

## **Have you met ROS? The value of cross library collaboration in project management and delivery**

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### **Introduction**

In 2013, UNSW Library launched a new system, to manage information about the research outputs produced at UNSW. In addition to the work expected as a part of a major technical implementation, the rollout of this system involved communication and support for up to 15,000 users, demanding skills that no single team at UNSW Library could provide on its own. The situation lent itself to collaboration.

Collaboration allows libraries to respond to complex new opportunities and challenges by bringing together diverse knowledge and skills sets. The analysis of UNSW Library's experiences and a review of the relevant literature identified four key elements for collaboration: interpersonal, developmental, organisational and leadership. This paper will evaluate the collaborative enterprise undertaken at UNSW Library and demonstrate the value collaboration can bring to project delivery within the framework provided by these four elements.

### **Background**

In 2009, UNSW adopted an in-house system, ResPubs, to record its publications data for the purpose of reporting HERDC (Higher Education Research Data Collection) publications points to the Australian Government. At the same time, responsibility for the collection of publications data was moved from the Division of Research to the University Library. ResPubs was standalone, although it fed data through to the University's data warehouse, from which ad hoc reports could be generated. All author information was entered and internal affiliations assigned manually. Additionally, data were extracted directly from ResPubs by the University's RQF (Research Quality Framework) office for the purposes of RQF and now ERA (Excellence in Research for Australia). Because ResPubs was difficult to use, researchers and admin staff only added minimal information to meet requirements, possibly resulting in a loss of income to the University. What data were entered into ResPubs was of variable quality and unusable in downstream systems.

In 2011 after a procurement process, UNSW engaged Symplectic to provide its Elements publication management system as a replacement for ResPubs. UNSW's installation of Elements is known locally as ROS (Research Outputs System). Considering publications alone, ROS was a significant improvement on ResPubs. Elements support automated feeds from the University's Human Resources and Grants management databases and the linking of publication data to authors imported through the HR feed. It also imports publication data

from a number of external sources such as Scopus, Web of Knowledge, arXiv and others – resulting in much more accurate data. The improved quality of the data collected has made it possible to populate downstream systems such as UNSW’s Research Gateway and faculty websites with citation data for individual researcher profiles.

The ease of use and population of citations to websites has also encouraged researchers to add records to Elements and to correct mistakes in their records. ROS is now the source of truth for UNSW research publications outputs, and will soon be used to populate the university’s institutional repository with publication data and open access versions of outputs. None of this would have been possible without broad collaboration across all units of the Library and indeed across the University.

### **Collaboration**

Collaboration played a key role in this project from its inception. The procurement process was driven by a team including representatives from the Division of Research, faculties (administrative and academic staff), IT procurement and Library staff. A Project Board and Project Team were then established. The Project Board included senior academic, Division of Research, faculty administration, and IT staff. The Project Team was made up of technical experts from Human Resources, Institutional Reporting, IT, the ERA office, the Division of Research and the University Library. An external project manager was appointed and remained with UNSW throughout the implementation and beyond to manage the integration of ROS with UNSW’s institutional repository.

The implementation and roll out of Elements at UNSW drew heavily on this cross-institutional collaboration. The successful engagement of academic and administrative staff throughout the University once the system went live in September 2012, would have been impossible without continuing goodwill across the organisation, and the diligent collaborative work of a number of library teams. The collaborative approach allowed UNSW to approach this project from many angles at once. While the Library’s Electronic Resources Unit (ERU) continued to clean data and remove duplicates, Outreach Librarians took the message to the Schools and Faculties and the Library’s Application Support Unit took over and brought rigour to the management of the system. The important work of regression testing each version of Elements, as new functionality, particularly in the HERDC module, has been completed using a distributed model, sharing the work between a number of teams, led by the Project Support Unit (PSU) and supported by the Academic Services Unit (ASU) and ERU. Digital Library staff continued to refine HERDC procedures and test the system to its limits, resulting in a robust HERDC report at the end of June 2013.

## **Defining collaboration**

In the literature about collaboration both inside and outside libraries, collaboration is defined in many different ways. These range from simple definitions such as “to work jointly with others” (Langley, Gray, & Vaughan, 2006, p. 2), to very specific definitions that outline the form, function and intentions required for something to be determined a ‘collaborative undertaking’ (Shepherd, 2004). In this paper we use a hybrid definition drawing from a number of researchers (Cook, 2000; Cronin, 2007; Giesecke, 2012; Langley et al., 2006; Schrage, 1991; Shepherd, 2004) and define collaboration as the following:

Collaboration is an active process undertaken by a group (or groups) to jointly create something new, solve a problem or complete a task or project. Each member of the group contributes based on their skills and knowledge to collectively create a complementary skills set that allows the group to create something that no-one part of the group could create on their own. The process of collaborating involves purposeful sharing of expertise and knowledge centred on a shared goal or objective.

