AN ENTERPRISE APPROACH TO RESEARCH OUTPUTS COLLECTION, MANAGEMENT AND REPORTING AT THE UNIVERSITY OF SOUTH AUSTRALIA: COLLABORATING TO INNOVATE

ABSTRACT

The challenges of ensuring that research outputs are captured in a timely manner, academics are not frustrated with administrative processes and using powerful tools such as ORCiD to their full advantage, are faced by all universities. Coupled with senior managers' increasing information needs to use research outputs data to answer key questions such as 'who are we collaborating with?', adds additional pressure for streamlined whole-of-university processes, often when different areas work at cross-purposes.

Through an intentional 'one team' collaboration between Library, Business Intelligence and Planning, Information Strategy and Technology Services, Research and Innovation Services, and Human Resources teams, UniSA has managed to support schools and academics to deliver enhanced end-user services and to introduce efficiencies across the organisation with the support of the Deputy Vice Chancellor: Research and Innovation. The benefits of this approach have led to the following in a time period of only 18 months:

- the creation of the Collection of Research Outputs (CRO) online submissions and management system for all UniSA research outputs including journal articles, books and book chapters, conference papers, reports, patents,

creative works, and Higher Degree and Masters by Research theses. CRO is currently harvesting 70% of all journal articles published by UniSA staff

- widespread adoption of ORCiDs
- output metadata being sufficiently complete and of high quality to automatically populate new design publicly-available staff home pages
- significantly increased compliance with UniSA's Open Access Policy which has required Library staff to develop new workflows to support post-print lodgement into the University's institutional Research Outputs Repository (ROR)
- a more complete and up to date source of data to support the Deputy Vice Chancellor: Research and Innovation's desire to introduce measures of research productivity, which in some cases, will report and benchmark performance on outputs not necessarily included in statutory reporting requirements
- integration of citation counts and Altmetrics, and affiliation and collaboration metadata into staff home pages, staff activity reports and ROR pages.

The project leveraged existing enterprise systems including Appian business process management workflow software, the Alma library management solution and vendor APIs.

The system delivers academics automated weekly notifications of new research outputs harvested from Scopus and Web of Science. Academics then either claim or reject the output and upload the postprint where applicable. Academics are also able to use a DOI lookup or manually submit publication details.

The development of the new Repository discovery interface was informed by stakeholder feedback with the additional display elements now including citation details, funding, and linked research datasets. A comprehensive whole-of-university communications plan (including support resources) was executed with capability building sessions delivered by Library and other staff.

The system has been in operation since August 2015 and initial uptake has exceeded expectations with academics quickly adapting to and engaging with the new process. Typically, academics claim outputs within a week of notification and the average time for a researcher to review and finalise an output is under five minutes.

Relevance:

This paper addresses the conference theme Data | Information | Knowledge by referencing strands including transformational innovation and knowledge collaboration.

PAPER

Ensuring that research outputs are captured in a timely manner, that academics are not frustrated with administrative processes together with using powerful tools such as ORCiD digital identifiers with its associated automated research workflows to their full advantage are challenges faced by all universities. Coupled with senior managers' increasing information needs to use research outputs data to answer key questions such as 'who are we collaborating with?' the impetus for streamlined whole-of-university processes, devoid of silos becomes increasingly important. This paper describes a collaborative, 'One Team' approach at the University of South Australia, focussing on a critical commodity, research outputs.

Background

In 2014, the Deputy Vice Chancellor: Research and Innovation (DVC:R&I) approved a joint Library, Business Intelligence and Planning (BIP) and Information Strategy and Technology Services (ISTS) proposal to change the process for collection of publications and creative works at the University of South Australia (UniSA) to deliver a new integrated service.

A number of drivers contributed what was a significant change in how UniSA research outputs are collected and used. These drivers included:

- introduction of an Open Access Policy (and related national open access requirements) which included postprint lodgement into the University's Institutional Research (IR) Archive
- pre-existing research output collection processes requiring significant manual effort causing delays and frustration for academics, research support staff and reporting units
- continued need to deliver enhanced end-user services and to introduce efficiencies across the organisation, especially with ongoing funding restraints
- recognition of need for widespread uptake of ORCID and other researcher identifiers
- desire to re-use research metadata in other systems such as staff activity reports and new Staff Home Pages using a 'enter once, re-use many' approach
- making better use of new technologies such as automatic harvesting

- Senior management's development of research activity benchmark measures, including outputs not included for Higher Education Research Data Collection (HERDC) or Excellence in Research for Australia (ERA)
- Senior management's requirements for richer and more reliable data around collaborations (i.e. affiliations)
- expanding the metadata available such as citation counts and Altmetrics
- instituting more robust (and automated) data checks to resolve legacy data quality issues and prevent reoccurrence.

From 2015 the responsibility for the collection of research outputs (publications) at UniSA was transferred from the research support unit to the Library. This followed developments in the previous year when research performance reporting was given increased organisational focus via a transfer to the Business Intelligence and strategic planning unit of UniSA. Both of these moves included streamlining back end processes for publication updates and better use of available technologies including automated workflows. These changes significantly increased the quality and currency of publication metadata allowing it to be used in other projects (see more below).

The anticipated benefits of the new integrated service delivery model for research outputs included:

- reduction of administrative burden by having a simple online submission process that only required researchers and publications administrative staff to interact with the system only once per output
- improvement in the collection and description of the outputs by replacing manual interventions with automatic harvesting, data cleaning and validation tools

- elimination of duplication of effort in Schools, Research Institutes/Centres, and central units
- widespread adoption of ORCiDs
- significantly increased compliance with UniSA's Open Access Policy
- a large scale project impacting all academic staff that proved the value of working across teams to achieve something that no individual team would have been able to do. Previously, well-intentioned teams that ended up working at cross-purposes now would share a common message which benefits everyone involved in the project.
- implementation of the above without the need to procure additional software or systems.

