

ORCID Adoption and Integration program report

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Contents

1. Introduction.....	1
2. Program goals.....	2
2.1. Products.....	2
2.2. Assessment metrics.....	4
2.3. Near term outcomes.....	6
2.3.1. Use cases.....	7
2.3.2. Communication.....	8
2.3.3. Discussion.....	9
2.4. Longer term outcomes.....	11
2.4.1. Lessons learned.....	12
3. Conclusion.....	13
Appendix 1: Links to code and resources.....	14

1. Introduction

The Alfred P. Sloan foundation “ORCID Adoption and Integration Program”¹ (henceforth the A&I program) was a high-profile and influential component of our activities in 2013 and 2014. In supporting, guiding and serving the program’s evolution, in publicising its results and achievements, and in synthesizing and disseminating its lessons, the whole organisation has engaged with the program. The value for ORCID and the research community has been significant. This report sets out the ways that ORCID adoption has been accelerated as a result of the outputs of the program. It shows how the wider scholarly community has engaged with the program outcomes, how participating organizations see the value that their projects have brought to their respective communities, and how the successes and challenges of the A&I program have shaped our priorities and planning.

This report extracts key lessons, features and achievements from program documentation. We have drawn on the use cases it has generated, as well as presentations and other communications materials to supplement the final, formal project summaries. By placing these documents in the wider context of ORCID’s growth and community engagement before, during, and after the program, we can clearly see the value and impact of the A&I program.

The participating organisations all report real benefits from the integration of ORCID iDs in their information systems. For ORCID, setting out the benefits of the program is straightforward. It has helped to fuel our growth, to develop our longer-term sustainability, and to align our priorities to those of our community. What we add to this picture in this report is an indication of what that

¹ <http://orcid.org/content/adoption-and-integration-program>

² <https://developer.github.com/v3/repos/downloads/>

community has gained from this program, in reduced opportunity costs, improved information resources, and better, faster integrations and software development.

2. Program goals

In the program proposal, we set out a number of goals to be achieved by participating institutions and in the broader community. There were also key goals and metrics relating to the way that future ORCID implementations and integrations will proceed. The following sections address each of these in turn. Where metrics are available and appropriate to demonstrate the effectiveness of the program, we have provided these. In other sections (for example the examination of the various use cases identified in the projects) a narrative approach is used.

2.1. Products

In terms of products, their uptake, and community responses to the program, we identified a series of specific targets. We encountered some challenges in tracking progress towards one of these targets, but we are able to provide a proxy for the original measure of success and impact. For the others, available statistics have shown that we met or exceeded our original targets.

For the software products and code generated during the life of the project, we originally proposed the use of download metrics to gauge community engagement with, and uptake of, program outputs. Our target was 20 downloads of code. Several of the projects opted to make their code available via GitHub (a perfectly reasonable decision, as the GitHub repository is both widely used and highly accessible). Unfortunately, GitHub has deprecated the ability to track downloads², -meant it was not possible for us to gather download metrics for these projects. Instead, to demonstrate use and re-use of program products, we have made an assessment of the reach of the platforms that integrated ORCID, as the code generated in each of these will be distributed to the community using that platform or product. This proxy provides us with promising measures for the reach and utility of the software developed during the program (see Table 1).

Platform/product name	ORCID integration release	User base
BePress Digital Commons	TBC, pending pilot completion	>300 instances in the US. ³
DSpace	Version 5	256 instances in US, >1500 worldwide. ⁴
Hubzero	Version 1.3	50 “hubs” using the platform. ⁵
Hydra	Currently available as plug-in, integrated release TBC	6 participating institutions, a further 45+ have compatible FEDORA instances. ⁶
Vireo	Version 2.0.7.x	14 instances in the US. ⁷
VIVO	Version 1.7	7 partner institutions. ⁸

² <https://developer.github.com/v3/repos/downloads/>

³ http://digitalcommons.bepress.com/subscriber_gallery/

⁴ <http://www.duraspace.org/registry/dspace>

⁵ Statistic taken from Purdue University, A&I program final report.

⁶ Statistic taken from University of Notre Dame, A&I program final report.

⁷ <https://www.tdl.org/etds/>

Table 1: User base of platforms and products integrating ORCID iDs during the A&I program.

