InterPARES Trust Research Report

Team Europe EU32 Project 2016-2018: The Role of the Records Manager/Records Management in an Open Data Environment in the UK: research data management in higher education

Aisling O'Malley, Jenny Bunn and Elizabeth Shepherd, UCL

2018

Abbreviations

ARM	Archivist and Records Manager
DCC	Digital Curation Centre
DLCS	Director of Libraries & Curriculum Support
DP	Data Protection
FOI	Freedom of Information
GDPR	General Data Protection Regulation
HE	Higher Education
HEI	Higher Education Institutes
HOR	Head of Records
HRDS	Head of Research Data Services
HRSC	Head of Research & Scholarly Communications
ITR	Interviewee Transcript Review
OGD	Open Government Data
RD	Research Data
RDM	Research Data Management or Research Data Manager
RDO	Research Data Officer
RK	Recordkeeper
RM	Records Manager or Records Management
SRM	Senior Records Manager
UCL	University College London

Introduction:

Research Data Management has grown in prominence within UK HEIs in recent years due to: requirements from funders; expectations of researchers who benefit from well managed and accessible data; and the universities themselves, where research data are valuable commodities (DCC, 2018 c). In order to effectively manage research data, robust infrastructures need to be implemented, both in terms of technical considerations and leadership of the service. RDM services have been closely aligned with libraries and librarianship, with much of the literature surrounding RDM produced by librarians for librarians, who argue that RDM is a natural extension of the library's current work (Latham, 2017). Yet, there exists literature from recordkeeping disciplines that argue that recordkeepers can play a key role in RDM (Childs, 2014).

This report builds on the previous InterPARES Trust research projects, in particular, the EU32 Report, 'The Role of the Records Manager/Records Management in an Open Government Environment in the UK: higher education' (Brimble et al, 2016), that identified the expertise recordkeepers possess that are suited to the management of RDM. From the case studies gathered in EU32, it was concluded that recordkeepers have been hindered by their limited resources, lone working culture, and existing responsibilities, which has prevented them from taking the lead on RDM. Therefore, it is from this basis that this report will explore the role of the recordkeeper operating in an open government data environment in the UK HEI sector with a focus on research data management. It should be noted that this report does not include a literature review, in particular regarding Open Government Data, as this has been covered extensively in the EU32 Report, instead literature has been referenced during the discussion of the report's findings.

The author began the study with the assumption that librarianship had monopolised RDM, since much of the literature on RDM had come from the librarian perspective and little from the recordkeeping sector. It was assumed that the expertise of the recordkeeper was being overlooked for the sake of convenience, rather than for the lack of a relevant skillset.

The aim of this report is to explore these assumptions by establishing the current landscape that RDM is operating in, what factors affect its placement with HEI, and what the role of the recordkeeper is in relation to RD. To achieve this, this report will explore three areas. The first establishes the framing of the report, in particular the relevance of Open Government Data to HEIs, and the question of whether or not there is a consensus (amongst participants) as to what RDM entails. The second explores the current practices and approaches to RDM at UK HEIs and determines what role, if any, recordkeepers have in the management of research data. The final discussion investigates the expertise required to effectively manage research data and lead an RDM service, with particular focus on the current, relevant knowledge of recordkeepers and knowledge they need to develop.

Each discussion will be reported using the data garnered from the qualitative interviews, conducted by the author, of the three HEI cases and relevant literature to explore these questions in depth. It should be noted that the term recordkeepers is used interchangeably in this report to denote records managers and archivists, unless otherwise specified.

Methodology:

Qualitative Interviews

The empirical research for this report was collected through eight semi-structured interviews, carried out on three cases. It should be noted that participants will be referred to by their identifying letter which can be found in the interview schedule in Appendix A.

Purposive sampling was used to determine the case subjects and although other sampling techniques can prevent bias in terms of selection (Palinkas et al, 2015) they would not guarantee those selected are knowledgeable and are willing to discuss the topic, especially within the time limitations. Participants were chosen on the criteria of a) having research data management responsibilities in their role, and/or b) being recordkeepers based at the chosen cases (regardless of whether or not they were involved in RDM.) The three HEIs were chosen for their structure and size in order to make a comparison between how RDM is being approached in different HEIs and to see if structure and size have any influence on who manages research data.

Initially, this report was going to be a comparison of case 1, a small postgraduate institute where RDM is based within the Library and Archives Service and under the direct management of the Archives service, against case 3, a large undergraduate and postgraduate institute where RDM is led by a designated Research Data Officer (G), who is based within the Library services and works with the Head of Research Data Services (C), based in the Information Service Division (ISD), to provide technical support. A comparison of the two would provide a distinction as to whether size and culture of an institution affected the approach and practice of RDM at a HEI. However, information gathered during case 1 led the author to case 2, a

large, former polytechnic institute, whose current Director, Libraries and Curriculum Support (D) was involved in developing the RDM service at case 1, where they were previously Head of Library & Archives Service; here D worked with the Archivist and Records Manager (A) at case 1 to develop the RDM service. It was decided that a third case would be used to see if working with recordkeepers, in relation to RDM and generally, impacted how RDM is practiced and approached.

Data Collection

All of the interviews were recorded on a Sony ICD-PX370 Mono Digital Voice Recorder, which were all transferred to a password protected laptop as soon as the interview concluded. The original recordings were then deleted in order to avoid data protection breaches during transportation. The limitations of this was the recorder was not encrypted and was powered by single use batteries which increased the risk of recording failure. The former issue was resolved by transferring the data immediately, and the latter resolved by testing and bringing spare batteries.

The interviews were transcribed in full, but semi-denaturalised and anonymised, soon after the date of the interviews, and were sent to the interviewees allowing them to review their transcripts. The purpose of this was to correct inconsistencies, errors, remove any information they felt could identify them, and give the interviewee control over their words. The aim of empowering the interviewee was fourfold, to uphold research ethics (Mero-Jaffe, 2011), validate the transcriptions, to put the interviewee at ease which in turn would provide a more candid interview, and provide additional insights that were not gathered during the recording (Dobrow, et al, 2009).

Allowing interviewee transcription review (ITR) has its limitations: firstly, valuable responses may be removed; secondly, candid responses may be edited, no longer making it a valuable response; and thirdly, it increases the time spent by the researcher to gather the data (Dobrow, et al, 2009). Nevertheless, it was decided that by allowing participants to review their transcripts clarity of meaning, additional information, and assurance of confidentiality could be achieved.

Research Ethics

Prior to the interviews, each participant was provided an information sheet that outlined the purpose of the research and the intended use of the data gathered (Pickard, 2013), via email, and was afforded the opportunity to contact the researcher or the researcher's supervisor if they had any concerns or further enquiries. At the start of each interview, the participants were given an informed consent form based on a template provided by the UCL Ethics Committee that reflects the changes brought in by GDPR. Participants were made aware that they would be anonymised as would their place of employment – the cases – and would only be referred to by their job title that could be altered if deemed identifiable. For the purposes of clarity, participants are referred to as their identifying letter within this report (Appendix A). Additionally, participants were given the opportunity to review the transcripts of their interviews and suggest adjustments; only one participant requested any changes, therefore, only their altered transcript was used for analysis. Finally, the data gathered for this report may be used in future research projects, therefore the informed consent form has referred to this fact so that participant confidence is undiminished.

Research Limitations

Although eight participants of varying professional backgrounds, in three cases of varying setting and culture, were interviewed for this report, their selection was partially due to their convenience to the author in terms of location, consequently the cases are only indicative of some of the approaches universities in Central London have adopted. Due to time limitations for the study and costs of travel, it was impossible for the author to interview HEIs outside of London. While this report only focuses on cases based in London, the variation in institution size and setting and the professional backgrounds of the participants gave diversity to the sample. Further study outside of London HEIs could provide additional perspectives.

Moreover, time with the participants were restricted due to their busy schedules, often the author was only able to secure one meeting with the participant and unable to get through all of the questions. In those cases, the author emailed the questions to the participants, often questions regarding RDM policies, but did not get many responses which meant the author was unable to analyse these questions. Resolution for this issue would be to streamline the questions or secure more time with the participants.

Discussion:

Open Government Data (OGD) relevance to HEI

The Open Government Data (OGD) framing for this report is unsuitable for exploring the recordkeepers' role in HEI. When asked, all participants displayed an understanding as to what OGD meant, with a vast majority determining that it was data produced by Government and made available, but there was a lack of consensus as

to its relevance to HEI and the ultimate purpose of OGD. This section will outline the participants' responses to questions regarding OGD, including its definition and place in HEI.

The Research Data Manager (B) at case 1 stated, 'Open Government is more about making the resources that are produced or used by Government available' (B, 2017), this indicates that OGD is about making government information accessible. Indeed, this was a sentiment shared by other participants who used terms such as accessible, 'sharing' (D, 2018), and 'making practical' (D, 2018) the ultimate goal of OGD. Interestingly, there was no agreement as to the motivation in making OGD accessible. The RDM at case 1 argued that it is to promote the re-use of data, however others argued that it was to provide transparency and accountability in governmental decisions. At case 3 the Head of Research Data Services (H) concluded that OGD was 'data sets, so forth, that are gathered as part of civil service responsibilities to be able to report things to government' (H, 2018), namely, that civil servants need OGD to justify their actions to governmental bodies.