Literature review

As UniSA already had experience with building and using an IR, and an institutional Open Access Policy was in place, the literature search on how to improve the collection and reporting of research outputs mainly focussed on looking for key resources and/or new approaches that would assist with the collaborative partnership and mutual gains for all stakeholders that was envisaged. It also looked for critical factors for success in development and implementation, building and future proofing for open access compliance, and researcher engagement with IRs.

Lynch's seminal paper (2003) can still be seen as one of the fundamental references regarding building IRs: the relationships between the key stakeholders, the collaboration required to ensure successful development and implementation, and wise words including how IRs could fail if they were seen to be selective about content submission, and become overly policy focussed.

The keys to success when implementing IRs has also been the focus of several more recent papers. Lagzian, Abrizah & Wee (2015a) received survey responses from 295 IR managers and identified 6 factors out a possible 46 as being key factors in a successful implementation: management, services, technology, self-archive practices, people and resources. In 2014 Sterman looked at trends and a proposed collaborative future for institutional repositories. A paper by Pinfield et al. (2014) summarised current characteristics and future possibilities of open access repositories, and confirmed some of our experiences with our previous repository. The attributes of the organization can also determine organizational innovativeness, the main factors being centralisation, complexity, formalisation, interconnectedness, organisational slack, and size. Innovative system-wide benefits can be realised if there is strong leadership and buy-in from management, but also incentives for researchers to engage with the process.

Harnad's 2015 article looked at optimising open access policy, and two of his eight factors resonated for our project, including "all mandates should designate repository deposit as the sole mechanism for submitting publications for performance review, research assessment, grant application, or grant renewal"; and "all repositories should implement rich usage and citation metrics in the institutional repositories as incentives for compliance."

A different perspective was provided by Quinn in 2010 who looked at reducing psychological resistance to digital repositories. His paper outlined various strategies to reduce resistance to researchers depositing their work, reinforcing that submission should be seen as a way of getting their work accessible and also be preserved, rather than a burden. Researchers who could give personal experiences of their successful interaction with an IR was another strategy, as was appealing to their

competitive nature by showing how their peers were utilising the system and enjoying the benefits. Embedding repositories into research practice, so that they become part of the researcher's daily work environment, and the benefits of repository integration with other institutional information systems was explored by Russell and Day (2010). They endorsed an approach of "add-value and save time rather than entail extra work for researchers (e.g. the ability to input data only once and to use for multiple outputs)". For Library staff there would also be significant change, not just from new software and new or changing relationships with stakeholders, but also complexities around metadata and handling new research output types such as datasets, so training needs of repository staff was another factor for consideration (Simons and Richardson, 2012). As Giesecke (2011) concluded, "changes needed in approach, standards and workflows to make repositories successful will likely be evolutionary rather than revolutionary…".