Table 1 gives an overview of the A&I projects, which explicitly stated in their reports that their implementation of ORCID was being incorporated into the platform in official release versions. However, in addition, this is only a partial picture of ORCID integrations resulting from the program. The integration of ORCID iDs into Symplectic Elements was initiated as a result of the University of Colorado’s participation in the program. ORCID integration in BU profiles was also substantially furthered during the program, opening up this integration to the other Clinical and Translational Science Institutes, such as the University of California, San Francisco.⁹ The Society for Neuroscience integrated ORCID into Personify, a common platform for association management.¹⁰ Another development that shows great promise was initiated by Texas A&M, who started the conversation about integrating ORCID into the eduPerson I2 standard, which has far reaching implications for anyone using LDAP Single Sign On (SSO).¹¹

These facts and figures show how the A&I program has enabled ORCID integration in each of these systems, opening up ORCID integration to hundreds of institutions in the US and around the world as they update their software to the newest releases.

The second class of product identified in the proposal was a suite of improved information resources. These took two forms, the enhancement of the ORCID Knowledge Base with articles synthesising the lessons of the program, and the widespread dissemination of slidedecks from each of the project institutions showcasing their work. Our target for the community use of these resources was 100 downloads and views for the articles, and 200 downloads of the slidedecks. We have tracked the usage of the articles that are directly attributable to the A&I program partners and products (See **Table 2**).

Knowledge base article	Number of views
Timeline for creating ORCID iDs via the API ¹²	1,584
Create on demand workflow ¹³	337
Example communications when creating ORCID records ¹⁴	191
XML for creating iDs ¹⁵	407
Tutorial: trusted party access as part of the claim process ¹⁶	202

Table 2: Web statistics for ORCID Knowledge Base articles attributable to the A&I program (as of December 15 2014).

Other web pages on the ORCID site relating to the A&I program drew significant numbers of pageviews.¹⁷ The program page itself¹⁸ gathered 2,368 views (2,109 unique viewers) and the May outreach meeting page¹⁹ gathered 4,641 views (3,341 unique views). The slides presented by project

⁸ <http://www.vivoweb.org/about/faq/about-project>

⁹ <http://www.bu.edu/ctsi/resources/bu-profiles/>

¹⁰ <http://www.personifycorp.com/>

¹¹ <http://www.internet2.edu/products-services/trust-identity-middleware/eduperson-eduorg/>

¹² <http://support.orcid.org/knowledgebase/articles/321374>

¹³ <http://support.orcid.org/knowledgebase/articles/369982>

¹⁴ <http://support.orcid.org/knowledgebase/articles/321386-example-communications-when-creating-orcid-records>

¹⁵ <http://support.orcid.org/knowledgebase/articles/324246-xml-for-creating-ids>

¹⁶ <http://support.orcid.org/knowledgebase/articles/333663-tutorial-trusted-party-access-part-of-the-claim-p>

¹⁷ As of December 15 2014

¹⁸ <http://orcid.org/content/adoption-and-integration-program>

¹⁹ <https://orcid.org/content/orcid-outreach-meeting-and-codefest-may-2014>

partners were uploaded to the ORCID SlideShare account.²⁰ This enabled us to track the usage of each slidedeck. Fifteen slidedecks were uploaded by the project teams, garnering a total of 6,992 views and an average view count of 466 views. The most popular slidedeck had been viewed 721 times as of December 8 2014 (See **Table 3**).

Institution	Number of slidedecks	Views per slidedeck	Total views
Boston University	3	586 + 517 + 539	1642
Cornell University	1	372	372
Purdue University	1	335	335
Reactome	1	373	373
Society for Neuroscience	2	589 + 362	951
Texas A&M University	3	447 + 484 + 444	1375
University of Colorado at Boulder	2	514 + 323	837
University of Missouri	1	721	721
University of Notre Dame	1	386	386

Table 3: Views of slidedecks produced by project team and uploaded to the ORCID Slideshare account, as of December 8 2014.

Taken together, these metrics indicate that the program generated considerable community interest. This interest in the experiences and lessons of the project teams, as demonstrated by the views of their slidedecks, has clearly translated into practical expertise, via the ORCID Knowledge Base, and actual code implementations in a solid and growing number of institutions.

2.2. Assessment metrics

A number of metrics were proposed for the success of the A&I program. These included the adoption of ORCID in core enterprise systems in participating institutions, and measurable changes in the trends shown in patterns of ORCID adoption and engagement with ORCID IDs in the wider community.