In contrast, the Senior Records Manager (E) at case 2, and Archivist and Records Manager (A) at case 1, cited the need to justify and provide evidence of government decisions to the public. Participant E reasoned that OGD ensures that 'government decisions are accountable, that evidence is there to ensure that they're accountable and transparent, that anyone can access this decision should they wish' (E, 2018).

Unlike the other participants, Head of Records (F) at case 3 did not provide a definition of OGD, instead dismissing it as 'something historical' and something they had not 'heard about in a long time' (F, 2018), suggesting that OGD is not relevant, at

the very least in a HEI setting. Instead, they aligned OGD's development with the Blair Labour Government and claimed that it was part of the movement that led to the implementation of Freedom of Information Act (FOIA). From their comments, it can be inferred that OGD was merely a political device in garnering the support of the public and that there were more effective tools in providing access to information in public bodies such as FOIA.

Although there is a division amongst the participants as to what the motivation for OGD is, there is consensus that OGD involves providing access to data produced by the Government to a wider audience. What is less clear is if OGD is applicable to HEIs.

Participants were unable to agree as to whether HEIs were government bodies, assuming that they would need to be, for OGD to apply to them. At case 1, participant B argued that OGD did not apply to HEIs as they were classified as 'charities' that are not 'government bodies in their own right' (B, 2017). By contrast, their colleague, A, felt that HEIs were public authorities and that OGD was applicable as public money was funding data to be collated. Nevertheless, participant A admitted that OGD, 'is not a term that I have come across much within kind of research data management…and my experience with…FOI and DP' (A, 20170).

Other participants saw OGD's relevance to HEIs in terms of use of data produced. Participant H, case 3, argued that the purpose of OGD is to be 'reused, being put out there as a resource for other people' (H, 2018). Hence if researchers are reusing OGD then they are fulfilling its aim and as a result it means it has relevance to HEIs. Similarly, D at case 2 determined that those working with HEIs are continually handling data, produced by HEIs relating to its administrative aspects, and for that

reason they are subject to OGD. However they did not phrase it as OGD, rather as ‘Open Government, Open Data agenda’ (D, 2018). An assumption can be made then that OGD is closely aligned with the Open movement and not viewed as a separate agenda, especially within HEIs. This conclusion is supported by participant E, case 2, who admits their scepticism with the term Open Government, ‘I don’t think Open Government is particularly helpful phrase to apply to HE…I don’t understand what Agenda is…apart from this loose idea they should be making more available’ (E, 2018). Instead they argue that ‘open’ is more applicable to HEIs, referencing the importance of Open Access and Freedom of Information at HEIs.

In fact, all participants referred to open when attempting to define OGD, determining that its purpose was to provide access. Many described it in terms of ‘freely available’ (E, 2018) and ‘available to anyone to scrutinise’ (B, 2017), but with some making the distinction that open does not necessarily mean unrestricted access to information. Participant C, case 2, argued that open actually means ‘Free to use’ (C, 2018), overcoming the obstacle that can prevent access to information: money. The participants’ familiarity with ‘open’ and a general shared understanding of what it entails arguably enabled participants to form a definition of OGD and to conclude that it held relevance for HEIs. This is evident in participants’ references to Open Access, Open Data and Open Science. Moreover, participant A, case 1, who believed that OGD applied to HEIs admitted that they had not, ‘come across it as much as other definitions…I know Open Access is more of a library term…we hear it that a bit more’ (A, 2017).

Interestingly, those with records management responsibilities all referred to FOI legislation in their responses to what open and OGD means, and its relevance to HEIs. Participant E, case 1, and participant F, case 3, inferred that records management

have been fulfilling the ideals of the open agenda with FOI, where information, including research data stored within RM, is ‘open by default unless you have a reason not to have them open’ (F, 2018) and that in ‘making stuff open that people can look at and scrutinise’ (E, 2018), albeit perhaps not easily accessible in terms of searchability and quick access, FOI does make access free to use. Participant A, case 1, agrees, noting that, ‘under FOI people could ask for that kind of data’ but ‘traditionally records management has been quite closed’ (A, 2017), this indicates that record managers at HEIs have been proactively involved with the open agenda, although possibly not recognising it under those terms.

It would be inappropriate for this report to explore the role of the records manager/keeper within HEIs with OGD as its framing, as OGD is not applicable in this context. Although, the participants were able to provide a definition as to what OGD is, and some believed that HEI adheres, or least should, to the OGD agenda, the ‘open’ agenda is more influential at HEIs and significant in the participants’ ability to consider OGD. The participants demonstrated that the open agenda has flourished in a number of ways within HEIs, such as Open Access and FOI. Research data management (RDM) is another part of this agenda that has recently emerged within higher education.

Although seemingly established in many universities, research data management grew in prominence only in the last few years when the ‘guidance on Best Practice in the Management of research data’ was produced by the Research Councils UK (RCUK), now known as the United Kingdom Research and Innovation (UKRI). This guidance outlined principles to correctly manage and share research data (Rouse, 2017). As this initiative was supported by the major research funders, universities were quick to implement RDM services. As a result, the position and

management of research data varies depending on the culture and resources of individual HEIs, but often it has been paired with libraries and librarianship (Knight, 2015). Arguably, research data management is still establishing its place within HEIs and for that reason, this is ideal frame to explore the role of recordkeepers.

RDM: Current practice approaches and the role of the recordkeeper

To understand the role of the recordkeeper in the management of research data in HEIs, it is necessary to explore the context in which RDM is approached and practiced. The three cases were chosen for the variation in their size and varying discipline specialism to provide a wide-ranging exploration into how RDM is approached and practiced.

All three cases had library involvement in the service of RDM to varying degrees. At case 2, although under the remit of participant C within the library, providing an RDM service is a cross-institutional affair affecting primarily three teams, the Archives and Records Management team, the Scholarly Communications team, and IT services, two of which fall under the remit of the library services. Additionally, case 2 does not have a designated RDM, rather participant C co-ordinates the management of the service alongside their other responsibilities, delegating RDM actions to other teams, for example participant E provides advice and guidance in data management plans and the IT service provides support in storage, security, and data sharing. In sum, the RDM at case 2 falls under the remit of the library and under the direct management of a trained librarian, who delegates RDM actions to other staff members who have the expertise to effectively fulfil these tasks.

Similarly, the RDM service at case 3 falls under the remit of the library services, however it is not managed by librarians, or by a trained librarian, rather they have a dedicated research data officer who reports directly to the Director of Services under its own division, the Research Support Team (figure 3). Like case 2, the RDM service requires the support of other departments, namely, participant H who is based within the ISD (figure 2), a division separate from the Library service. Initially, participant G was employed to raise awareness of the RDM service and foster relationships with a variety of stakeholders within the institution, in particular ISD who manages the University's data repository, but was previously underrepresented in the University. There are plans to implement a long-term repository which is being developed and will be managed by participant H. The management of the information, namely metadata, will fall under the control of participant G along with advocacy and supporting researchers. Participant F, whose division, Special Collections, Archives & Records Management, also falls under the Library services, currently only provides ad-hoc advice on compliance, especially in terms of clinical data.