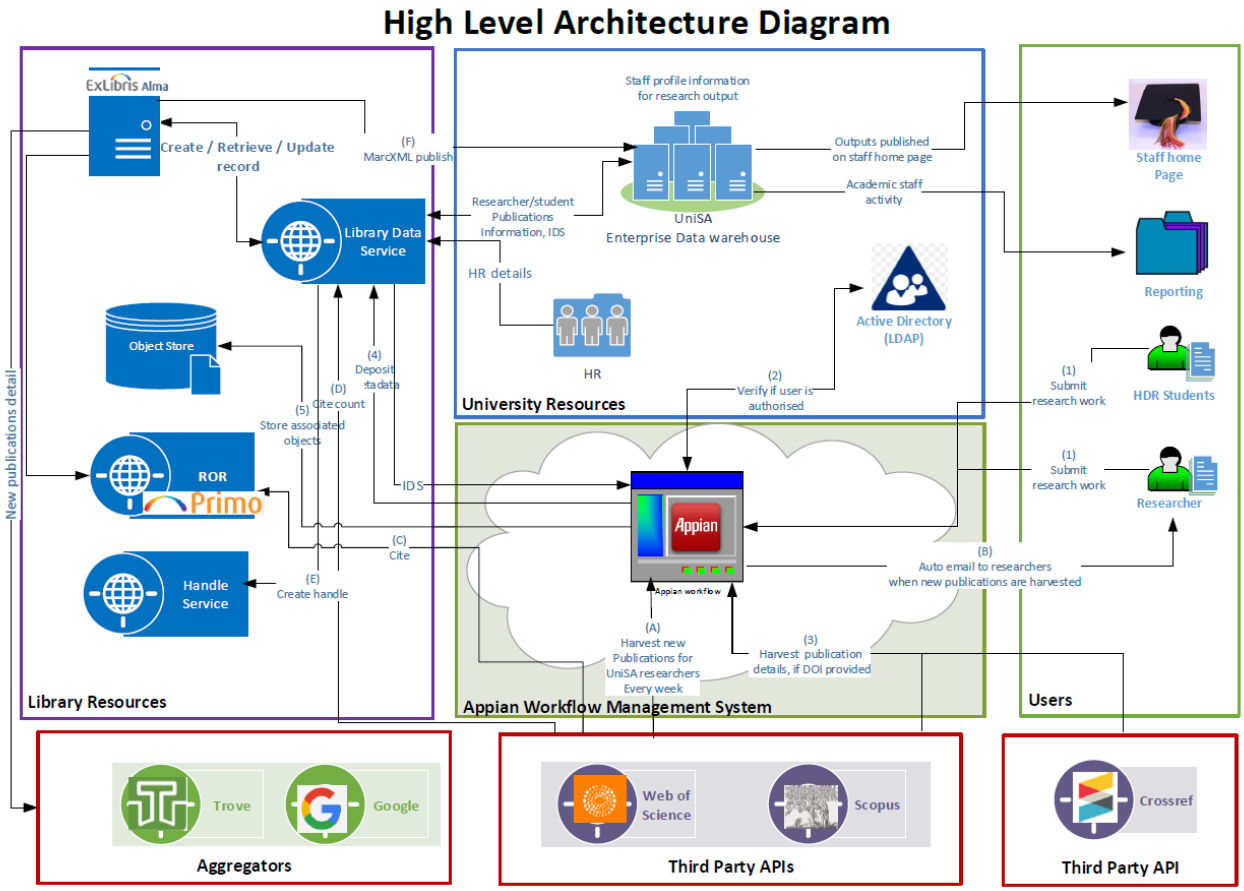
Design and development

The Collection of Research Outputs (CRO) system was developed by leveraging existing University systems: Library Services Platform (Ex Libris Alma), Discovery Service (Ex Libris Primo), and UniSA Enterprise Data Warehouse (EDW). It utilised the corporate business process management platform (Appian). The system also sourced and published metadata via various Application Programming Interfaces (APIs) from Alma, CrossRef, Web of Science, Scopus and Trove.

As of September 2016 the new research outputs collection system is harvesting 70% of all published UniSA journal articles.

The following infrastructure was used to support this state:

- submission of research outputs and associated workflow – Appian business process platform
- researcher and student data – Empower HR and PeopleSoft
- authentication and access – Light-weight Directory Access Protocol (LDAP)
- citation alerts – Web of Science and Scopus
- externally sourced metadata – CrossRef
- metadata management – Alma
- persistent links – CNRI Handle System
- discovery service and publishing – Primo, Google, and Trove
- reporting – Enterprise Data Warehouse (EDW)



One Team Project Methodology

UniSA has given this cross-university approach special focus as part of being a ‘university of enterprise’ and has developed a One Team Project Framework methodology to support this work. Working across units as ‘One Team’ was key for delivering an improved service for senior management, academics and support staff within a tightly defined timeline.

Project Governance and Working Arrangements

This project was sponsored by the Deputy Vice Chancellor: Research and Innovation. A Steering Group of the Directors of the units performing the work (or their delegates) met on a monthly basis to overview work. A Working Group of staff across the units met fortnightly and on an ad hoc basis, smaller task groups were formed and staff from other areas were invited. The project was advocating a change to a number of business processes and hence each area also reported local issues to their respective management.

While these were conventional approaches to project delivery, for the required work to be completed in tight timelines, the project was aligned with each teams regular work plans (or ‘business as usual’) to ensure the project deliverables were given ongoing priority. Also important was for any issues between teams to be addressed as soon as possible – especially during the busier periods. Given that at any one time there were 20 staff working across 5 units it was important to keep communication channels open and honest.

Communication strategy: One Message

Consistent with the One Team Project Framework, a ‘One Message’ University-wide communications plan was developed to support the rollout of CRO and the re-launch of the institutional repository as the Research Outputs Repository (ROR). A ‘One Message’ approach was needed for clear, consistent and timely communication to the various stakeholders and was critical to the success of the project. The complexity and strategic importance of the project meant an investment in the re-education of the University community was considered a priority. Additionally the project was a critical success factor into future 2016 projects including new Staff Home Pages sponsored by the Vice Chancellor. The communications plan was reviewed and updated fortnightly to ensure the delivery of each message was timed to maximise engagement and all stakeholder groups were reached.

Integral to the development of the project was feedback from the User Reference Group, comprising twelve academic and research staff, professional staff representing the Publications Officers based in each School, and research degree students. They attended three face to face meetings or provided feedback over a 3 month period, and also undertook User Acceptance Testing (UAT). The meetings were chaired by the Project Communications Coordinator, with meeting feedback documented and communicated via the Collection of Research Outputs LibGuide. In the lead-up to the go-live launch, additional UAT was undertaken, with several professors responding to a request to test the system and providing favourable feedback within minutes of receipt of email and claiming the output.

In the lead-up to the launch, training and promotional materials to advise and engage staff were developed. Not only was there a new workflow to communicate, but a

change of name from the UniSA Research Archive (indicative of 'fixed, preserved, old') to the Research Outputs Repository which was more inclusive of non-traditional output types and signalled it was a useful and current source of content. The materials were:

- Collection of Research Outputs LibGuide
- 4 minute video highlighting the benefits of the new research outputs collection process, how to claim an output, load the postprint and how the record displays in ROR; testimonials from researchers were also included here
- 2 page Research Quick Guides were produced: *Collection of Research Outputs > Research Outputs Repository*; and *Postprints, Open Access and the Research Outputs Repository*
- *CRO > ROR: making your research outputs visible to the world* was promoted as part of the Library's Spotlight on, and was featured prominently in the staff portal for several months.

At various stages of the implementation, emails were sent to key stakeholders: Library staff were kept in the loop by regular emails and project members attending team meetings to walk through the CRO submission process; A formal All-Staff Announcement was made by the Deputy Vice-Chancellor: Research and Innovation to advise CRO was operational. Concise 10 minute presentations were made at eleven School Boards and Research Committee meetings, which were presented by the CRO Project Communications Coordinator and/or an Academic (Liaison) Librarian.