One core criterion for the success of the program was the successful adoption of ORCID in core enterprise systems of the universities and professional associations who took part in A&I program funded projects. The definition of success in this goal was the implementation of 10 new integrations. In fact, the program partners integrated ORCID IDs into 13 systems, often at more than one institution. The enterprise systems involved were:

- Academic Analytics
- Bepress Digital Commons
- DSpace (Integrated at both Texas A&M and the University of Missouri)
- HUBzero
- Hydra (and by extension FEDORA and potentially any Ruby on Rails application)
- Kualii Coleus
- Oracle APEX
- Personify
- The Reactome database

²⁰ <http://www.slideshare.net/ORCIDSlides>

- SAP
- Symplectic Elements
- Vireo
- VIVO (at Cornell, Texas A&M, and the University of Colorado at Boulder)

These systems include repository solutions, profile systems, publications management software, association management software, and core human resources and people systems.

A corollary to this success criterion was that there should be further momentum, demonstrated by the adoption of these integrations and best practices by 30 additional universities and professional associations within the subsequent year. Although it is too early in this period to give a definitive number of integrations or to quantify the expanded use of the best practices generated by the projects, the degree of interest and the number of platform and software integrations set out in **Tables 1, 2 and 3** above are early indicators that this second criterion is well on the way to being met.

By comparing usage patterns both in the project participants and the wider community before during, and (where possible) after the program, it is possible to discern some trends in ORCID uptake and engagement. A number of possible metrics were identified in the original program proposal, and by comparing registry data from 2013 to data from 2014, and by comparing trends in A&I program participants to the wider community, we can present an overview of progress on each of these.

The proposal set out several measures for the increased use of ORCID identifiers by researchers and institutions. The first proposed measure was growth in the proportion of researchers who claim ORCID records created for them by their university.

It should be noted that only three institutions decided to create records on behalf of their researchers, so the sample is very small. Texas A&M created records for graduate students, rather than actively-publishing career researchers. Of the records created at University of Colorado, Boulder and Boston University, 43.70% of records created were claimed, compared to 41.16% in the rest of the creator institutions.

The second proposed measure was of an increased the level of active engagement by researchers with their ORCID record, as indicated by a growth in the proportion of researchers who attach their identifier to a research work. This metric does show a clear difference between the A&I participants and the general population of ORCID integrators. Across the ORCID registry as a whole, 18.74% of iDs have at least one work attached. In the A&I program, University of Colorado, Boulder and Boston University (both of whom created records on behalf of their researchers) 99.96% of records have at least one work attached.

The final assessment metric proposed was the level of growth in the overall identifier registration count. To evaluate this, it is necessary to isolate identifiers from the United States (the focus of the A&I program) from other countries, as changes that occurred amongst the population directly affected by the program are masked in the noise of global statistics. For comparison, we have also included the equivalent statistics for the same period for the UK and Australia.

In **Figure 1**, there are clearly visible upticks in record creation in the spring and fall of 2014, which match up to the peaks of activity in the A&I institutions. By comparison, engagement is much flatter in the other two countries.

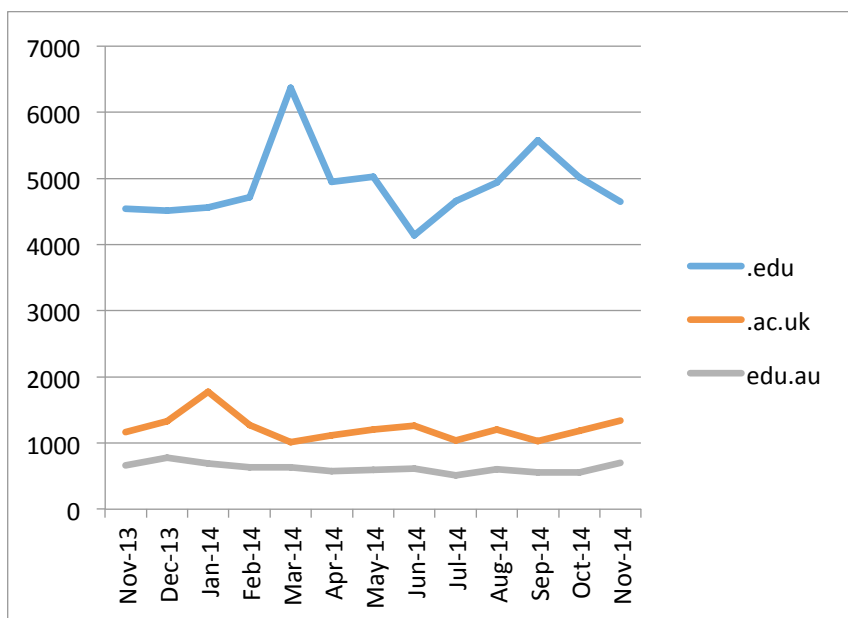


Figure 1: ORCID records created per month in the US, UK and Australia.