Figure 1
Case 1: Library & Archives Service

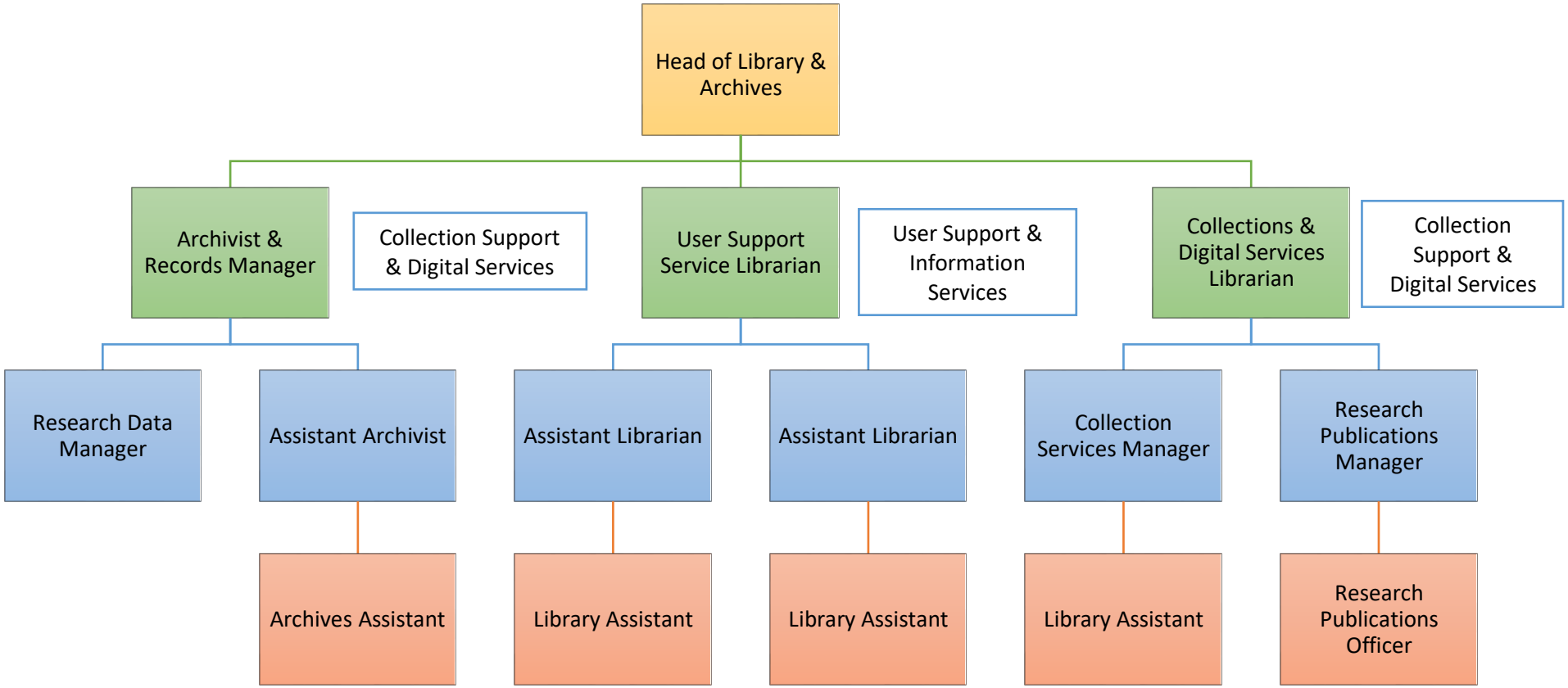


Figure 2
Case 3: Information Services Division (ISD)

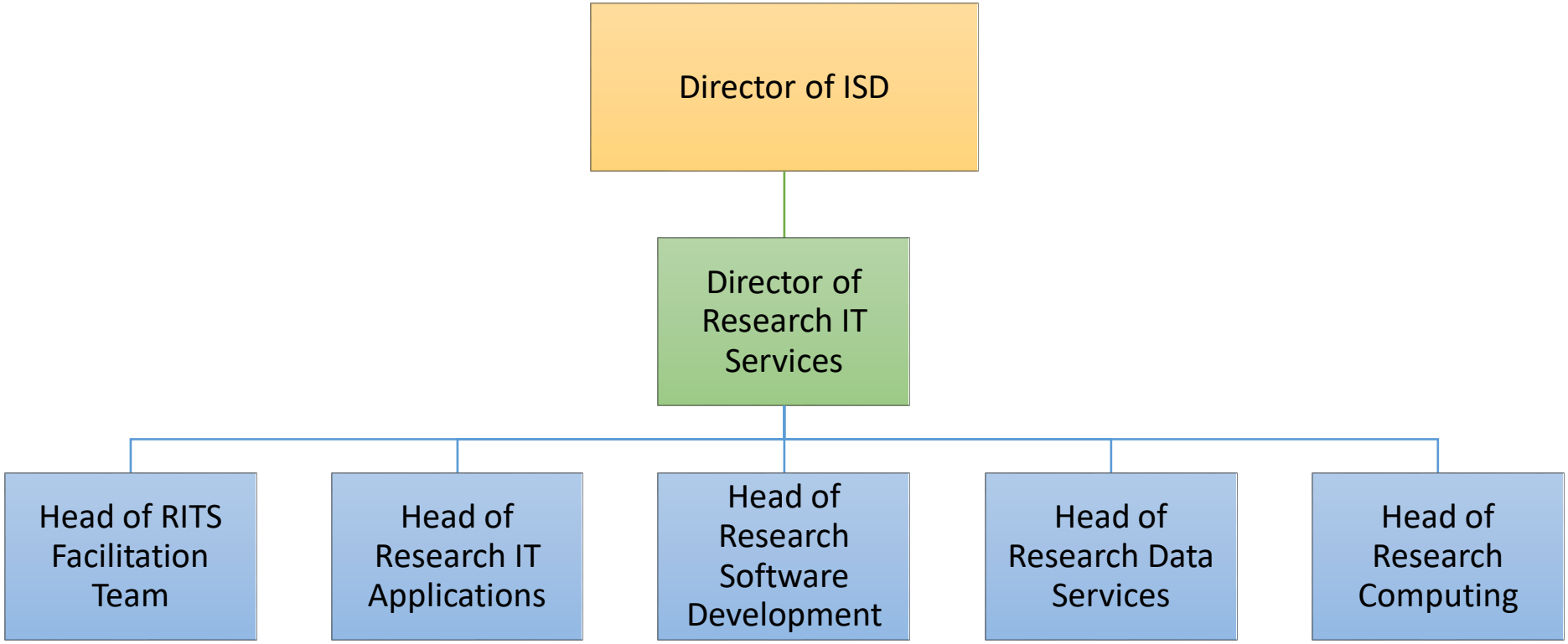
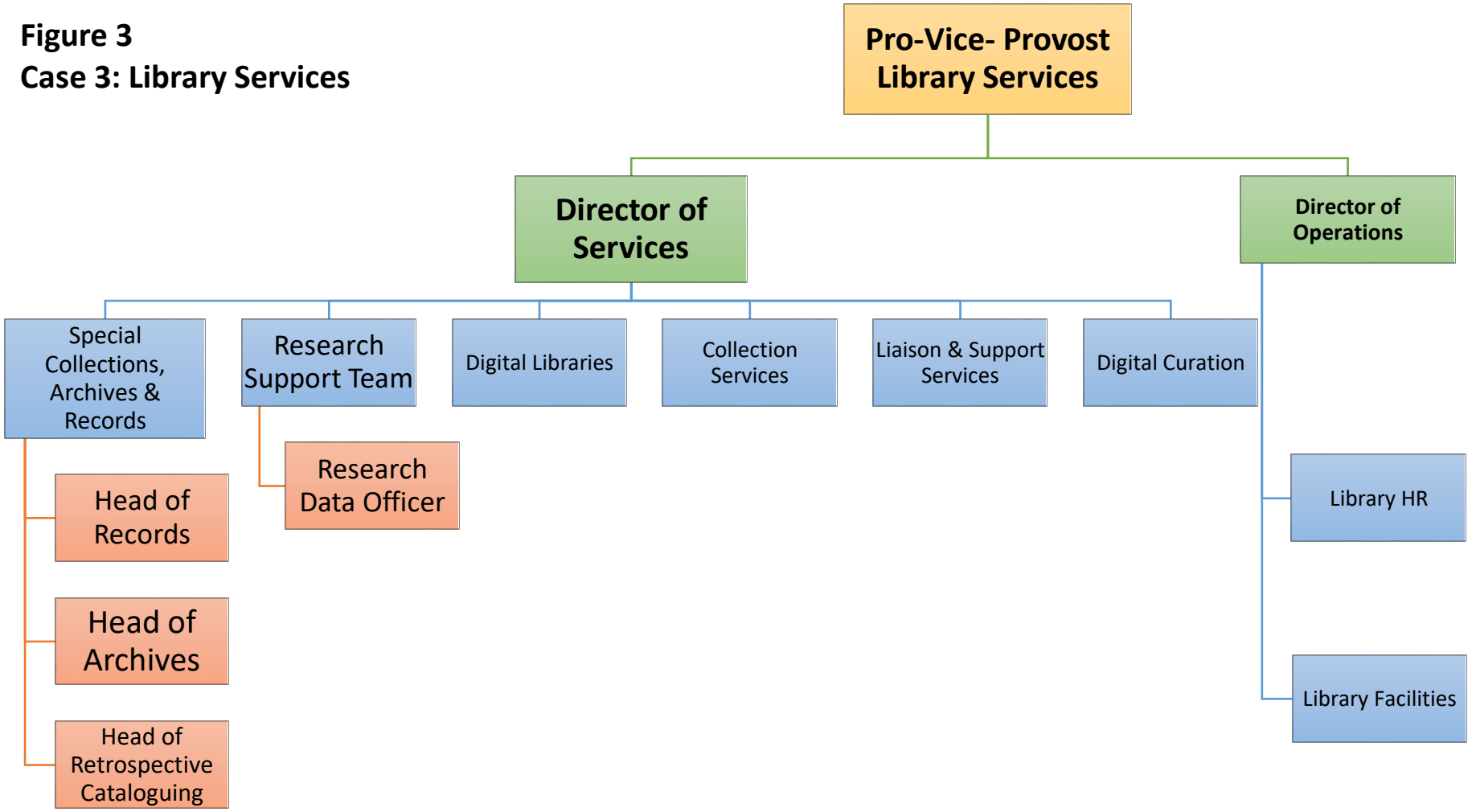


Figure 3
Case 3: Library Services



Like case 2 and 3, the RDM service at case 1 is also based within the Library service, however falls under the direct management of the Archives and Records Management team (figure 1). Similar to case 3, case 1 has a designated member of staff to manage the service, the Research Data Manager (participant B), who is responsible for the management of deposited data, repository building, advocating the service, and supporting researchers including the development of DMP. The RDM (participant B) has support from IT services for storage advice, repository building, and security, but not for the day to day running of the service, which is their sole responsibility. Participant A is not involved in the day to day delivery of the service but was instrumental in implementing an RDM service at case 1, providing guidance on retention scheduling, and is the Research Data Manager's (participant B) line manager, responsible for the operational plan for the service.