Collaboration can form organically as individuals join forces based on shared interests and then identify joint objectives. Alternatively, opportunities can be created ‘by design’ as individuals or groups with complementary expertise are brought together to complete a task or project. Whilst opportunities for collaboration can be created and supported through environmental controls, the active process of collaborating is much more effective if it is authentic and intrinsically motivated rather than entirely externally imposed (Cronin, 2007).

Beyond completion of the desired goal, there is a range of potential benefits that can result from collaborative enterprises. These include tangible benefits –saving money or repurposing existing assets, but also intangible benefits such as socio-cultural changes (Shepherd, 2004). Collaborative activities can create new communication channels and opportunities for professional development as participants learn new skills from each other. Collaboration is particularly of benefit when complex shared challenges are identified, as the collaborative process brings together different skills sets that can respond to cross-boundary needs. Each collaboration also builds future collaborative potential as the process creates new communities as well as shared knowledge and understanding (Langley et al., 2006).

## **Key elements of strong collaboration**

Across the literature a range of elements are identified as fostering successful collaboration. They can be clustered into four groups: interpersonal, developmental, organisational and leadership elements. Each cluster is closely connected with the other clusters but also offers a distinct contribution to creating effective collaborative enterprises.

### **Interpersonal elements**

The interpersonal elements cluster includes many of the personal and behavioural characteristics that play a defining role in how individuals will engage with collaboration. This cluster captures the vital role that communication plays in ensuring that the collaboration is fruitful and functional. In a collaborative context effective communication makes it possible for people to build from each other’s ideas, avoid misunderstandings, build trust and share expertise and knowledge (Giesecke, 2012). Trust and communication are

equally vital components that work hand in hand to create common understanding and build relationships (Shepherd, Gillham, & Ridley, 1999). Without both of these, the team will lack a shared identity and team members are more likely to act in anticipation of possible errors from others on the team, wasting time and energy and duplicating efforts (Malhotra & Majchrzak, 2004).

### **Developmental elements**

Closely connected to the interpersonal elements are the developmental elements: learning and development opportunities that arise from and give rise to collaborative activities. The discussion about the role of learning in the workplace is not new; however there is a growing recognition that continuous learning is an essential part of work and a key link to collaboration (Blakiston, 2011; Dalkir, 2013; Shepherd et al., 1999). As Shepherd, Gillham and Ridley (1999, p. 334) comment: “the community that emerges from collaborative enterprises is different from the sum of it’s experiences. The emergent organisation learns about itself: how it views its world, its values, its interests and how it responds to challenge.”

The developmental elements are closely connected to the interpersonal elements, as learning is a pre-dominantly social event (Dalkir, 2013; Roberts & Black, 2007) and people are the most critical conduits of knowledge (Cross & Parker, 2004). In many cases people prefer to contact other people to find and use information. This is a successful strategy for a number of reasons. It is often faster and may result in supplementary information that gives context. The information or knowledge that has been shared can also come bundled with an awareness of the source as being a trusted and credible colleague (Dalkir, 2013).

By fostering an environment that encourages learning and development, the organisation reinforces behaviours that are vital for successful collaboration. It encourages individuals to be intellectually curious, solve problems and be willing to explore new ideas and approaches (Blakiston, 2011). It can help staff members come to terms with ambiguity and work through questions that don’t yet have answers (Shepherd, 2004). All of these traits support collaboration, particularly in a project context where sometimes the unknowns can outweigh the knowns.

### **Organisational elements**

There are two main types of organisational elements that can influence the success of a collaborative enterprise: varying the time and resources available for the collaborators, and shaping the generative space available (Cronin, 2007; Giesecke, 2012; Langley et al., 2006; Malhotra & Majchrzak, 2004; Nonaka & Konno, 1998; Shepherd, 2004; Shepherd et al., 1999; Vinopal & McCormick, 2013). Generative space is a space to facilitate emerging relationships through the culmination of a safe location, time, context and knowledge. (Cronin, 2007; Nonaka & Konno, 1998) It is easy to skip over establishing effective generative space particularly under the influence of tangible pressures such as budgets and deadlines. However if an organisation fails to establish this space, interpersonal and developmental elements such as communication, knowledge sharing, trust and learning will be inhibited (Giesecke, 2012; Malhotra & Majchrzak, 2004; Shepherd, 2004).

Organisations can also influence the outcome of collaborative enterprises through the use of a range of staffing models. This is particularly important in the content of project-driven

collaboration. Vinopal and McCormick (2013) offer a detailed discussion of staffing models for digital scholarship projects and discuss 3 options for staffing projects of this kind. The first is modelled around creating a separate unit or department. The second staffs projects by fully integrating them across the organisation, allocating staff from existing units to spend some of their time on the project.