However, these stats on their own do not tell a complete story. In analysing the actual levels of use of the ORCID registry, it is noticeable that the number of users per month from the US doubled in the first four months of the program. In 2013, usage levels hovered consistently around 25,000 per month. In the four months to March 2014, monthly user numbers grew by an average of 13.2% each month, to 49,000, and have held steady close to the new average of 43,400 per month.

It is clear from the metrics presented so far, taken alongside the number of integrations and the level of outreach activities undertaken, that the program has contributed to a sustained increase in momentum through 2014. We are confident that this momentum will continue to drive adoption, engagement and integration into 2015 and beyond.

2.3. Near-term outcomes

The near term outcomes of the program include not just quantifiable outputs and patterns of usage, but also a wealth of experience, insight and guidance. As noted above, a great deal of this best practice and expertise has been incorporated into our Knowledge Base, where it is serving our global community well. We have made as much of the information coming from the projects as possible available, both online, in community outreach and in formal presentations.

While the outcomes of these activities are harder to quantify, they are extremely promising, and have helped to drive the growth in adoption that we are witnessing. The level of community engagement with the outputs, experience and resources emerging from the A&I program has been extremely encouraging.

We present some of the highlights, and extract some of the insights that have emerged from the program here.

2.3.1. Use cases

The full range of use cases explored by the program projects is available on the ORCID website.²¹ They cover a variety of needs and systems, and provide a very rich resource for any stakeholder group in the scholarly communications ecosystem seeking to begin the process of integrating ORCID iDs into their software or services.

While the projects each explored the possibilities for ORCID integration through their own particular lens, there were some common themes that can be clearly picked out as core use cases that can serve much of the community.

One of the fundamental use cases that cut across all of the projects is that of the creation and capture of ORCID iDs for individuals. This process was characterised by the simultaneous linking of the newly created and/or captured iD to local systems. In practice, there were two primary approaches to this process: the creation of iDs on behalf of the researcher and the facilitation of self-registration by individuals. It was striking that, despite initial expectations that many projects would choose the bulk creation of iDs, in fact only three (Texas A&M, Boston, and Colorado) did so.

Authentication was another common use case. By using authenticated connections, institutions were able to unambiguously link ORCID iDs to accounts on their system, and from there to specific records (of publications or datasets in the repository for instance). The primary difference here was amongst those for who used authentication primarily to connect ORCID iDs to works, and those who used the authenticated ORCID iD as an attribute and shared it with other systems within the single sign-on environment. By including the ORCID iD in the authentication payload, institutions, such as Texas A&M or Boston, were able to share the iD with a central directory and to use it to further disambiguate and connect records across institutional systems, offering improved data quality and reliability.

Further benefits, to both researchers and information systems, were enabled by the connection of ORCID iDs to other identifiers (such as DataCite DOIs at Purdue) and existing local or shared person identifiers in profile systems (as at Cornell or Colorado). These use cases demonstrate the potential of the ORCID registry to function as an effective hub for the transmission of identifiers, attributes, and data between local systems and external or shared platforms and services. By ensuring that person information is disambiguated and linked to other authoritative data sources, the value proposition for both sides of the exchange is improved data quality and a reduction in the resources required for the cleaning and verification of imported data.

The use of authenticated ORCID iDs also enabled the extension of institutionally provided or procured services to individuals who may not have been able to exploit these systems previously. Connecting specific groups who might lack other identifiers or systems access was a high priority at, for example, Cornell for external users and graduate students who had no access to the local Symplectic Elements instance, or at Notre Dame where ORCID iDs were used as the primary identifier for non-university repository accounts. This not only opened up services to the previously excluded, it enabled the institutions to capture information about those people that previously would have been lost to them.

Finally, the improvement of attribution was a core use case. This underpins the purpose of ORCID, and as such we were pleased to see it bearing fruit in this program. Enhancing both the accuracy and

²¹ <http://orcid.org/organizations/institutions/usecases>

comprehensiveness of attribution were vital to Reactome, especially since it deals with ‘non-traditional’ publications, which can often go undetected and therefore unrecognised and unrewarded.