The context of RDM at the three cases demonstrates that libraries have a significant influence on the delivery of RDM at HEIs. The question is why has RDM been closely aligned with libraries and why are there fewer recordkeepers taking the lead? Cox and Pinfield (2013) argue that records managers already practise many of the disciplines required to fulfil the actions for an RDM service, a fact garnered in the EU32 Report (Brimble et al, 2016). In fact the next section of this report outlines the key knowledge and expertise that the participants and literature notes that recordkeepers possess to effectively deliver RDM. Arguably then, due to their suitability to RDM, recordkeepers should be more active than they currently are. The rest of this section will explore what the participants and literature identified as reasons why RDM has been paired with librarianship and libraries and will consider if this is the only context RDM can operate in at HEIs, and why recordkeepers are less likely to be involved.

Prominence

Many of the participants argued that RDM has commonly been paired with libraries due to the prominent place it has within HEIs. Participant C, case 2, believes that 'libraries tend to be bigger and louder, so they already have that presence' (C, 2018) of supporting researchers as evident in managing Open Access, RDM is an extension of their work. It is an assessment share by participant F, case 3, who describes libraries as a 'big information unit' (F, 2018) that absorbs new functions like RDM, inferring that other disciplines are overlooked, such as archives and records management, to take on these tasks as they do not have the same presence, therefore their relevant expertise is overlooked. Participant A, case 1, concurs with participant F, stating that libraries have a 'higher profile in an institution than archives do' (A, 2018), again attributing their status within HEIs as a reason they tend to manage research data as opposed to recordkeepers.

The literature also identifies libraries' status in HEIs as the reason RDM has been paired with librarianship. Cox & Pinfield (2013) note that records managers have relevant expertise to fulfil RDM, but libraries have a strong professional identify that can outmanoeuvre smaller professions like archives and records management. Henderson & Knott (2015) take a less cynical perspective, rather than undercutting other professions, libraries have a prominent status within HEIs whereby researchers traditionally start their research process from, hence it makes sense to pair the management of research data, and, in turn, ensure its accessibility, discoverability, and re-use, with a discipline that supports the research process. It is this affinity with researchers that Pryor (2014) believes is libraries' strength in managing research data, in that researchers may be reluctant to admit they do not know what RDM is, by giving the control of it to a familiar service the profile of RDM is increased and in turn quality

datasets submitted. Nevertheless, Pryor also notes that RDM should not be fulfilled in its entirety by one unit, rather actions need to be delegated to other stakeholders. Consequently, RDM's placement within libraries is a necessity as 'someone has to take responsibility for the delivery of the whole service' (Pryor, 2014), simply put, libraries provide a placement for it but does not mean libraries or librarians have all the expertise to fulfil an RDM service.

Education and Outreach

Previously discussed, the role of libraries in teaching researchers was cited by the participants as a significant reason as to why RDM has seemingly been paired with librarianship. Participants C (2018) and D (2018) at case 2, both referred to the role of liaison librarians who have experience in teaching and interface with researchers. They both saw the role as having potential in their institute to teach about and advocate for RDM, but also to guide researchers to key stakeholders who are involved in the RDM service. To them, guidance on RDM could become an extension of the liaison librarian expertise. Participant G, case 3, agreed stating that liaising with users and other departments is a vital soft skill of librarians and important in providing an RDM service (G, 2018). These comments suggest that supporting, teaching, and guiding researchers is fundamental to a providing an effective RDM service and a skillset that librarians have a strong tradition (Henderson & Knott, 2015) in and can easily transfer to the management of research data. Liaison librarians already teach users how to be independent researchers, so it would not be difficult to extend their role to incorporate teachings on data management and planning (Gadridge, 2009).

Interestingly, the participants at case 1 do not touch upon these skills of the librarian. This is not to say that they do not recognise the importance of supporting

and guiding researchers. Case 1 is a small institution with a designated Research Data Manager, who has built strong connections with various stakeholders throughout the institution. Additionally, the RDM service falls under the remit of the Archives and Records Management team, and although this is based within the Library directorate there is little cross over in terms of day to day activities. In sum, it is unlikely that support and guidance needs to be delegated to library staff, unless demand of RDM grows exponentially and the Research Data Manager is unable to cope.

Open Access

As previously outlined, RDM has been closely aligned with the Open movement within HEIs which encompasses initiatives, such as Open Access and Freedom of Information (FOI), with the former being managed by library services. JISC defines Open Access as a means to make publications freely available to read, re-use in research, and re-use the data, in particular through text mining (Jisc, 2016). Open Access is part of the wider 'Open' movement that allows access and re-use of knowledge without barriers, as discussed previously. RDM is part of the Open movement as it seeks to enable re-use of data (DCC, 2018 b), therefore it is unsurprising that some of the participants noted that librarian involvement in leading Open Access is a potential reason as to why RDM has been allied with librarianship.

Participant G, case 3, and participant A, case 1, both contend that there are clear links between RDM and the Open Access agenda. Participant G noted that RDM is 'a kind of continuity after Open Access' and that 'we could replicate what we've done for Open Access to research data' (G, 2018). Simply put, libraries already have established means to provide access to publications, therefore it would be easy to provide access and re-use of data in the same way. Participant A recognised that RDM

could easily have been placed with the Open Access team at case 1, rather than with the Archives and Records management team as ‘there are links with publications’ (A, 2018) in relation to RDM. Indeed, Cox & Pinfield contended that RDM is a natural extension of libraries work in that there is a link between RDM and the Open Access agenda, an agenda that librarians have been actively promoting (Cox & Pinfield, 2013). Arguably then, with strong links in managing Open Access, it is unsurprising that another Open movement initiative, RDM, has been paired with a service experienced in its management. Nevertheless, Cox & Pinfield (2013) go on to state that although RDM has Open qualities it is not ‘simply or necessarily related to openness’, in fact other factors such as obligations to provide publicly funded data, increase academics’ citation rate, and verification of findings (Higman & Pinfield,2015), also support the need for RDM.

Arguably, RDM is not limited to the Open movement, there are other factors driving its agenda, consequently, it would be narrow-minded to pair RDM with libraries simply because it has similarities to the management of Open Access. Instead libraries’ expertise of promoting and managing Open Access should be a consideration when deciding on where RDM should sit in a HEI.

Context and Institution Setting

This section has so far explored the reasons that may have led RDM to be paired with libraries and librarians, reasons such as library status within HEIs, education and outreach skills of librarians, and their expertise with Open Access, all of which benefit the management of research data. Furthermore, the fact that all three cases have the involvement of libraries in their delivery of an RDM service suggests that librarianship is potentially the most suitable discipline to lead RDM and that this is the accepted

approach within HEIs. However, these assumptions disregard the individual context in which RDM services are established.

Although all three cases have the varying involvement of libraries in their RDM service. The latter's placement is as much a result of institutional context and setting as it is of the prominence and expertise that libraries offer. Cox and Pinfield, whose paper recognised the significant role that libraries play in the management of research data, noted that context and institutional setting were 'important influencing factors in the development of an RDM programme' (Cox & Pinfield, 2013). This is evident in the structure of the RDM services at the three cases in this study, where size, resources, skillset, and an individual's status within the HEI, were influential factors.

At case 1, the size of the institution was identified as a significant factor for the service to be placed within the Library service and under the remit of the Archives and Records Management team. Participant A claimed that when the Library was approached to take the lead in the development of an RDM service, the Head of the Library – now participant D at case 2 – recognised the relevant skills of participant A to take the lead of the service (A, 2018). Participant A contends that the service could easily have been placed with the Open Access team who were establishing themselves at the time, but the skills of the individual were more important than where it should be placed (A, 2018). Yet, simply because an institution is small does not mean everyone's skills are widely recognised, rather participant A's involvement in the senior leadership of the Library was an important reason that led RDM to fall under the remit of the Archives and Records management team. Participant D stated that in most institutions, records management is not aligned with the library and the role of a RM is often a lone worker, therefore their presence and skills are overlooked, whereas

at case 1, participant A had the influence to advocate their skills and collaborate with their colleagues (D, 2018).

This is evident in case 3, where, after initially providing draft policies, participant F claims that they were ‘side-lined’ (F, 2018) from the development of the RDM programme when participant G was employed, unbeknownst to them. Interestingly, participant H claims they tried to get the involvement of participant F but believed they were disinterested in the process (H, 2018) and ultimately not involved in any great depth. However, what is more telling is how both participants, H and G, describe participant F, where the former described them as having a ‘low profile’ (H, 2018) and the latter noting that the records office is ‘quite small and busy’ (G, 2018). Their perceptions of participant F indicate that without significant status, or resources, in terms of staff, it is difficult to demonstrate your suitability and expertise to take the lead of a service. Moreover, case 3 is significantly larger institute than the other cases, for example there are approximately 250 library staff members (F, 2018) across 19 separate libraries (UCL, 2018), hence it is more difficult to effectively communicate with other stakeholders to advocate expertise and services such as RDM. Difficulties in communication can be common in most organisations, but more problematic in a larger one, so it is no surprise that a designated research data officer was employed to advocate the service and participant F was not considered.