Questions asked at these meetings helped inform the FAQs on the LibGuide, with the best endorsement of the new system being unsolicited feedback from

researchers who had already used CRO and had a positive experience. When one professor asked why he needed to submit to an IR when there was ResearchGate, we were able to provide an answer that was a ‘carrot’ rather than a ‘stick’ type response. Information was also included in all school and research newsletters, and postcards promoting CRO and ROR were distributed.

In addition to the Academic Librarians having another opportunity to promote the message about getting outputs into ROR and submitting postprints as part of the University’s Open Access Policy, another major benefit has been increased engagement between the researchers and the Library’s Repository Services Team, who as each output is processed, notify the researchers via email and provide a persistent link to the record in ROR. Marketing strategies to appeal to researcher self-interest were essential.

It was also imperative to ensure positive relationships with Publications Officers and Research Administration Support staff who are based in Schools and Research Institutes, particularly as a significant part of their work would change. Meetings and workshops were held with the Publications Officers at each campus at critical stages of the project, to inform them about the online submission system, display in ROR, and the new reporting options available via the Business Intelligence Hub.

Information about CRO and ROR is also covered in various training sessions, including *Publishing with impact: where and how*; *Publishing and what journal editors want*; Academic Promotion workshops; and included as part of the rollout of new staff home pages which were publicly launched in April 2016. Tailored workshops were also provided for staff in the School of Art, Architecture and Design in

recognition of the complexities of the submission and display of non-traditional research outputs.

The intentional message behind all the communications was that this was a project about streamlining processes for researchers and research support, which was responsive to suggestions about design and display on the basis of user feedback, and used a 'enter once, re-use many' approach – it was not a case of making researchers fit in with convenient administrative processes to suit the support units who would process, report, and/or display the outputs. (Russell & Day, 2010; Quinn, 2010)

Metadata – schema, additional data elements, legacy data, data quality

As repository content is now managed in the Alma library management system, a decision on the metadata schema – either MARC or DC - was required. We chose to use MARC, as this is natively supported in Alma, and it allows the use of local field. Most importantly, validation (mandatory and alerts) and controlled vocabularies could be configured.

Mapping of BI data elements to MARC fields and subfields was an early priority, especially as Business Intelligence and Planning needed to transform an automatically generated XML daily extract from Alma into a data warehouse database structure.

The following additional metadata elements (previously not collected, or only partially collected), managed or displayed in the UniSA Research Outputs Repository were in scope for the project;

- grant and funding information

- affiliation information for all contributing authors (aligned to a master reference list)
- Open Access information
- author identifiers (Staff, Student, ORCiD)
- identifiers (Scopus EID, Web of Science ID)
- cites counts (Web of Science, Scopus)

We expect that as University and other research outputs' reporting requirements change, that the list of metadata elements will continue to evolve, for example work has already begun towards including patents, and links to datasets.

Legacy Data

Together with the additional metadata elements required for CRO, major legacy data issues were encountered. These were partly due to different business practices and migration issues – both into the previous repository system and on export from that system. The previous system lacked batch editing, robust validation and controlled vocabulary functionality and was also subject to instability requiring significant local IT support. The 'metadata editor' itself was quite clunky, access rights functionality would freeze, and staff search functionality was limited. On migration, significant corrupt record issues were also encountered. Retrofitting of missing data elements from Research Master records was also not without its challenges. By sticking to the 'one team' mantra, retrospective data quality issues are just termed legacy data and fault is not normally apportioned.

Agreeing on data quality

The absence of validation and controlled vocabulary function resulted in data quality issues such as typos, invalid fields and subfields, and missing and incomplete data elements and identifiers. The lack of authority control was also a factor in the many variants of personal and corporate names.

For Library, the previous quality lens was around the descriptive elements of records while for BIP it was identifiers, data integrity and validation, internal reporting and external reporting needs such as ERA, plus engagement (affiliation). Harmonising the data quality lens foci of Library and BIP has been key; together with development of an automated daily mandatory exceptions reporting and timely resolution of errors and exceptions.

Data Quality Assurance

As an outcome of the project a comprehensive suite of data quality assurance measures and activities are now in place and include the following:

- use of Alma's controlled vocabulary and mandatory metadata fields for record validation
- Alma Analytics reporting
- checklists and comprehensive processing documentation
- record review by staff prior to publishing to BIP
- BIP Exception reporting for mandatory and non-mandatory data elements

To ensure quality metadata in the Research Outputs Repository the Library's Repository Services Team refer to the detailed Publication Processing documentation and the MARC checklist, a comprehensive list of the MARC coding, including mandatory fields. The team also use a range of online resources to verify

all the metadata recorded, included in Useful links. These tools include both local resources such as the local Masterfile of external affiliations, and external resources like Ulrich's, Scopus, Web of Science and CrossRef. Staff also add internal processing notes to assist with periodic audits.

Review of records happens in two ways. Every record is reviewed by a second team member ensuring each output description is seen by two separate people within the team. There is also a daily Exceptions report provided by BIP that details any records that fail to meet mandatory and non-mandatory requirements. This report focuses on ensuring critical data is captured – authors, titles, affiliation, collaboration, publication details and identifiers. The Library guarantees the report is actioned before the following business day's load.