While the use cases in their diversity show the flexibility of identifier integration, and the ability of a lightweight, connective infrastructure such as ORCID, to interoperate with a very wide range of solutions and technologies, the core commonalities demonstrate the value to researchers and organisations of a standardised hub to link people, data, and services.

2.3.2. Communication

There are a great many communication and outreach activities described in the program participants’ final reports. These range from stakeholder outreach on campus, faculty meetings, professional association or interest group presentations, and user group meetings to conference papers and journal articles.

Rather than repeat the various lists of extensive communications, we have picked out some highlights from the program, which either reached out to a core stakeholder community and significantly boosted the awareness and reach of the program, or showcased the breadth of work undertaken by the partners.

One of the best opportunities to witness the scale of the effort and achievements of the A&I program was the ORCID Outreach Meeting, in Chicago on May 21 and 22 2014.²² All the projects were well represented, and the presentations from that meeting helped to drive the high usage of the slideshows on the ORCID Slideshare account. In addition, feedback and discussion from the assembled community at the meeting helped to refine the final stages of the projects, and to help to shape the priorities of the project teams for their ongoing work with ORCID. 150 people attended the event.

The Open Repositories 2014 conference, which took place from June 9 to 13 2014 in Helsinki, Finland²³ represented an excellent opportunity to connect the A&I program with the global repository community. The teams from Purdue and Missouri took part in a panel discussion titled “ORCID in the wild: implementing ORCID into research support and repository systems”, presenting the program results and discussing best practice for ORCID implementation for an international audience of repository developers and managers.

Projects working with common, community-driven platforms added significant value to the communication coming from the programme, with their ready-made and engaged audiences, and the ability to deliver fresh integrations into the hands of developers and implementers. Both Boston University and Cornell University presented their work at the VIVO conference 2014, held August 6 - 8 2014 in Austin, Texas.²⁴ These presentations showed off the applications of integrating ORCID iDs into VIVO, as well as showcasing forthcoming functionality and engaging implementers with the practicalities of using the new code.

²² <https://orcid.org/content/orcid-outreach-meeting-and-codefest-may-2014>

²³ http://or2014.helsinki.fi/?page_id=985

²⁴ <http://www.vivoconference.org/2014/index.aspx>

Purdue University also demonstrated their integration as a new feature in HUBzero at the Hubbub 2014 conference, held in Indianapolis, IN, between September 29 and October 1 2014.²⁵ The Notre Dame University team presented a poster promoting the new ORCID plug-in for Hydra at the Hydra Connect conference September, which took place from September 30 to October 3 2014, in Cleveland, Ohio.²⁶

The University of Missouri²⁷ and Texas A&M²⁸ created excellent library guides on registration for and the use of ORCID iDs, explaining the value and utility of ORCID and identifiers more generally for scholarly communications. These guides have been promoted as examples of good practice in ORCID presentations²⁹ and at our May outreach meeting in Chicago. Gail Clement of Texas A&M talked about the design and impact of their library guide to ORCID in a webinar on October 30 2014³⁰ attended by 55 people. The recording of the webinar has been viewed 43 times since, as of December 8 2014.³¹

The University of Missouri also produced an excellent video guide to ORCID for their researchers, which sets out the rationale and benefits of using ORCID iDs, and explains how to make best use of them. This has been uploaded to YouTube.³²

These outreach activities have been further internationalized by the ongoing interest from, and engagement with, the Jisc-ARMA ORCID pilot programme in the United Kingdom.³³ The general approach taken by this cluster of 8 funded implementations has broadly mirrored that taken in the US by the A&I program, and the outputs, use cases, costs and benefits of the A&I program have been examined by the consultants retained by Jisc to analyse the results of their UK projects. We anticipate that the comparative analysis of the two complementary programs will add another layer of insight above and beyond that already delivered, and we look forward to publicising the results when the Jisc report is released in the first quarter of 2015.

2.3.3. Discussion

As emphasised in the discussion of the use cases set out by the project teams, improving attribution and data quality in local systems was a common goal. This goal is a fundamental driver behind ORCID adoption globally, as we encounter more institutions that are struggling to process flows of information in an increasingly international and complex environment. The experiences of the institutions that participated in the program are interesting to read in this light, as their priorities, the 'wins' they identify, and the challenges and obstacles they continue to face are shaping our priorities and our approach to supporting integrators and partners in the coming years.