Unlike other cases, case 2 does not have a designated research data manager or similar role, instead its management falls under the remit of participant C alongside their other responsibilities, and who delegates actions to other stakeholders such as participant E who provides retention and DMP guidance, and IT services who provides storage support. Participant C notes that resources have been a significant factor in how RDM has been managed within case 2, stating ‘funding wise, we aren’t able to

get a post for that right now' (C, 2018). Namely, if the resources were available a designated RDM would be employed to develop the service further, something which is impossible due to participant C's other responsibilities. Participant D noted, that although implementing a RDM would benefit the service, by delegating the service to other departments it prevents it from being siloed (D, 2018). By involving others it increases it recognition within the HEI. Moreover, although resources have impacted how RDM is approached at case 2, participant D's experience of working alongside participant A, when they were Head of the Library and Archives service at case 1, exposed them to the role of archivists and records managers and the benefits that they could bring to the management of research data. Arguably, if they did not have this previous experience, the RDM service could easily have overlooked the skills of participant E, or diminished their involvement to ad hoc advice.

The three cases have shown that the approaches and practice of RDM in HEIs is dependent on the institutional culture and resources available. Smaller institutions have the advantage that building connections with other stakeholders is less complicated and advantageous to the recordkeeper who is often a lone worker and unable to advocate their valuable skills, but again, it is dependent on the culture of the organisation and the placement of recordkeepers in relation to RDM. Larger organisations have issues in terms of communication, not just for recordkeepers advocating their skillset, but with other stakeholders within the institution, hence a designated role is required to lead RDM so that its importance is recognised by the research community, simply tacking it onto existing roles can stunt its growth and importance within the HEI. This is evident in organisations which do not have the resources to hire an RDM and have to delegate the actions of the service to other stakeholders. Aalthough it can prevent RDM from being siloed and its importance

diminished, it can potentially prevent the service from growing as there is limited time and resources to devote to its development.

This section has shown that librarianship and libraries have the skillset and prominence within a HEI to deliver an RDM service. Indeed, the three cases all have their RDM service based within their library, suggesting that the management of RD is, perhaps, best placed with libraries. Nevertheless, the context of the cases reveals that the practice of RDM is also dependent on the resources and setting of the institution, which suggests that one approach does not fit all. Furthermore, the cases all reveal that RDM is not solely under the control of one unit, each case has input from other stakeholders, even if they have a designated Research Data Manager, in terms of support from IT services and records management. This is expressed by the DCC who contend that meeting all of the needs required to deliver an RDM service cannot be provided by one unit and must be delegated to others within the HEI (DCC, 2018 c). Indeed, Sue McKnight, who recognised that RDM is an extension of libraries' current work, noted that the 'infrastructure, skills and culture change' (McKnight, 2010) required to effectively manage RD requires the actions of various stakeholders.

The enhanced knowledge needed by recordkeepers to fulfil their responsibilities in this environment

This section will explore the knowledge and expertise that recordkeepers have that enable them to effectively manage research data. The section will also explore what RDM is by examining the participants' responses and what the literature states. This is to determine what knowledge and expertise are required to approach research data.

Finally, this section will identify expertise that recordkeepers need to develop in order to become involved in RDM.

The DCC (2018 b) define RDM as an 'explicit process covering the creation and stewardship of research materials to enable their use for as long as they retain value'. This is a broad definition that covers numerous activities in the management of research data but does not specify what they should be. It does not assign importance to any one approach and skillset for RDM, but rather appears concerned with the ultimate goal of enabling reuse of data. A majority of the participants also cited making data accessible and shareable to 'the wider research community and public as well' (A, 2017) as the main purpose of RDM. Seemingly, this could imply that the participants believed that RDM is about having hard skills, in terms of digital curation, however all the participants emphasised the importance of working with researchers and the latter's role in making data accessible. Participant D, case 2, spoke about how RDM is responsible for implementing infrastructures that enable researchers to make their data accessible, participant F, case 3, cited these infrastructures as 'formats to use, research funders' requirements, policies, all of the tedious stuff' (F, 2018). The role of RDM is as much ensuring that researchers are meeting funder compliance without overburdening them with information.

Some of the literature surrounding RDM contrasts this view, not in terms of emphasising the value of preserving data, but by also emphasising some activities involved in managing data and in turn, the skillset required. Latham (2017) determines that RDM is, 'essentially a subset of data curation', whereby it is primarily concerned with the preservation and management of digital research data. It can be assumed that Latham's view, therefore, puts emphasis on hard skills, technical abilities, as essential attributes required in RDM. Tammaro and Casarosa (2014), similar to

Latham, initially speak of RDM in terms of digital preservation where it is concerned with maintaining 'digital information that is produced in the course of research in a manner that preserves its meaning and usefulness as a potential input for further research'. Again, emphasis is placed on technical skills and knowledge in the management of digital data. Tammaro and Casarosa later concede that RDM is not simply a 'technical/engineering issue'; rather research data managers should be knowledgeable of the context in which they are operating and involved in the entire life-cycle of digital material. Simply put, they recognise that other expertise are required rather than just technical, hard skills.

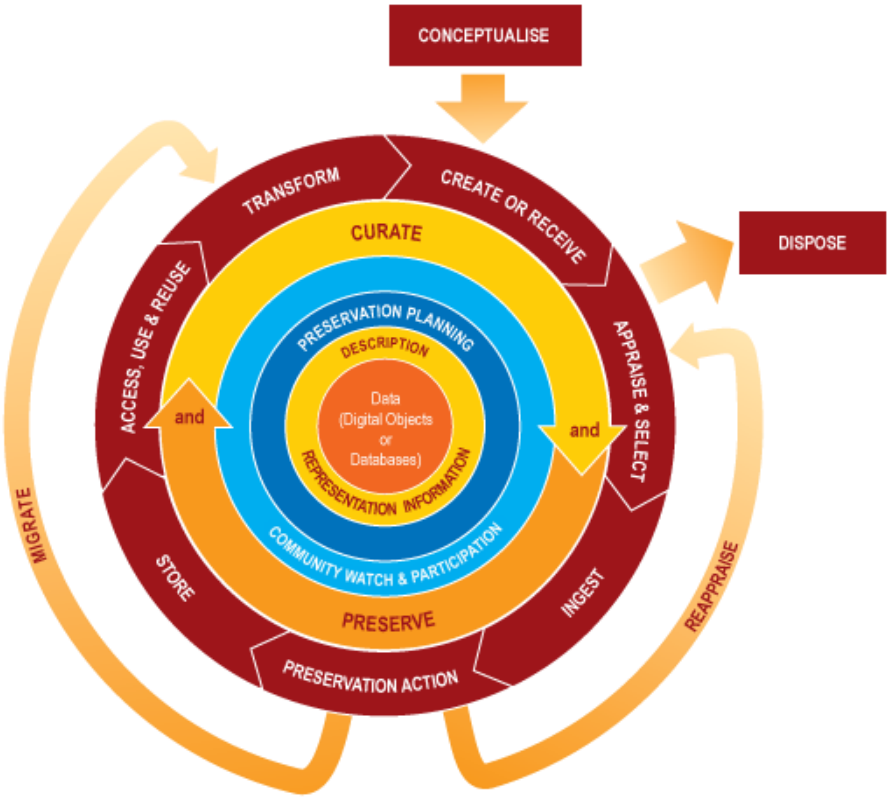
Others see RDM as a service to support the researcher to enable them to manage their own data. Knight (2015) concluded that supporting researchers to manage their research data was intrinsic in providing an RDM service. It is a sentiment shared by Surkis and Read (2015), who reasoned that RDM is to make sure that, 'a researcher's data collection process is organized, understandable, and transparent'. Participant H, case 3, concurred, clarifying why it was important to encourage researchers to manage their data, 'to be given the raw data and expect to be able to draw good descriptive metadata for discovery…would be in most cases extremely difficult…the researcher needs to help out by basically saying what it is they are giving you' (H, 2018). This suggest that even if you possess the hard and soft skills needed to manage and curate research data, you will not have in depth knowledge of all data that is deposited to effectively describe it so that it is accessible. This focus on supporting the researcher to manage their own data indicates that RDM is more than ensuring the physical data is accessible; rather it is also about providing infrastructures and guidance to make the data accessible. This suggests that RDM also requires soft skills, such as communication, in addition to hard, technical skills.

It would be inappropriate to suggest that the author of this report only views RDM in terms of hard or soft skills. It is also important to consider the knowledge required for an RDM service, as evident in the research lifecycle, where different expertise is required at different stages. Jones et al (2013) break the research lifecycle into three stages: pre-award, where support is required for drawing up a data management plan; throughout the project, where support for formats, storage, and compliance is required; and post-project, where advice on making the data accessible and selecting data for long-term value is needed. Jones el al demonstrate that RDM is a multifaceted service that necessitates the expertise and skills of many groups within HEIs, it cannot be provided by any one individual or unit. This suggests that those from varying disciplines, including archivists and records managers, have expertise that that can support an RDM service. The question then is, what knowledge and expertise do recordkeepers have or need to have to be involved in RDM?

