are you interested/already in collaborating with others on initiatives to leverage ORCIDs to improve ROI? If so, what areas and who with?

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10. Please include some details about the person who filled in the majority of this questionnaire - in case we need to contact you for further clarification. Thank you.

Name	
Job Title	
Institution	
Best contact method (and details)	

12. Appendix C: Internal Stakeholder Interview Plan

1. Can you tell me what your understanding of ORCID, in general, is?

2. What awareness do you feel your community have of ORCIDs?
   a. Please define your community
   b. Please indicate proportion who are aware of ORCIDs and an indication of how knowledgeable they might be

3. What is your experience of communications and information about ORCID?
   a. Generally
   b. Oxford specific

4. What ORCID activities are you aware of in Oxford?
   a. Communications (Postcards, websites, presentations etc)
   b. Single Sign On integration (IT Services registration)
   c. Potential plans for Symplectic/REF
   d. Potential use in ORA or ORA-Data
   e. Other

5. How aware do you think your community is of ORCID activities in Oxford?
   a. Communications (Postcards, websites, presentations etc)
   b. Single Sign On integration (IT Services registration)
   c. Potential plans for Symplectic/REF
   d. Potential use in ORA or ORA-Data
   e. Other

6. What impact (12-18 months) do you think ORCID will have on:
   a. Your activities (or your current role)
   b. Your community
   c. More widely

7. Where do you think we (Oxford) needs to target its ORCID-related activities in the immediate future (12-18 months)? This could be technical, or policy and training or something else.

8. What do you think the long term effect of ORCIDs will be?

9. Is there anything else you would like to add?

13. Appendix D: Acknowledgements

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Frankie Wilson
Sara Barkla
Liz Beckett
Alena Ptak-Danchak
Mary Fridlington
Sally Rumsey

Juliet Ralph
Matthew Smart
Christopher Hoskin
Sam Sneddon
Kevin McGlynn
David Tomkins
Lotte Boon
Andrew Fairweather-Tall

Meetings, Workshops etc.

The following events were attended, as a presenter, facilitator and/or session chair, in order to gather information and opinions for this paper.

Jisc RIM Group Meeting, London, 26th Jan
International Digital Curation Conference, Amsterdam, 22-25th Feb
Jisc Digi-fest, Birmingham, 2-3rd Feb
Alan-Turing Institute Symposium on Reproducing Research Data, Oxford 6-7th April
CASRAI-UK Launch Meeting, London 16th May
Cultivating ORCIDs, Birmingham, 25th May