A third 'hybrid' model is also identified. A hybrid model involves creation of a core and stable leadership for the project either by hiring new staff, for example a project manager, or borrowing them from other units. This core 'team' is then grown and supplemented by drawing in subject matter experts to contribute expertise and experience to the project. An incremental approach to staffing, this model offers the ability for the project to grow and adapt over time. Vinopal and McCormick stress the importance of assessing work being done and to use the 'experiments and experiences' of the early phases to document needs and the resources required (2013). They also identify the importance of ensuring the knowledge and context gained from these early experiments are shared with the rest of the staff as they are brought on board to ensure that the learning and experiences are shared and the evolution of the project is understood.

The hybrid model proposed by Vinopal and McCormick aligns with network theory based approaches to collaborative innovation as it allows for the incorporation of both strong and bridging ties. Network theory classifies the relationships between members in a collaborative environment in two main types: strong ties, people that know each other well; and bridging ties, acquaintances from different circles. Collaborations can benefit from having a combination of both (Cronin, 2007; Rost, 2011). Strong ties are founded in trust and offer solidarity benefits such as knowledge recognition and realisation but can create insular silos with closed viewpoints. Bridging ties offer fresh perspectives and external expertise, however the lack of deeper social ties means this knowledge is often undervalued and communication and focus can suffer as a result.

### **Leadership elements**

Leadership plays a key role in collaboration, with leadership elements affecting every stage of the collaborative process. In a collaborative context, leaders need to lead by example modelling collaborative behaviour and promoting it through the organisation. However, they also need to foster a distributed leadership model and step back enough to give the participants responsibility and authority (Giesecke, 2012; Shepherd et al., 1999; Vinopal & McCormick, 2013; Walton, 2007). Leaders need to provide sustained strategic vision, ensuring that they set clear boundaries of what is in and out of scope and providing guidance and support to help keep the collaboration and the project on track. In a project context, collaboration can be fostered hand in hand with traditional project management strategies in which responsibility for overseeing the operational work is delegated to a project manager. In this approach senior leaders become responsible for setting the tone for the collaboration and overseeing strategic integration (Giesecke, 2012).

## **Methods**

Two distinct research methods were applied to assess the success of the ROS rollout as a collaborative enterprise and as a project. To assess the success of the collaboration, this study undertook a survey of participants whilst data from a range of workplace sources was analysed to assess the success of the project itself.

The survey component took the form of a voluntary, self-administered questionnaire using a Survey Monkey online form. 38 UNSW team members identified as being part of the ROS implementation were contacted via email and one reminder email was sent. The survey sought to investigate how the library staff involved in the ROS rollout perceived their experiences with the project. This included whether they believed they were part of a cross-library collaboration and what they had gained from this experience. In designing and creating the survey, the study considered the recommendations of Langley, Gray and Vaughan (2006) on how to assess collaborations. The recommendations included ensuring instructions were clear, keeping the survey short and including workplace specific demographic questions for cross tabulations.

The survey questions focused on communication and understanding between the staff involved in the project, engagement with the project and acquisition of new skills and knowledge. A web based survey format was chosen as it enabled easy dissemination, ease of use and anonymity for respondents, as well as ensuring that the data collected were easily exported and transformable. The survey included both closed and open-ended questions to allow for both qualitative and quantitative data collection. The analysis of the data collected from the survey included both statistical analysis of the quantitative questions and content analysis of the qualitative questions.

The workplace data analysis incorporated analysis of systems data and usage statistics from ROS itself and analysis of statistics and feedback from client support and training interactions collected by the Outreach Team over a number of years. The 2014 HERDC return (of 2013 publications) was completed within the implementation period and so the results of that return were also analysed through a comparison with the previous year's return. These datasets were analysed to identify performance measures on which the project could be assessed including tangible elements such as the number of publications collected with the new system in comparison with the older system and intangible elements such as engagement with ROS by the research community throughout the implementation.