Appraisal

Childs et al (2014), contend that 'effective appraisal of research data is crucial, as its value through time will differ enormously'. This sentiment is supported by the DCC Curation Lifecycle Model (Whyte & Wilson, 2010) that sees it as a fundamental stage to successfully curate and preserve data.

Figure 4: DCC Curation Lifecycle Model



As figure 4 shows, it is a sequential action that occurs at the early stage of digital curation and again during the preservation action stage when data is reappraised. Appraisal of data at these stages is crucial to research data management when storing, preserving, backing up, and managing data incurs continual costs, and more importantly, reduces its discoverability when searches are saturated with research data (Whyte and Wilson, 2010).

Recordkeepers, archivists and records managers, are well versed in appraisal techniques, with the work of T. R. Schellenberg (1975) and his idea of records having primary and secondary value taught as foundational knowledge in recordkeeping courses. It is likely the reason as to why the participants cited appraisal as one of the strengths that recordkeepers bring to RDM.

The participants concurred that RDM currently lacks appraisal knowledge. Participant A (2018), case 1, argued that it is one of the main differences they have struggled with when approaching RDM, 'with RDM there seems to be a view that everything will be kept, which is obviously very different to archives'. Moreover, participant E (2018), case 2, discussed their hope that appraisal will become a part of 'data management planning' as it is something not currently considered in depth. Their comments demonstrate that although appraisal is noted as an important step in the management of research data, evident in the DCC Curation Lifecycle, it is yet to be fully realised in the practice of RDM.

Interestingly, participant C and E discussed appraisal as an expertise that records managers need to educate researchers to develop, noting that researchers and academics are 'very bad at' (C, 2018) or do not consider it. The researcher is fundamental in the appraisal process of research data as their understanding of the research project and of what data may be valuable in the future ensures that relevant and valuable data is selected. This is knowledge that recordkeepers are unlikely to develop sufficiently, but their expertise in appraisal can be shared (Childs et al, 2014). This is similar to the point that H, at case 3, made about the importance of the role of the researcher in describing research data. They have the knowledge of the topic to make informed decisions that a recordkeeper, RDM or librarian could not be expected to know.

In contrast, participant A, case 1, discussed the appraisal process as something that recordkeepers personally undertake and assign value to, 'we will do an appraisal of it, and we'll select it and we will look at our selection criteria on how important it is and obviously its evidential value' (A, 2018). Their comment implies that they also believe that research data should be appraised but by those who are managing the

data, rather than the creator. Participant A does not explain why they understood appraisal as the responsibility of an RDM, but it can be inferred that it is discipline driven as recordkeepers are usually tasked with making the appraisal decisions, and can therefore transfer this understanding to the management of research data.

Although the participants disagreed on who should be responsible for appraising research data, the value of appraisal is evident in their responses. Furthermore, while the DCC Curation Lifecycle Model emphases the importance of appraisal and reappraisal, the participants' responses suggest that it is under represented in the practice of RDM and is an action that needs to be developed. It is this lack of practical appraisal that recordkeepers can bring to RDM as the participants concurred they have significant expertise in it.

Retention

Connected to appraisal, many of the participants noted expertise in retention schedules that recordkeepers can bring to RDM. As noted previously, it is unfeasible and inefficient to keep all research data deposited in an institute's repository, with reasons ranging from cost of backing up and preserving data, to its discoverability. Nevertheless, with UK research funders stipulating that research data with long-term value is preserved and remains accessible for reuse in the future (DCC, 2018 c), appraising data can be challenging.

The retention of data varies depending on the research funder, for example the Biotechnology and Biological Sciences Research Council (BBSRC) stipulates that research data should be kept for 10 years after the completion of the research (DCC, 2018 d), whereas other funders like the Wellcome Trust (DCC, 2018 e) and the MRC (DCC, 2018 f) do not specify a retention period. Rather they specify that data should

be made available either before or at the time of publication but provide no guidance to suggest how long data or what data should be retained. Regardless, even if the research funders provided specific guidance there are other factors that affect what information can be kept, namely legislation such as the Freedom of Information Act (FOIA) and the General Data Protection Regulation (GDPR). Significantly, legislation is dependent on the context of the institution and the discipline.

Records managers have expertise with creating retention schedules; after all, one of the principles of records management is managing, capturing, and creating records based on the business' legal, regulatory, and societal context (BSI, 2016). In other words, records managers are acutely aware of the context that their organisation is working in and the records they should retain and what to dispose of.

Participants E and C, case 2, and participant G, case 3, all cited records managers' expertise in retention as a fundamental expertise they can bring to RDM. Participant E acknowledged that researchers are familiar with legislation that affects their research data, but that they are unaware of the precise requirements, which has led them to 'advise quite a bit around retention' (E, 2018). It is an advisory role recognised by participant C who described records management as a 'key stakeholder' (C, 2018) in RDM, citing participant E's understanding of statutory requirements as a significant contribution to the management of research data. Participant G concurred with participants E and C, in that expertise in retention is valuable to RDM. Moreover they acknowledged that it is an expertise that RDM is lacking and one 'we need to work more on' (G, 2018). The participants' comments demonstrate that retention is an important tool in the appraisal of research data. It goes above the idea that appraisal should only seek to preserve data of future value and re-use and takes into consideration legislation that could have significant impact

on the HEI if not adhered to. Additionally, the participants validate the role of records management in this as they all associate knowledge of retention schedules with records managers.

Preservation

Preservation knowledge was noted by participants as an expertise that recordkeepers could bring to the management of research data. The DCC (2018, b) defines RDM as 'an explicit process covering the creation and stewardship of research materials to enable their use for as long as they retain value'; the key aim being capturing and maintaining the integrity of the research data to ensure access and re-use. This has been equated to the goal of recordkeepers by participant A, case 1, who noted that 'preserve the material' was a common aim of RDM and recordkeepers. Nevertheless, they indicated that there was no consensus on how long research data should be maintained.

As the DCC definition and the previous exploration of funder requirements demonstrates the length of time that research data should be maintained is subjective dependent on legislative requirements, value, and quality of the data. Whereas when a recordkeeper discusses retaining information for the long-term they view it in terms of historical value, rather than how long it is deemed useful. This distinction is important as RDM may find itself having to manage research data for longer periods of time than the retention periods funders currently ascribe. For example the MRCs have recently recommended the retention of clinical data for a minimum of 25 years (MRC, 2017) and it is likely that other funders will follow suit. Already, recordkeepers are experts at preserving information for immeasurable periods of time. It is unsurprising that the participants saw recordkeepers' preservation knowledge as transferable to RDM.

The participants noted that recordkeepers were knowledgeable in 'file naming and versioning' (C, 2018), were capable of cataloguing to item level (D, 2018), and argued that recordkeepers, as a profession, are interested in digital curation developments (F, 2018), as evident in recordkeeper membership in organisations such as the Digital Preservation Coalition (DPC). Interestingly, the participants do not isolate individual preservation actions any further, instead they just state that recordkeepers have preservation knowledge. This could be because some of the participants are not overly familiar with the recordkeeping discipline or due to the nature of the questions, which did not require the expertise to be broken into minute detail, but regardless, the participants recognised that recordkeepers were knowledgeable in preservation.

Curiously, knowledge of metadata, which is important to digital preservation, was seen by participant C, case 2, as a strength that librarians could bring to RDM. They admitted it was an expertise that they have developed throughout their career, 'I never knew that it would be part of my job being a librarian' (C, 2018), but one that features within their job. In contrast, participant A, case 1, considered metadata as something recordkeepers have knowledge and expertise in, comparing it to the cataloguing of an archival collection; 'you're working with ISAD (G) and the way you catalogue information…you've got that level of knowledge about metadata in order to make it accessible' (A, 2018). Their comments do not suggest that they believe their discipline is more knowledgeable in metadata than the other; instead they indicate that there is a shared proficiency that both can contribute to RDM.

Knowledge and expertise recordkeepers need to develop

Several of the participants considered that recordkeepers lack the ability to advocate for their expertise. It was determined that in order to effectively get involved in RDM recordkeepers needed to demonstrate their knowledge and how they could directly benefit the management of research data.

Participant A, case 1, believed that by advocating their expertise to participant B, they are able to demonstrate their similarities and differences, which helped to develop an overall RDM service (A, 2018). Simply put, through advocacy recordkeepers can improve an RDM by providing expertise that can otherwise be lacking, such as knowledge of appraisal and retention. Similarly, participant C, case 2, sees advocacy as a means for recordkeepers to promote their skillset and avoid duplication of work, but contrastingly they saw it was the recordkeepers' responsibility to approach libraries to raise their profile (C, 2018). Tellingly, HRSC's (participant C) comments suggest that they view RDM as primarily a library concern and that advocating recordkeeping knowledge only enables the recordkeeper to contribute to an existing service.

In contrast, participant F, case 3, saw advocacy as a means for recordkeepers to reassert their value to the organisation, determining that RDM was another 'badge for something that we'd been doing for a really long time' (F, 2018). Through advocacy the recordkeeper not only gets involved in RDM, but reaffirms their importance to the organisation. Participant F's comment infers that RM should involve themselves in RDM as their expertise and knowledge already meet the aims and actions of RDM. Childs et al concur stating, 'RDM is records management for research data' (Childs, 2014). Therefore, advocacy allows the recordkeeper to put themselves forward, leading RDM, rather than supporting a service already established and in turn reaffirm

the importance of the recordkeepers' skillset to an organisation beyond traditional ideas of just managing traditional records.