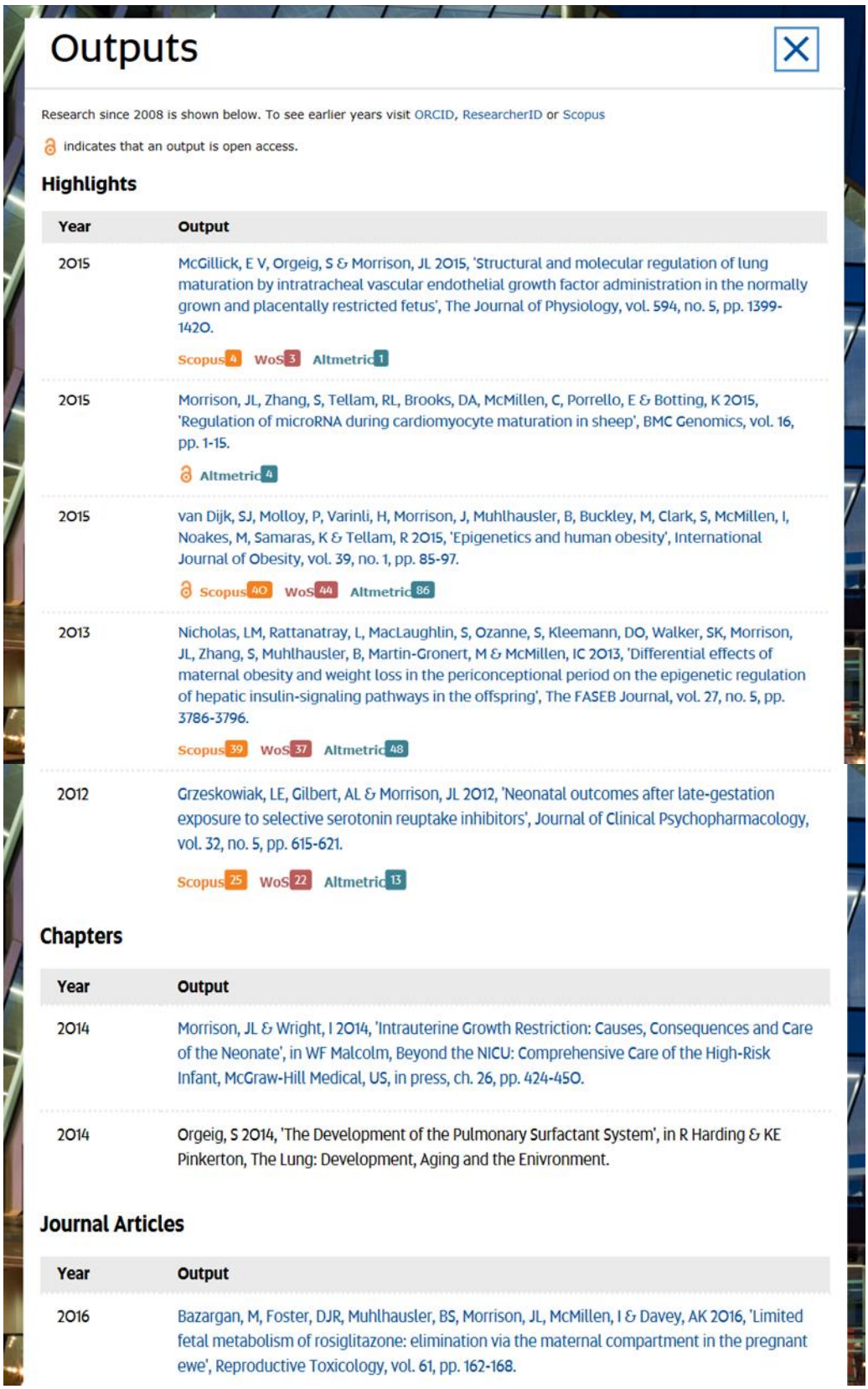
BIP also conduct periodic audits of outputs to review the assigned resource type, coding category and peer-review status, to ensure compliance with specifications required nationally, for example ERA.

Collaborate to innovate

The mantra of 'enter once, reuse many' continues to be the catchphrase used across the project. After the initial planning, development and implementation, Library and BIP staff continue to work collaboratively to further provide benefit to the university and staff.

One key benefit was the ability to automatically populate publication metadata as part of UniSA's new Staff Home Page project. This project went live in April 2016 using data from the Library Research Outputs Repository updated overnight.

The following screen shot shows the display of outputs by Highlights and then by output type:



Outputs

Research since 2008 is shown below. To see earlier years visit ORCID, ResearcherID or Scopus

indicates that an output is open access.

Highlights

Year	Output
2015	McGillick, E V, Orgeig, S & Morrison, JL 2015, 'Structural and molecular regulation of lung maturation by intratracheal vascular endothelial growth factor administration in the normally grown and placentally restricted fetus', The Journal of Physiology, vol. 594, no. 5, pp. 1399-1420. Scopus 4 WoS 3 Altmetric 1
2015	Morrison, JL, Zhang, S, Tellam, RL, Brooks, DA, McMillen, C, Porrello, E & Botting, K 2015, 'Regulation of microRNA during cardiomyocyte maturation in sheep', BMC Genomics, vol. 16, pp. 1-15. Altmetric 4
2015	van Dijk, SJ, Molloy, P, Varinli, H, Morrison, J, Muhlhausler, B, Buckley, M, Clark, S, McMillen, I, Noakes, M, Samaras, K & Tellam, R 2015, 'Epigenetics and human obesity', International Journal of Obesity, vol. 39, no. 1, pp. 85-97. Scopus 40 WoS 44 Altmetric 86
2013	Nicholas, LM, Rattanatray, L, MacLaughlin, S, Ozanne, S, Kleemann, DO, Walker, SK, Morrison, JL, Zhang, S, Muhlhausler, B, Martin-Gronert, M & McMillen, IC 2013, 'Differential effects of maternal obesity and weight loss in the periconceptional period on the epigenetic regulation of hepatic insulin-signaling pathways in the offspring', The FASEB Journal, vol. 27, no. 5, pp. 3786-3796. Scopus 39 WoS 37 Altmetric 48
2012	Grzeskowiak, LE, Gilbert, AL & Morrison, JL 2012, 'Neonatal outcomes after late-gestation exposure to selective serotonin reuptake inhibitors', Journal of Clinical Psychopharmacology, vol. 32, no. 5, pp. 615-621. Scopus 25 WoS 22 Altmetric 13