## **Results**

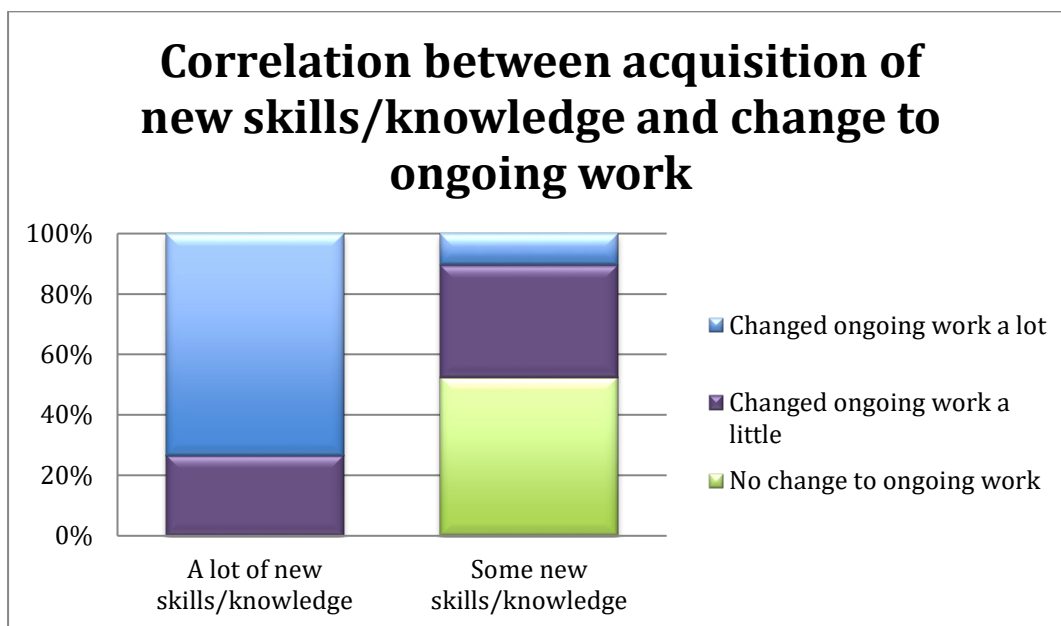
### **Survey results**

Of the 38 staff invited to complete the survey, there were 20 respondents (53%). Respondents were asked to identify their role as either primarily client facing or primarily technical in nature. The ratio of client facing to technical staff that responded was 70% to 30%, which closely correlated to the ratio of staff invited to the survey.

Several of the survey questions centred on how the respondents felt the project affected their work and what they gained through their participation. Within these questions:

- 100% of respondents felt that they developed new skills and/or knowledge as a result of their involvement in the implementation. This was split evenly between ‘a lot of new skills/knowledge’ and ‘some new skills/knowledge’.
- 50% of respondents felt their ongoing work changed a lot as a result of the project, 35% felt it changed a little and 15% felt there had been no change to their ongoing work.
- Of those respondents who identified a change in their ongoing work, 60% said this was a change for the better with 40% identifying the change as neutral.

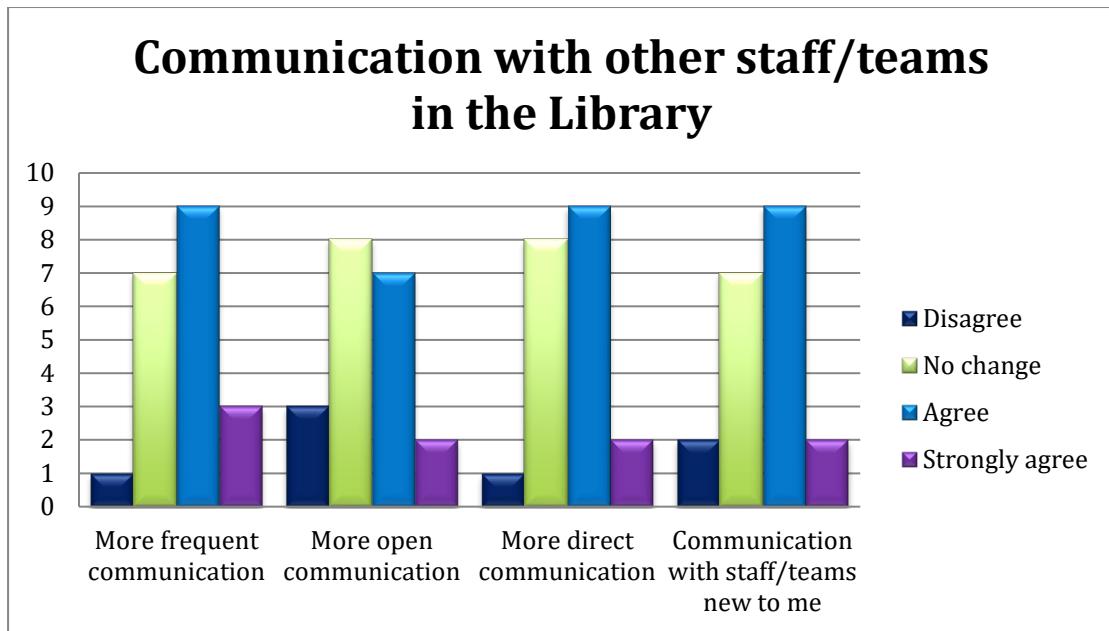
A correlation was identified between the new skills and/or knowledge the respondent felt they had developed and the amount to which they identified that their ongoing work had changed. Those who identified a significant increase in skills and knowledge also identified the most changes to their ongoing work (Figure 1).