In summary, it is interesting how the participants view advocacy as enabling recordkeepers to involve themselves in RDM. There is agreement that recordkeepers have valuable skills that can benefit RDM, but that they are not recognised, in part, due to lack of awareness within HEIs. They all agree that recordkeepers need to advocate this expertise so that they are not overlooked in the management of research data. Nevertheless, their comments are telling in how they would contribute. Participant F, from a records management perspective suggests that recordkeepers should be leading RDM in HEIs, whereas participant C sees the recordkeepers' role in an advisory position.

Conclusion:

Framing of the report

This report has determined that Open Government Data is unsuitable for the exploration of the recordkeepers' role in RDM at HEIs. This was determined by the participants' responses and the way in which they were unable to clearly define what OGD entailed and whether it had relevance to HEIs. Rather participants were divided as to whether HEIs constituted government bodies and others argued that OGD was relevant to HEIs as collaborators with local governments. Instead, participants described OGD in terms of the Open agenda, referred to Open Access and recordkeepers discussed Freedom of Information (FOI) as having more relevance to HEIs. It was for these reasons that the focus was shifted to the open agenda, a movement that RDM has been closely aligned with. The author believes that the OGD

agenda is not a suitable framing for HEIs. This is not to say that they unfamiliar or reluctant to make data freely accessible, instead they are involved in other open agenda initiatives, such as Open Access and FOI. It is necessary to make this distinction to properly explore the environment that RDM is operating in within HEIs.

Current practice approaches to RDM and the role of the recordkeeper

The author's assumption, that librarianship has taken a prominent role in the management of RD at HEIs, with recordkeepers having limited involvement, was superficially confirmed. This was evident in the cases where all three had varying involvement of the library service in the RDM service, Even in case 1, where RDM fell under the direct management of the Archives and Records Management team, this team was part of the Library directorate. Nevertheless, in cases 1 and 2, the designated role for managing research data was not held by a trained librarian. At case 3, the RDM service was led by a trained librarian, participant C, but this was due to limited resources and a designated role would have been implemented if this was not the case, but they did not specify if this would be given to someone with a library background. Nevertheless, the cases demonstrate that libraries are involved and the participants and literature indicated that the prominence of a library within a HEI, the teaching expertise of liaison librarians, and libraries' experience with the Open Access movement, are all valuable in providing a robust RDM service.

However, all three cases also had some involvement of a recordkeeperin RDM, with some more prominent than others. It illustrates that although libraries have valuable skills, knowledge, and resources to lead a RDM service, they require the support of other units to provide an effective service, evident in participant E, case 2, who provides data management plan guidance, and apparent in all three cases where

IT services are involved for technical support. The cases prove the DCC's (2018 c) point that 'all of these needs cannot be delegated to a single unit' and that librarianship alone is not suitable to lead RDM. Instead, the context and setting of the institution has a strong influence on the placement and delivery of a RDM service, where resources, communication, placement of services, and ability to influence, are important factors.

Although, the cases outwardly demonstrate that libraries have a prominent role in the delivery of RDM services, other disciplines, including recordkeepers, are involved in the management of research data, indicating that the context of the institution is a significant factor in the direction of a RDM service. Therefore, the author's assumption could not be definitively proved.

Skills and expertise required for the management of RDM

Defining RDM through the literature and the participants, a view of a multifaceted service emerged, where technical skills, in terms of data curation, and soft skills, such as supporting the researcher to manage their own data, were all viewed as intrinsic to RDM. These skills also included knowledge in appraisal, retention, and preservation; expertise that recordkeepers possess.

Appraisal was viewed as lacking in RDM, by the participants, and of utmost importance, in the literature, evident in the DCC Curation Lifecycle Model (Whyte & Wilson, 2010). Although there is a consensus that appraisal is important in the management of research data and is an expertise that recordkeepers can bring to RDM, there was a divide amongst the participants on how this should be achieved. Some participants advocated the importance of researchers appraising their own data, whereas others viewed it as a responsibility of the recordkeeper. The author of this

report believes that this is inconsequential and dependent on the context that the RDM service is placed in. After all, some institutions may not have the resources to actively appraise research data, so it would be convenient for the RDM service if the researcher took on this responsibility.

Leading on from appraisal, retention was noted by the participants as another significant expertise that recordkeepers could bring to RDM, in order to reduce unnecessary research data from being stored, and more importantly, to ensure that the organisation is complying with relevant legislation. This is knowledge that records managers are able to provide. Retention is important in RDM, as research funders stipulate their own retention periods for research data, so it is important to provide guidance to ensure that data, that should not be kept, is disposed of.

Finally, preservation was noted as an expertise that is prominent in recordkeeping. This is also an area that RDM is already active in, but recordkeepers provide experience in the practicalities of long-term preservation; something of which RDM are yet to see the full implications of. It was also noted that recordkeepers were able to provide expertise in file naming, versioning, and metadata. These, however were skills also shared by disciplines like librarianship. The author believes that recordkeepers' experience and knowledge of preserving material for the long-term, benefits RDM who likely will retain research data past the retention dates stipulated by research funders.

The inability to effectively advocate their expertise was determined by participant A, case 1, and participant F, case 3, as a weakness of recordkeepers' that needs to be developed. Interestingly, these participants saw the function of advocacy in contradictory terms. For whereas participant F saw it as a means to elevate the role

of the recordkeeper and take a leading role in an RDM service, participant A viewed it as a means to bolster an RDM service by providing expertise. Nonetheless, there is agreement that recordkeepers have valuable expertise that can benefit RDM.

In conclusion, RDM is often paired with libraries and librarianship rather than any other discipline, including recordkeeping. This pairing does not however, always equate with librarians taking the lead in an RDM service, as evident in cases 1 and 3 where roles with RDM responsibilities are implemented but the individuals do not have librarian backgrounds. Instead, RDM placement and management as a service is influenced by the context that it is being placed in, such as case 2 where limited resources mean it is absorbed into an existing role. Furthermore, simply because RDM has often been placed within libraries does not mean that this is the only discipline fit to lead RDM services, as evident in the valuable skills and expertise that recordkeepers possess. Libraries have prominence within HEIs as the traditional starting point for researchers, but, as the DCC (2018 c) explains, RDM cannot be managed by one unit, the task is too big and the variety of requirements, such as storage guidance, outside the remit of the library. This means that recordkeepers should not be disheartened that libraries have seemingly monopolised RDM; rather recordkeepers have a role in supporting a RDM service. To what extent and how they provide that support is dependent on the context they are operating in, but it is also dependent on recordkeepers advocating for their skills and expertise and exploring means to develop them further.

Bibliography

Blasio, E. de and Sorice, M. (2016), 'Open Government. A Tool for Democracy?', Medijske Studije, Vol. 7 No. 14, pp. 14–31.

Borglund, E., Engvall, T., & Thurston, A, (2014), 'Open data?' Records Management Journal, 24(2), pp.163–180.

Brown, S., Bruce, R., Kernohan., (2015), Directions for Research Data Management in UK universities [online]. Available at: https://www.fosteropenscience.eu/sites/default/files/pdf/1240.pdf [Accessed 29 August 2018]

BSI (2016) BS ISO 15489-1-2016 – Information and documentation -- Records management -- Part 1: Concepts and principles, British Standards Online, British Standards Institution [online] Available at: https://www.iso.org/standard/62542.html [Accessed 20 August 2018]

Childs, S., Lomas, E., McLeod, J., (2014), 'Opening research data: issues and opportunities'. Records Management Journal, 24(2), pp.142–162.

Clark, D., (1996). 'Open government in Britain: Discourse and practice'. Public Money & Management, 16(1), pp.23–30.

Cox, A.M., & Pinfield, S. (2013), 'Research data management and libraries. Current activities and future priorities', Journal of Librarianship and Information Science, Vol. 46 No. 4, pp. 299–316.

De Saulles, M., (2013) Open Data and Open Government in the UK: how closely are they related? In: Proceedings of the 13th European Conference on eGovernment, University of Insubria, Como, Italy, 13-14 June, 2013.

Digital Curation Centre – DCC. (2018) a. DCC Curation Lifecycle Model, [online] Available from: http://www.dcc.ac.uk/resources/curation-lifecycle-model [Accessed 20 August 2018]

Digital Curation Centre – DCC (2018) b. Glossary, [online] Available from: http://www.dcc.ac.uk/digital-curation/glossary#R [Accessed 20 August 2018]

Digital Curation Centre – DCC (2018) c. How to Develop RDM Services - a guide for HEI, [online] Available from: http://www.dcc.ac.uk/resources/how-guides/how-develop-rdm-services#Selection [Accessed 20 August 2018]

Digital Curation Centre (2018) d. Research Funding Policies – bbsrc, [online] Available from: http://www.dcc.ac.uk/resources/policy-and-legal/research-funding-policies/bbsrc [Accessed 20 August 2018]

Digital Curation Centre (2018) e. Research Funding Policies – Wellcome Trust, [online] Available from: http://www.dcc.ac.uk/resources/policy-and-legal/research-funding-policies/bbsrc [Accessed 20 August 2018]

Digital Curation Centre (2018) f. Research Funding Policies – MRC [online] Available from: http://www.dcc.ac.uk/resources/policy-and-legal/research-funding-policies/mrc [Accessed 20 August 2018]

Dobrow, M.J., Hagens V., Chafe, R., (2009). 'Interviewee Transcript Review: assessing the impact on qualitative research'. BMC Medical Research Methodology, 9(1), p.47.