Chapters

Year	Output
2014	Morrison, JL & Wright, I 2014, 'Intrauterine Growth Restriction: Causes, Consequences and Care of the Neonate', in WF Malcolm, Beyond the NICU: Comprehensive Care of the High-Risk Infant, McGraw-Hill Medical, US, in press, ch. 26, pp. 424-450.
2014	Orgeig, S 2014, 'The Development of the Pulmonary Surfactant System', in R Harding & KE Pinkerton, The Lung: Development, Aging and the Enivronment.

Journal Articles

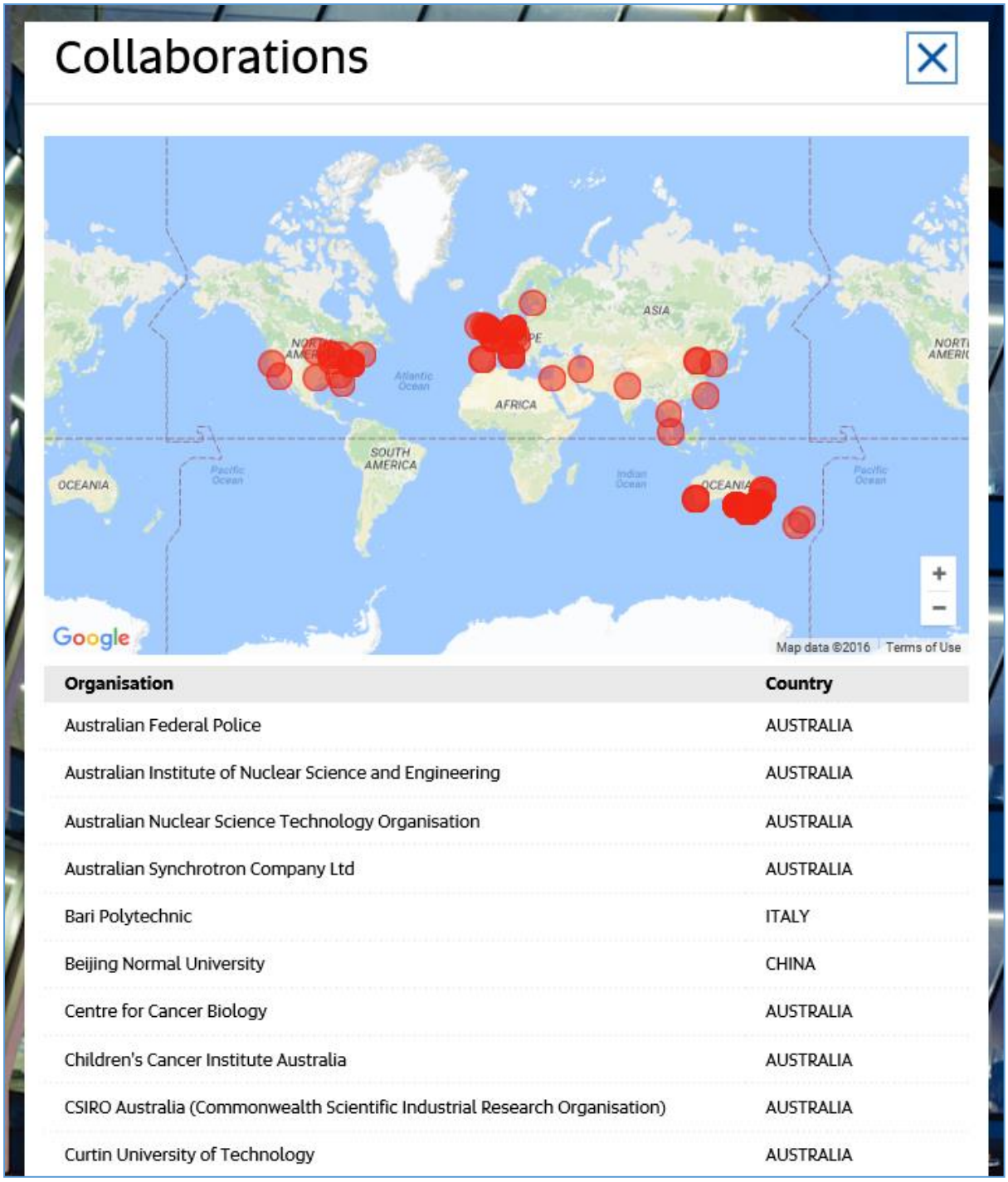
Year	Output
2016	Bazargan, M, Foster, DJR, Muhlhausler, BS, Morrison, JL, McMillen, I & Davey, AK 2016, 'Limited fetal metabolism of rosiglitazone: elimination via the maternal compartment in the pregnant ewe', Reproductive Toxicology, vol. 61, pp. 162-168.