It was striking that there were two frequent approaches taken in ensuring that code developed could be re-used. (This discussion applies to Open Source Software primarily, for obvious reasons we

²⁵ <http://hubzero.org/hubbub/2014>

²⁶ <https://wiki.duraspace.org/display/hydra/Hydra+Connect+2+-+Fall+2014>

²⁷ <http://libraryguides.missouri.edu/researchidentity>

²⁸ <http://guides.library.tamu.edu/content.php?pid=553864&sid=4564756>

²⁹ See, for example, <http://www.slideshare.net/ORCIDSlides/orcid-engaging-researchers>

³⁰ <http://orcid.org/blog/2014/10/21/new-webinar-libraries-researchers-and-orcid>

³¹ <https://vimeo.com/110792162>

³² <https://www.youtube.com/watch?v=213eh-QVpkl>

³³ <http://orcidpilot.jiscinvolve.org/wp/>

have less insight into the re-use or extension of code used in proprietary software solutions.) This largely seemed to depend on the relationship of the participating institution to the core development team of the platform or solution. Taking the Cornell University approach to VIVO as one example, they were part of the core team and were able to integrate their code swiftly into a new release of the VIVO software. By contrast, Notre Dame developed a series of modular plug-ins to enable ORCID integration in systems on a one-by-one basis, with three distinct plug-ins to enable the full functionality (the ORCID integrator core, and ORCID content and metadata translator and the ORCID Hydra User Interface). The timeframe for the full integration of these into the main Hydra release is not yet clear, and while these outputs are accessible and usable to potentially any user of the FEDORA repository software, there is a higher opportunity cost in adopting these outputs in other institutions. It is clear from this that the emphasis on Open Source can accelerate adoption and integration for community-driven software platforms, but that integration into the core code underpinning all instances must be the goal for effective and widespread adoption.

Many of the PIs anticipated exciting new possibilities and a bright future for ORCID. Boston University remark, that “we have learned that a potentially excellent opportunity may lie in the utility of ORCID to greatly facilitate the creation and tracking of various training grants... Our training program directors who have recently been in the process of submitting new and continuing grants have extremely excited by this functionality and the potential to improve their capacity to document their successes and impact”. We continue to reach out to research funders, and third party systems providing management systems and information to funders to ensure that this opportunity is seized.

Other cross-sector or international partnerships also emphasised their vision of the future. Reactome observed, that "It is possible to imagine a time not too far ahead when the ORCID platform, through online collaboration tools, like Reactome, will become integral to development and dissemination of scientific research." ORCID's value to global communication was also noted by the Society for Neuroscience, whose membership base of 40,000 members in 90 countries, 38% of whom are based outside the US, means that participation in a global information ecology is vital to them for survival. ORCID enabled them to improve the data integrity in their systems. As a result, they aim to integrate ORCID iDs with their membership directory, which is publicly searchable online, helping them to connect their members to each other and to potential external collaborators seeking expertise.

However, this is not to say that the integration process did not encounter challenges. For example, The University of Colorado at Boulder found that the staff burden of integration was higher than they had expected it to be, representing the equivalent of one full time employee working for close to 4 months. They felt that the investment was worth it, but it is a warning to us that opportunity costs may be significant to smaller institutions wishing to be early adopters, especially those who do not have access to additional funding for their work.

The University of Colorado at Boulder noted that better integration with Symplectic Elements would have helped them to move further faster with their integration. Even for those with the resources and the drive, maintaining integration via external vendors and providers can slow progress. Any loss of pace for an integrator could result in lost potential, because, as the Boston team observed, ORCID adoption is a moving target with new functionality being released constantly, systems and suppliers changing and organisations evolving.

For other project partners, technical challenges were a greater barrier, especially for those like the Society for Neuroscience who lacked experience in handling some of the technologies involved in the integration, in this case OAuth for the authentication of ORCID iDs and connections. Membership

organisations, or commercial platforms competing for limited researcher attention also face different challenges to universities and other employing organisations, in that they have much less ability to direct what is essentially a voluntary relationship with the researcher. This means that they must proceed carefully with ORCID integration, ensuring that touch points with ORCID are placed in such a way as to demonstrate the value of the integration to avoid deterring their members or users from engaging with the new functionality.