Fitt, A, Rouse, R., Taylor, S, (2015). 'RDM: An Approach from a Modern University with a Growing Research Portfolio'. International Journal of Digital Curation, 10(1), pp.154–162.

Gabridge, T. (2009) 'The Last Mile: Liaison Roles in Curating Science and Engineering Research Data'. Research Library Issues: A Bimonthly Report from ARL, CNI, and SPARC, no. 265, pp 15-21 [online]. Available at: https://doi.org/10.29242/rli.265.4 [Accessed 29 August 2018]

Grant, R., 2017. 'Recordkeeping and research data management: a review of perspectives'. Records Management Journal, 27(2), pp.159–174.

Henderson, M.E. and Knott, T.L. (2015), 'Starting a research data management program based in a university library', Medical reference services quarterly, Vol. 34 No. 1, pp. 47–59.

Higman, R. & Pinfield, S., (2015), 'Research data management and openness'. Program: electronic library and information systems, 49(4), pp.364–381

Jisc (2016). An introduction to open access [online] Available from: https://www.jisc.ac.uk/guides/an-introduction-to-open-access [Accessed 20 August 2018]

Jones, S., Pryor, G. & Whyte, A. (2013). 'How to Develop Research Data Management Services - a guide for HEIs.DCC How-to Guides. Edinburgh: Digital Curation Centre'. [online] Available from: http://www.dcc.ac.uk/resources/how-guides [Accessed 29 August 2018].

Jubb, M. (2012), 'Freedom of Information in the UK and its Implications for Research in the Higher Education Sector', International Journal of Digital Curation, Vol. 7 No. 1, pp. 57–71.

Jubb, M. (2017), Research Data Infrastructures in the UK: Landscape Report [online]. Available at: https://www.universitiesuk.ac.uk/policy-and-analysis/research-policy/open-science/Documents/ORDTF%20report%20nr%201%20final%2030%2006%202017.pdf [Accessed 29 August 2018]

Knight, G., (2015). 'Building a research data management service for the London school of hygiene & tropical medicine. Program: electronic library and information systems, 49(4), pp.424–439.

Latham, B. (2017), 'Research Data Management. Defining Roles, Prioritizing Services, and Enumerating Challenges', The Journal of Academic Librarianship, Vol.43 No.3, pp. 263–265.

Lyon, L. (2012), 'The Informatics Transform. Re-Engineering Libraries for the Data Decade', International Journal of Digital Curation, Vol. 7 No. 1, pp. 126–138.

Martin, C., (2014), ‘Barriers to the Open Government Data Agenda: Taking a Multi-Level Perspective’, Policy & Internet, 6(3), pp.217–240.

McKnight, S., (2010). Envisioning future academic library services: initiatives, ideas and challenges / edited by Sue McKnight, London: Facet.

Mcleod, J., (2012), ‘Thoughts on the opportunities for records professionals of the open access, open data agenda’, Records Management Journal, 22(2), pp.92–97.

Mero-Jaffe, I., (2011), ‘Is that what I Said?’ Interview Transcript Approval by Participants: An Aspect of Ethics in Qualitative Research, International Journal of Qualitative Methods, 10(3), pp.231–247.

MRC (2017), MRC Regulatory Support Centre: Retention framework for research data and records [online]. Available at: https://mrc.ukri.org/documents/pdf/retention-framework-for-research-data-and-records/ [Accessed 20 August 2018]

Oliver, D.G., Serovich, J.M. & Mason, T.L., (2005), ‘Constraints and Opportunities with Interview Transcription: Towards Reflection in Qualitative Research’, Social Forces, 84(2), pp.1273–1289.

Palinkas, L.A., Horwitz, S.M., Green, C.A., Wisdom, J.P., Duan, N. and Hoagwood, K. (2015), ‘Purposeful Sampling for Qualitative Data Collection and Analysis in Mixed Method Implementation Research’, Administration and policy in mental health, Vol. 42 No. 5, pp. 533–544.

Pickard, A.J., (2013), Research methods in information, London, Facet

Pinfield, S., Cox, A.M. and Smith, J. (2014), ‘Research data management and libraries. Relationships, activities, drivers and influences’, PloS one, Vol. 9 No. 12, e114734.

Pryor, G., (2012), Managing research data / edited by Graham Pryor, London, Facet.

Pryor, G., Jones, S., Whyte, A., (2014), Delivering research data management services: fundamentals of good practice, London, Facet

Rouse, R. (2017), RDG 09-46 RCUK Strategic Framework Update [online]. Available at https://www.ukri.org/files/legacy/documents/oa-faqs-sept-17-pdf/ [Accessed 29 August 2018]

Schellenberg, T.R. (1975), Modern archives: Principles and techniques, Midway Reprint, University of Chicago Press, Chicago.

Shepherd, E.J. (2013) 'Open government, open data: where is the records manager?', paper presented at First Annual Conference of ICA, Brussels, 2013. ICA [online]. Available at: https://www.ica.org/sites/default/files/AC2013_Shepherd%20paper.pdf [Accessed 29 August 2018]

Shepherd, E. (2015), 'Freedom of Information, Right to Access Information, Open Data. Who is at the Table?', The Round Table, Vol. 104 No. 6, pp. 715–726.

Surkis, A. and Read, K. (2015), 'Research data management', Journal of the Medical Library Association JMLA, Vol.103 No.3, pp. 154–156.

Tammaro, A.M., & Casarosa, V., (2014), 'Research Data Management in the Curriculum: An Interdisciplinary Approach', Procedia Computer Science, 38(C), pp.138–142.

UCL (2018) UCL Libraries. [online] Available at: https://www.ucl.ac.uk/library/sites/libraries [Accessed 20 August 2018]

Whyte, A. & Wilson, A. (2010) How to Appraise and Select Research Data for Curation. DCC How-to Guides. [online] Available at: http://www.dcc.ac.uk/resources/how-guides [Accessed 29 August 2018].

Unpublished:

Brimble, S., Flinn, A., Shepherd, E. (2016) Team Europe EU32 Project 2015-2016: The Role of the Records Manager/Records Management in an Open Government

Environment in the UK: higher education (unpublished)

Interviews

Case 1:

A - Archivist and Records Manager (2017) Unpublished interview conducted by Aisling O'Malley, 11 September

B – Research Data Manager (2017) Unpublished interview conducted by Aisling O'Malley, 6 September

Case 2:

C – Head of Research and Scholarly Communications (2018) Unpublished interview conducted by Aisling O'Malley, 27 April

D – Director, Libraries and Curriculum Support (2018) Unpublished interview conducted by Aisling O'Malley, 19 January

E – Senior Records Manager (2018) Unpublished interview conducted by Aisling O'Malley, 12 February

Case 3:

F – Head of Records (2018) Unpublished interview conducted by Aisling O'Malley, 2 May

G – Research Data Officer (2018) Unpublished interview conducted by Aisling O'Malley, 12 February

H – Head of Research Data Services (2018) Unpublished interview conducted by Aisling O'Malley, 15 February

List of Tables and Illustrations:

Figure 1 – Organisational Chart: Case 1 – Library and Archives Service

Figure 2 – Organisational Chart: Case 3 - Information Services Division

Figure 3 – Organisational Chart: Case 3 – Library Services

Figure 4 - DCC Curation Lifecycle Model

Appendix A– Interview Schedule

Case 1

Job Title	Identifier	Date	Time	Further Information
Archivist and Records Manager	A	11/09/2017	1:03:21	Qualified Archivist and Records Manager. Set up the archives and records management service and helped establish the RDM service at Case 1 with participant D.
Research Data Manager (1st Interview)	B	06/09/2017	54:45	Does not have a library or recordkeeping background, instead has experience in digital curation and preservation.
Research Data Manager (2nd Interview)		06/09/2017	37:21	

Case 2

Job Title	Identifier	Date	Time	Further Information
Head of Research and Scholarly Communications	C	27/04/2018	0:58:54	Qualified librarian, but, as part of their postgraduate degree, completed some archives and records management modules.
Director, Libraries and Curriculum Support	D	19/01/2018	1:05:28:9	Qualified librarian who was once the Head of Library and Archives Service at Case 1 where they helped establish the

				RDM service at Case 1, working with participant A.
Senior Records Manager	E	12/02/2018	1:06:52	Qualified archivist and records manager.

Case 3

Job Title	**Identifier**	**Date**	**Time**	**Further Information**
Head of Records	F	02/05/2018	1:16:43	Qualified archivist and records manager.
Research Data Officer	G	12/02/2018	1:01:36	Not a qualified librarian or recordkeeper, has experience working in both environments. Comes from a research background.
Head of Research Data Services	H	15/02/2018	0:49:16	Comes from a research background in humanities, neither a qualified librarian or recordkeeper.