Source: http://people.unisa.edu.au/janna.morrison#Outputs (January 2017)

Now, from a combination of automated harvesting from Scopus and Web of Science, academics claiming their publications prompted by emails, and the overnight update from the Repository to the data warehouse, a new publication can be harvested, claimed, processed and displayed automatically on a staff home page within 5 days. Only five minutes input is required from any of the UniSA co-authors. Library Repository Services staff complete the processing by enhancing the metadata record to conform with the agreed schema and standards, and with quality assurance supported by automated checks and validation alerts. The availability of complete, timely and accurate records for research outputs was a significant success factor for the smooth introduction of the Staff Home Page project – namely removing the major issue with the previous home pages not being automatically populated, and with no quality checks nor verification.

Interestingly a proportion of academics were motivated to make sure their publications were up to date as part of checking their new home page although previously they had not responded to similar requests for other projects.

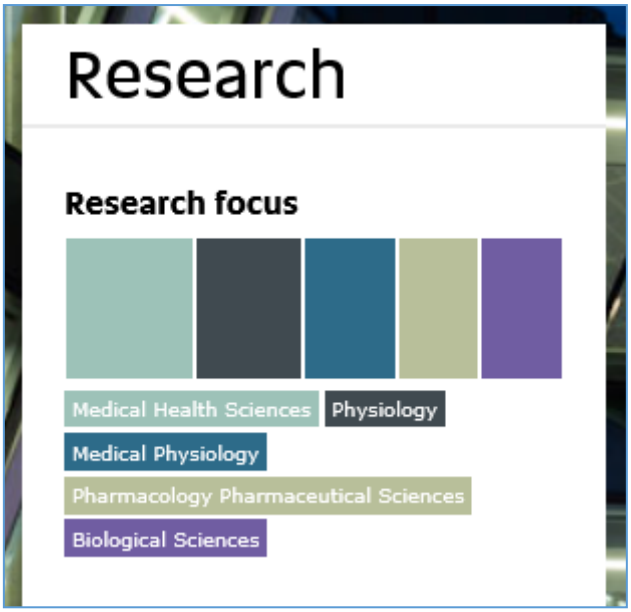
Another aspect of this project was to be able to make use of reliable and increasingly important collaboration data (e.g. below). The use of a master organisation reference file as the source of truth across Library and BIP systems to show research collaboration activities ensures clean and consistent metadata.



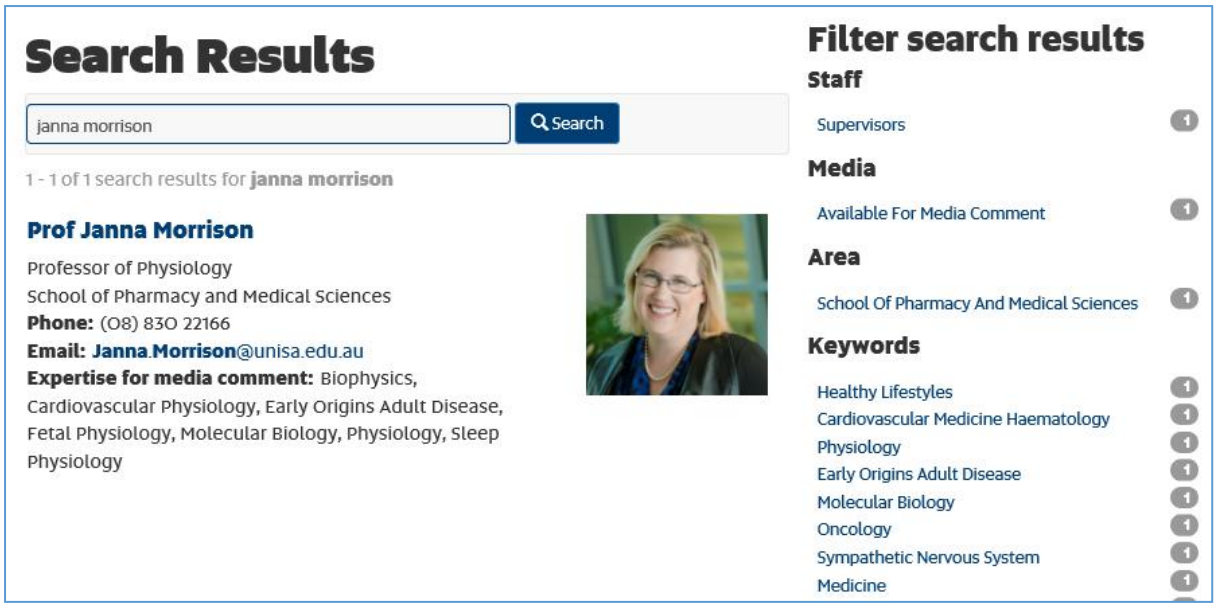
Organisation	Country
Australian Federal Police	AUSTRALIA
Australian Institute of Nuclear Science and Engineering	AUSTRALIA
Australian Nuclear Science Technology Organisation	AUSTRALIA
Australian Synchrotron Company Ltd	AUSTRALIA
Bari Polytechnic	ITALY
Beijing Normal University	CHINA
Centre for Cancer Biology	AUSTRALIA
Children's Cancer Institute Australia	AUSTRALIA
CSIRO Australia (Commonwealth Scientific Industrial Research Organisation)	AUSTRALIA
Curtin University of Technology	AUSTRALIA

Source: http://people.unisa.edu.au/nico.voelcker#Collaborations (September 2016)

Due to the efficiency and reliability of the data, journal keywords are able to drive visualisations about research concentration on the Staff Home Page and staff activity report that are high quality and transparent:



Other projects to benefits of the new publications process were the academic staff activity reports, and the publicly available Directory of Research Expertise.