2.4. Longer term outcomes

Amongst longer-term outcomes from the project, several further measures of the impact of the program were identified. The first was an additional 30 integrations initiated within one year. As noted above, it is early in the period to give a definitive number, although progress indicates that this target will be exceeded. The second measure was that the average time taken to complete an integration should be reduced from 1 year to 9 months. On the present timescale, it is too soon to measure this, a mere four months after the program ended. We have set up a monitoring program using Salesforce, where we log interactions with member organizations. We track both when an institution began to use the ORCID sandbox (a clear sign that development work is ready to begin) and when they applied for production credentials (a move that tells us that they have finished their development and are ready to go live). We will be reporting these statistics in our Annual Report.³⁴

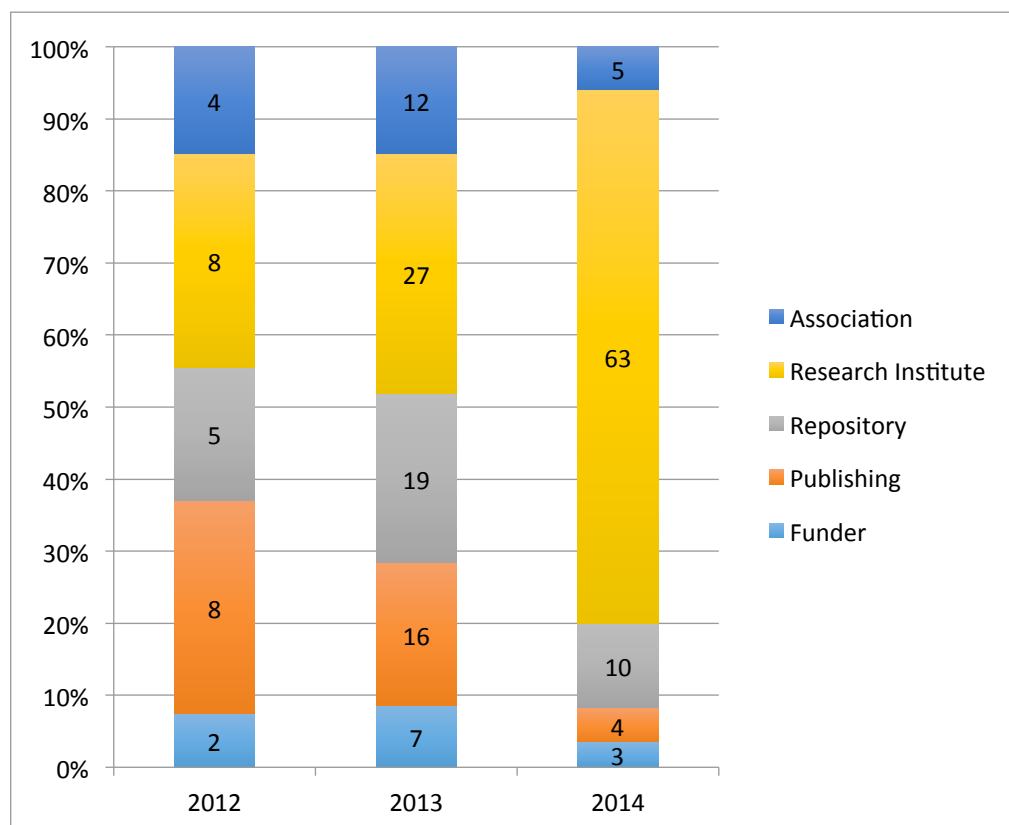


Figure 2: member integrations by sector and year 2012-2014.

³⁴ ORCID annual reports are published in the first quarter of each year, and available online at <http://orcid.org/content/our-governance>.

Figure 2 shows the growth in the number of active member integrations since the launch of the ORCID registry. While the number of integrations has grown steadily over this time, there has been an explosion in activity in the higher education sector. In 2012, 29% of integrations came from HE. In 2013, this number grew to 33% and in 2014 it reached 74%. The Sloan A&I program created a tangible “buzz” that has clearly helped to drive this phenomenon. The cadre of early adopters created by the program, and their communication activities, have sent a clear message to the global HE community that ORCID integration is worthwhile and that it has value. Add to this the extent to which the program has lowered barriers to adoption, via platform integrations, and created a model for emulation, as in the UK’s Jisc-ARMA programme, and it is plain that the impact has been huge.

2.4.1. Lessons learned

We have learned a great deal from our close engagement with the projects, and our analysis of the program’s impact. It has become clear to us how our outreach and engagement strategies should evolve, in particular to address member and user behaviour that has not always conformed to our initial expectations.