**Figure 1**

Several survey questions focussed specifically on communication throughout and after the project. Just over half of the respondents felt there had been overall positive changes to the way they are able to communicate with other teams in the Library. Figure 2 outlines the detailed results, but in summary, as a result of the project:

- 60% of respondents agreed they had more frequent communication
- 45% of respondents agreed they had more open communication
- 55% of respondents agreed they had more direct communication
- 55% of respondents agreed they had had communication with staff or teams they had not previously been communicating with.



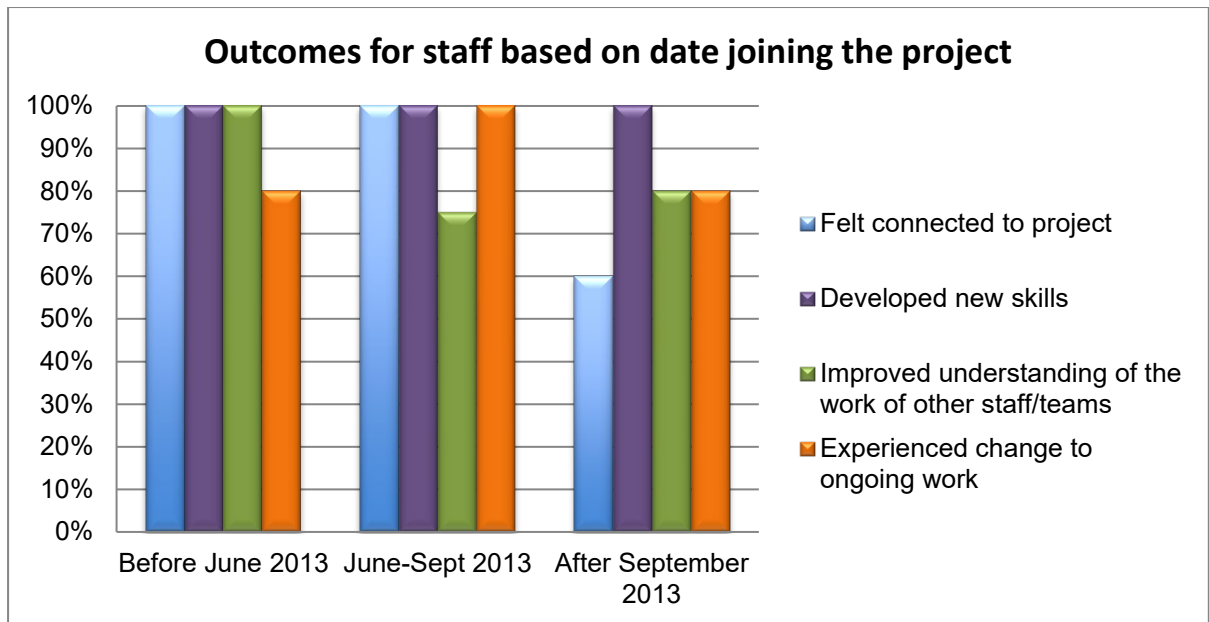
**Figure 2**

The survey asked a number of questions relating to the respondents' contextual understanding of the project and if respondents felt connected to the project:

- 85% of respondents felt connected to the project, with 75% also understanding the way their work had contributed.
- 95% of respondents felt that they have a somewhat clear or clear understanding of the way ROS is used at UNSW and why it was implemented.

Correlations were identified between how strongly respondents were engaged with the project overall and when they joined the project. Everyone who came on board with the project before June 2013 (50% of respondents) felt connected to the project, developed new skills and/or knowledge and identified a better understanding of the roles performed by other teams in the Library. 80% of these respondents felt their ongoing work had changed as a result of their involvement with the project (Figure 3).