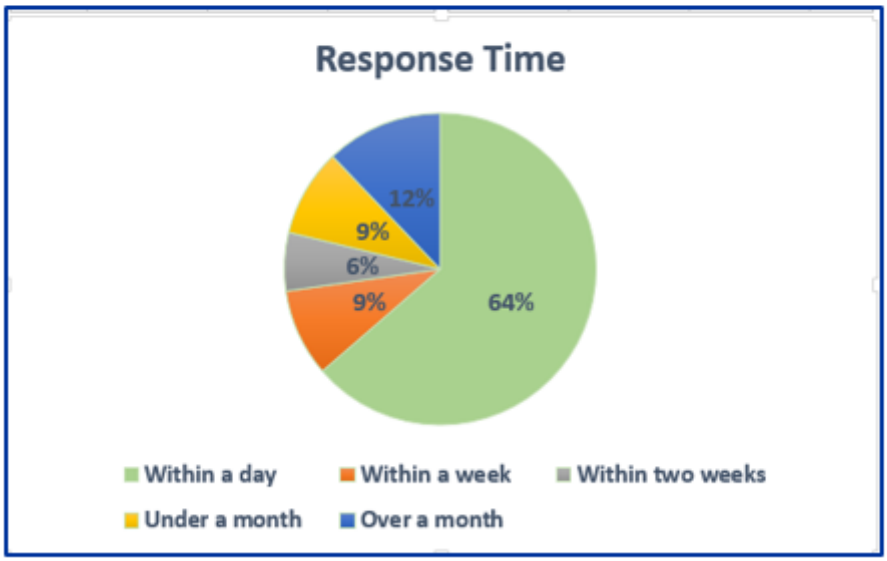
Source: www.unisa.edu.au/dore (accessed September 2016)

Another major outcome was the citation counts enhancement which was released into production in September 2016. Over the course of a month, citation counts from Web of Science and Scopus are sourced from APIs utilised in Alma, which then update in the Enterprise Data Warehouse. Altmetrics scores are also included in

Repository records where available. Other changes included default text for the source information field for conference papers and book chapters. The process to retire Research Master records and promote Repository records needed a bit of work to handle some duplicate publication IDs etc. Patents are the latest resource type to be streamlined into online submission and Repository processing workflows, which will then feed into the data warehouse and be surfaced into University systems. Links to datasets are also being included in records in the Repository, these will direct users to the University's Open Data Portal or external data repository. Funding and grant information is included in Repository records with ARC and NHMRC funded outputs hyperlinked to Research Data Australia.

The Story So far

How quickly are researchers responding to advice of harvested outputs?



The new system has already achieved multiple milestones, including:

- approximately 400 submissions are now being received each month, 40% higher than the average annual level of research outputs reported for the previous 3 years
- 82% of researchers completing their output submission within 5 minutes
- improved processing timeliness between submission and surfacing in ROR, and other systems
- content is automatically published every 6 hours to ROR, daily to the University's Enterprise Data Warehouse (EDW) and weekly to the National Library of Australia's Trove database
- acknowledgement of successful submission into the CRO system, followed by email to all UniSA co-authors when published to ROR
- improved functionality of reports available via the BI Hub, including open access indicators and grant information.

Contributory factors to the increased research outputs submission level include:

- systematic harvesting of new outputs and the simplified claim and submission process for researchers
- streamlined on boarding of new researchers where Library process all eligible outputs from 2008 onwards
- strategic recruitment by the University of research-active staff
- increased academic engagement through promotion in School Boards and Research Committees,
- greater awareness by PhD students of how CRO and ROR fit into the publishing lifecycle, included as part of the Library's publishing workshops

- increased visibility of research outputs in Academic Staff Activity reports
- implementation of the new Staff Home Pages where the outputs are sourced from the EDW
- significant level of uptake due to a comprehensive whole-of-University communications
- support for accreditation including Business School's triennial EQUIS accreditation
- more non-traditional research outputs captured regularly and peer-reviewed by the Non-Traditional Outputs Working Group

Lessons learnt

As with all system development projects that introduce fundamental changes in business processes, it is essential to demonstrate and to encourage openness to new and changed workflows rather than trying to shoehorn previous workflows into a new system.

Our keys to successful development and implementation and a more inclusive approach are:

- collaborate for success
- set achievable milestones for the project
- seek expert advice as required
- clear communication
- online support is fine but sometimes face to face is better
- maximise staff buy-in
- remember that cultural change takes time

- acknowledge ambiguities
- be pragmatic and work with available resources.

Future plans

The intense commitment and effort of the key stakeholders over an 18 month period realised a very successful implementation. Workflows are constantly under review to utilise Appian technology and ensure that Alma's functionality is fully exploited. Within the Library, the team actively supports improving workflow efficiency through regularly sharing tips and tricks and supporting less experienced staff. Regular communication between Library and BIP continues to improve functionality and further streamline workflows. The key stakeholders will continue to collaborate to utilise agile processes and future proofing the systems for new requirements, such as compliance reporting for funding mandates from ARC and NHMRC, national reporting requirements such as ERA, embedding ORCiD into University systems for auto-harvesting of outputs, and inclusion of metadata and linking to datasets, and patents. By collaborating to innovate, this One Team project is alive and well by making efficiencies and streamlining processes, and showcases the University's scholarly research output to the world.

Reference list:

DeGroff, H 2016, Preparing for the Research Excellence Framework: Examples of Open Access Good Practice across the United Kingdom, *The Serials Librarian*, vol. 71, no. 2, pp. 96-111

Giesecke, J 2011, 'Institutional repositories: Keys to success', *Journal of Library Administration*, vol. 51, no. 5-6, pp. 529-542.

Harnad, S 2015, 'Optimizing Open Access Policy', *Serials Librarian*, vol. 69, no. 2, pp. 133-141.

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