For example, one of the original longer term indicators discussed before the program launched was adoption progress as measured by the proportion of ORCID iDs claimed after institutional creation. In actual fact, only three projects in the A&I program adopted the ‘create’ approach. In the UK, only one of the UK Jisc-ARMA projects did so. We are discerning a trend away from institutional creation of ORCID iDs, with a growing majority of institutions preferring researchers to create their own iD. This emphasis on individual rather than institutional creation is being borne out around the world. It is likely, especially in Europe, this is being shaped by an emerging consensus on new privacy laws moving through the European Parliament.

As a consequence of our analysis and the detailed discussions that we have had with program participants, we are now encouraging all members to move to a ‘create on demand’ workflow, both for privacy and user engagement reasons. This is now our standard policy, and the change is one example of the ways that the program has driven an evolution in our practices.

The A&I program gave us a chance to discuss every step of the process of integration, both social and technical, with the projects, and this has led to two further shifts in our practice. Our guidance to new integrators now couples the user engagement strategy tightly to the various stages of technical integration³⁵. To help to cement this approach across the whole community, we are building out sector-specific member support pages, with specific recommendations for implementation.³⁶ These are due to launch in Q1 2015.

We have also shifted our community engagement strategy. Initially, we focused on direct engagement with researchers themselves. This approach was essential in the early days of ORCID to drive individual awareness and acceptance of the ORCID concept. As a result of the success of member integrations and the user engagement work undertaken by the project, we now engage with researchers via member integrations, and focus on supporting the user engagement of our members. This shift will help to support both the long-term sustainability of ORCID by building up

³⁵ <http://support.orcid.org/knowledgebase/articles/321374>

³⁶ <http://members.orcid.org/>

our membership base, and will also help us to get outreach into the heart of user communities, via the actual integrator and their natural connection to their users.

3. Conclusion

The results of this program have been profound. For a comparatively small program of activity, it has had impact beyond that anticipated. Within the participating institutions, the level of community awareness of ORCID has skyrocketed, and many partners are continuing to build upon the work they did as part of their Sloan-funded project with further integrations. ORCID iDs are now integrated with popular and widely supported platforms and software. The accumulated wisdom of the program partners continues to spread. To give just one example, library guides to ORCID developed at Texas A&M during the project have been re-purposed at other institutions, and were publicised in a webinar with their main author, Gail Clement.³⁷ This shows that at every level, be it code or experience, the value of this program has been enhanced by the community adoption of its outputs.

The overall number of ORCID iDs passed 1,000,000 in November 2014. This milestone marks an enormous achievement for ORCID and its partners and supporters. While we are a global system, and trends around the world shape adoption levels and the rate at which membership grows, we have seen a clear boost from the support of the Alfred P. Sloan Foundation for ORCID, and its funding of the A&I program, and for that we are, and remain, very grateful.

³⁷ Op. Cit. <https://orcid.org/blog/2014/10/21/new-webinar-libraries-researchers-and-orcid>

Appendix 1: links to code and resources

As well as being incorporated into the ORCID github repository at <https://github.com/ORCID/ORCID-Source>, projects have maintained their own code and technical resources. These are included in the project use cases and final reports, but for convenience' sake we have compiled a single list for reference and information.

Boston University:

API Source code has been uploaded to both GitHub and is available from the Harvard Catalyst Profiles website at <https://github.com/ProfilesRNS/ProfilesRNS> and <http://profiles.catalyst.harvard.edu/?pg=download&version=2.5.0>

Cornell University:

The VIVO project on GitHub at https://github.com/vivo_project incorporates ORCID integration changes on the current develop branch. The repository https://github.com/j2blake/orcid_api_client is the source code for the ORCID API client library. It is used in both the VIVO integration and in orcid.cornell.edu. It controls the interaction with OAuth and the ORCID API. The repository https://github.com/j2blake/orcid_cornell_edu is the source code for the orcid.cornell.edu site. Like the VIVO integration, it treats the ORCID API client library as a 3rd party package.

Purdue University:

<http://hubzero.org/download>.

Reactome:

Reactome source code is available at github <http://www.github.com/reactome> and the Reactome website at <http://www.reactome.org>.

Society for Neuroscience:

<https://github.com/SfN2/Utilize-ORCID-API-with-C-Sharp>

University of Missouri:

<https://github.com/DSPACE/DSPACE/pull/612>

University of Notre Dame:

<https://github.com/projecthydra-labs/orcid>