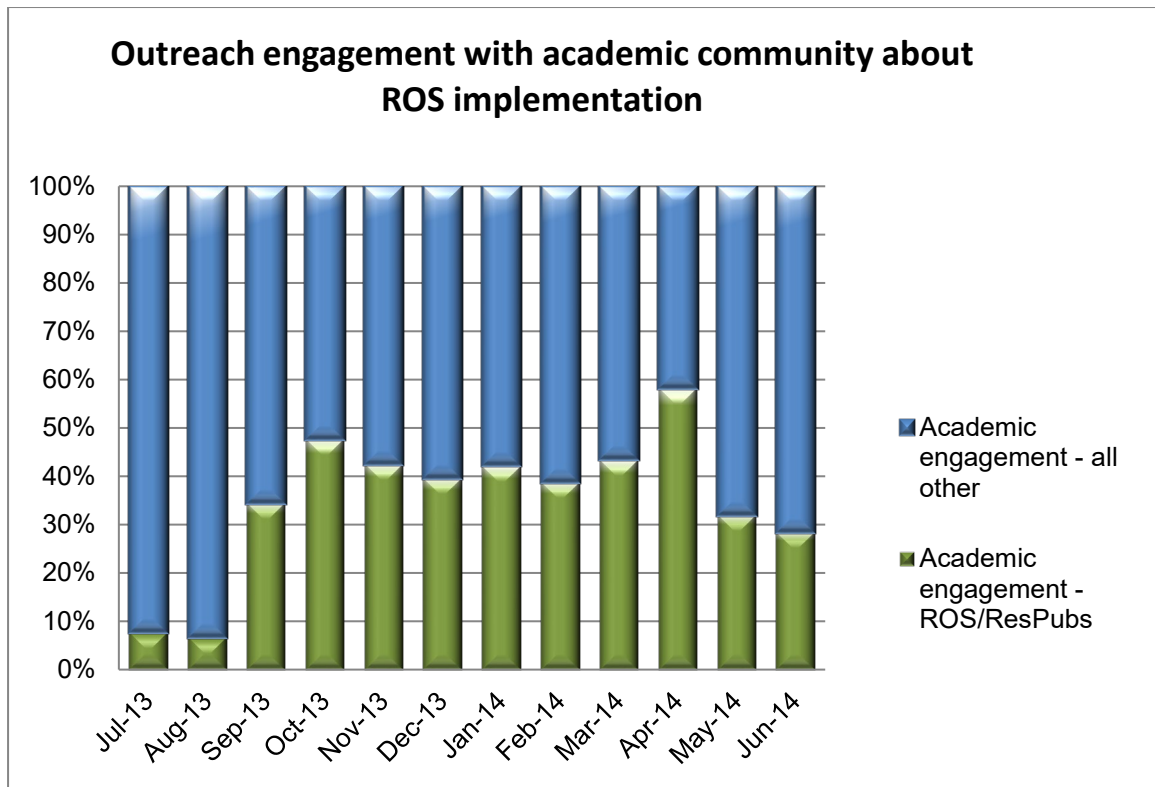
**Figure 3**

**Analysis of workplace statistics: ROS Usage**

Nearly 5000 researchers have used ROS between its launch and the end of October 2014. An analysis of ROS Usage Statistics identified an initial surge in first time use by researchers from September to December in 2013, correlating with Outreach’s promotion of the new system. The dramatic rapid growth in the use of the new system continued from January until April 2014 correlating with due dates for key HERDC collection tasks. More than a year on, each month sees more researchers use the system for the first time, though at a slower rate than the first 6 months. Growth in total logins to the system has been sustained since launch with researchers returning to use the system multiple times.

**Analysis of workplace statistics: Community Engagement**

Outreach involvement has remained high since the launch with peaks correlating with initial promotion, new downstream integrations and HERDC collection dates (Figure 4). The Outreach Team’s statistics indicate an overall growth in engagement with the UNSW research community after the ROS implementation, showing higher levels of all forms of interactions both on ROS related topics and other topics. Informal feedback suggests the increased engagement may be as a result of new relationships with faculties built through the ROS roll out. The Outreach Team have found the nature of their community engagement activities changing as a result of the ROS implementation with a larger proportion overall of Outreach conversations connecting to the system as it connects to a greater range of research activities such as impact and profile management. This is an example of how the system is reshaping services as where previously Outreach may have helped a researcher locate their h-index, they now assist with refining the researcher’s ROS profile which contains their h-index. Informal feedback collected by Outreach was not a representative sample and as such could not fairly be statistically analysed. However, speaking generally, this feedback demonstrated clients had a positive response to the ROS implementation and that an effective process was in place for resolving any issues or concerns that did arise.



**Figure 4**

#### **Analysis of workplace statistics: HERDC return results**

UNSW’s research publications included in the HERDC return showed significant growth from 4,918 in 2012 to 5534 in 2013, an overall increase of 13% (Figure 5). The growth in total publications is more than double the Go8 average (approx. 6%). The most dramatic increase was in the number of journal articles included in the return, which grew by 20% in comparison to the 2012 return (Figure 6). There was an increase in publications across most faculties, with some of the most dramatic increases correlating with groups for whom publications have been traditionally harder to collect such as conjoint staff and research centres.

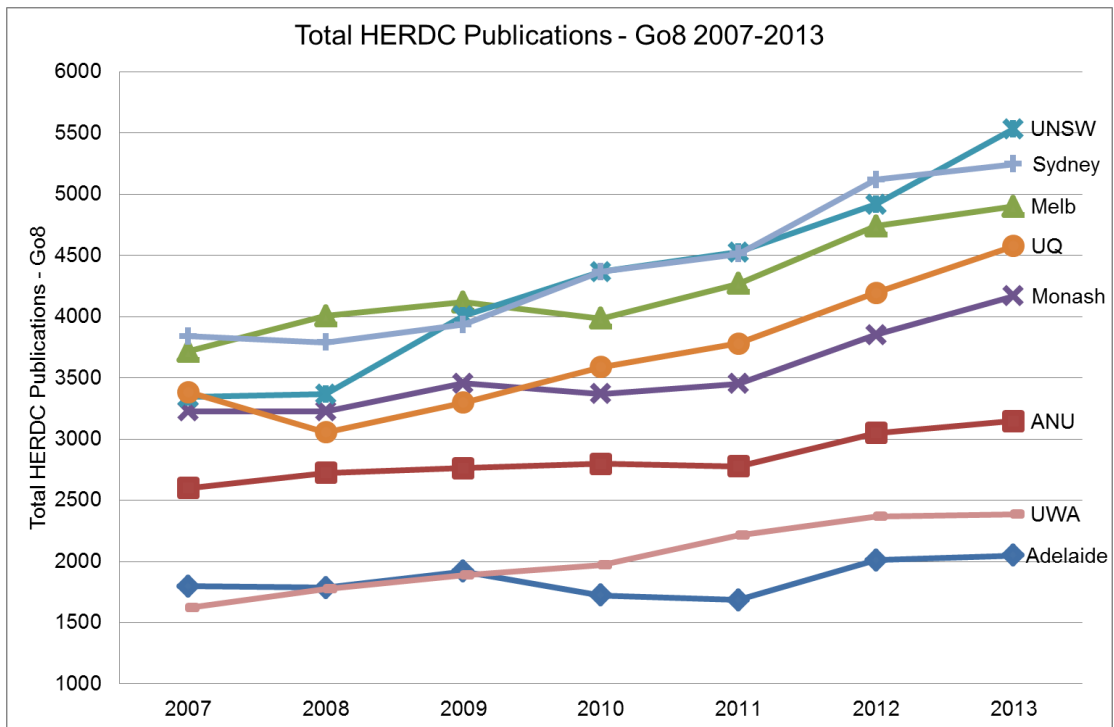


Figure 5

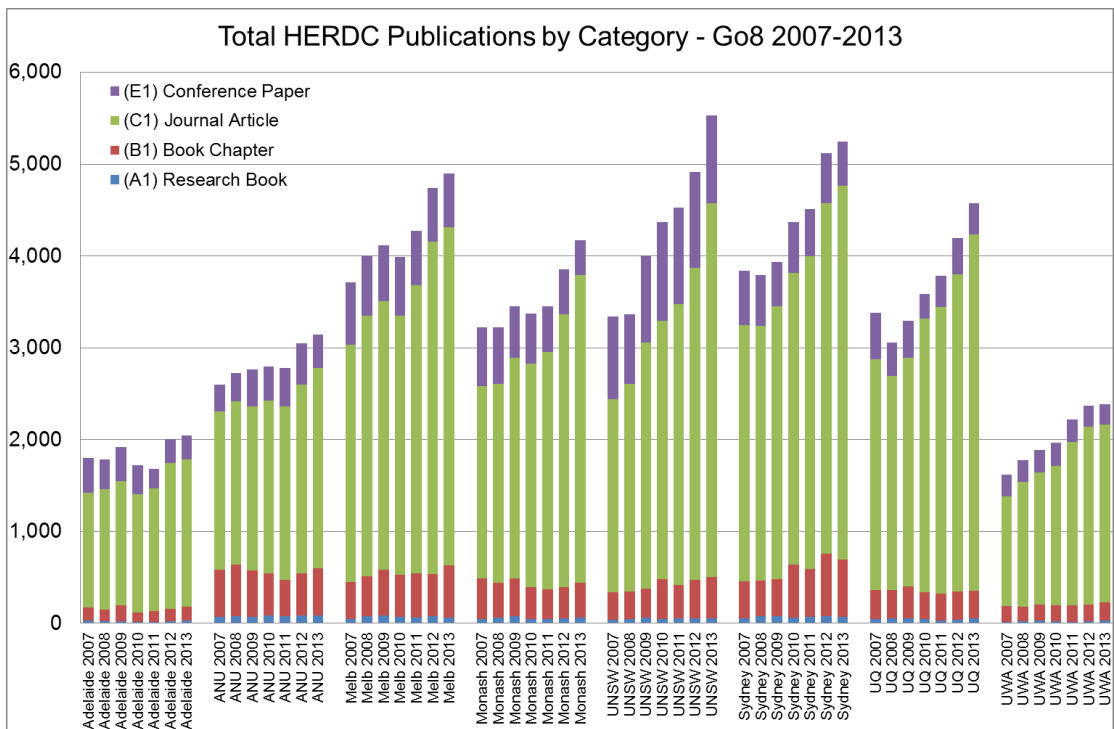


Figure 6

## **Assessing UNSW Library's Collaboration**

### **ROS implementation - a successful collaborative project?**

UNSW Library considers the ROS implementation to have been successful, both as a project and as a collaboration. The clear improvement in our HERDC data, increased engagement with the system by and informal feedback from the academic community point to its success as a project. The response to the rollout from the UNSW academic community has been significant and positive overall. Faculty administration appreciated the opportunity to have training and support tailored to their specific needs and individual academics are overwhelmingly positive about the benefits of using ROS.

Staff survey feedback and the establishment of new workflows and practices as a result of the project indicate the success of the collaborative effort. Assessing the collaboration against the four elements of interpersonal, developmental, organisational and leadership provides a framework for a successful model for future projects of this kind.

### **Interpersonal elements**

Internal relationships have been strengthened at both an operational and higher management level as a direct result of the collaboration on the project. The survey data indicates that the majority of respondents felt that communication across teams within the Library has improved or changed in some way for the better as a result of working on this project.

Formal structures such as the Library's ROS Development Group led by the University Librarian, have created a better understanding of the roles of different teams across the Library. Documentation and workflows have been shared across teams and there have been many examples of these being created by one team for use by another. This has ensured that while the tasks may be performed in different teams across the Library, they are undertaken with the outcomes of various other teams in mind. For example, the Electronic Resources Unit has undertaken much of the routine data clean-up work within ROS, but the workflows have been largely written or enhanced by the Outreach team, drawing on their expertise in the areas of research impact, publishing patterns and knowledge of the UNSW research community and their expectations. This all helped build the crucial sense of trust and sharing of knowledge indicative of good collaboration (Giesecke, 2012).

### **Developmental elements**

All respondents to the survey identified the acquisition of new skills and/or knowledge as a result of working on the project. Just over half of all respondents stated that they now communicate with staff or teams in the Library that they had not previously communicated with.

Client facing staff that have not traditionally had any part of system testing are now part of a new testing schedule for ongoing ROS upgrades. Conversely, technical staff received training and information about the HERDC collection process and its significance for UNSW, giving context to their work and contributing to their sense of connectedness to the project.

This cross library collaboration on workflows, documentation and testing protocols continues to be informed by the work units involved and has created an environment that fosters 'social learning' and increased access to the skills and knowledge of other team members (Dalkir, 2013; Roberts & Black, 2007; Cross & Parker, 2004).

An area for improvement in future project collaboration is clear when we compared outcomes for staff based on date joining the project. There is a strong correlation in the survey results between the time an individual joined the project and their sense of connectedness to it with those who came on board on or after the system implementation identifying the least understanding or connectedness. This risk is identified by Vinopal and McCormick (2013) and, given that it is often impractical and unnecessary for all staff to be involved early in the project, it is important to put a framework in place to give context and ownership to staff who arrive later in the project.

### **Organisational elements**

The project was led by a full time project manager reporting directly to the University Librarian, with oversight from the Director, Digital Library Services. This established clear support from senior management for the project from the beginning. Expertise was then brought into the project from across many units in the Library, with management for each element of the project coming from those units.

The strong ties within each individual work unit enabled specific tasks to be completed and the project manager initially worked as the bridging tie between units. This was formalised later with the creation of the ROS Development Group. Over time, the various teams and staff involved with the project began to develop stronger ties with each other, leading to the positive changes in communication that were identified by respondents to the survey.

### **Leadership elements**

Strong leadership elements are clearly evident through all aspects of the project. There was early senior staff buy-in from across the University. This was continued in the make-up of the Project Board, and continued internally in the Library when the University Librarian convened the ROS Development Group.

This leadership was backed up by the University's investment in a Project Manager to bolster the prospects of success. As predicted by Giesecke (2012) this leadership set the tone for the collaboration and ensured the project stayed on course. Responsibility for delivering project tasks was devolved to appropriate work teams under the oversight of the project manager.

The distributed leadership allowed for by the hybrid staffing model that was adopted meant that the day to day work of the project was being managed at team level where there are strong network ties with a high degree of trust.

## **Conclusions**

The response to the rollout from the UNSW academic community has been significant and positive and the increased results in the HERDC return further demonstrate the success of this project. Furthermore, the collaborative process used to complete the project has left a lasting impact on UNSW Library. The lessons drawn from the collaboration continue to be an influence at UNSW Library in new projects and ongoing work.

The project has allowed UNSW Library to explore collaborative staffing models. Using a hybrid model and engaging distributed leadership maximised the effect of strong network ties and trust and created a generative space for developing and sharing skills and knowledge. Strong leadership and commitment from senior levels within the Library and the wider University has been essential to its success. This approach created opportunities for staff development and engendered professional and interpersonal ties that were previously either weak or non-existent. The collaborative approach was paired successfully with traditional project management to ensure project deliverables were met.

The process of evaluating the project has identified the interplay between four key elements for collaboration: interpersonal, developmental, organisational and leadership. Each of these elements is vital to collaboration but the true value is in the overlap between them, as such no one element can be considered in isolation.

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