Virtual Reading Rooms and Virtual Teaching Spaces in collection holding institutions

An RLUK report on current and future developments

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VIRTUAL READING ROOMS AND VIRTUAL TEACHING SPACES IN COLLECTION HOLDING INSTITUTIONS

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This report presents the results of a survey launched by Research Libraries UK (RLUK), in collaboration with members of the International Alliance of Research Library Associations (IARLA), to explore the most recent developments and innovations in the area of Virtual Reading Rooms (VRRs) and Virtual Teaching Spaces (VTSs). RLUK would especially like to thank the members of the IARLA VRR Working Group for their support and feedback during the development of this work.

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EXECUTIVE SUMMARY

This report presents the results of a recent survey launched by Research Libraries UK (RLUK), in collaboration with members of the International Alliance of Research Library Associations (IARLA). The aim of this work was to document the most recent developments and innovations in the development and delivery of Virtual Reading Rooms (VRRs) and Virtual Teaching Spaces (VTSs) by collection-holding institutions internationally. It informs an ongoing piece of research being undertaken by RLUK regarding the potential of VRRs as digital research infrastructure and the possibilities and benefits of undertaking a networked approach.

As the previous RLUK work on VRRs and VTSs (Greenhall, 2021) showed, remote technologies were employed by many collection-holding institutions as an emergency response to the challenges imposed by the Covid-19 pandemic. As academics, researchers, and students were prevented from getting physical access to collections due to the closure of libraries and archives, VRRs and VTSs constituted an alternative way of accessing physical materials digitally, without relying on digitisation.

As our findings revealed, the re-opening of on-site operations has seen many institutions continuing to run VRRs and VTSs alongside physical processes and activities. Although demand for virtual sessions has slowed down as academics, students and other users are currently able to visit physically, institutions are now more aware of the potential of VRRs and VTSs to make collections available to various audience groups as well as facilitate research and learning as bespoke services. Therefore, it is not surprising that more institutions internationally are planning to launch their VRRs and VTSs in the immediate future.

Through this work, we were able to document the current progress and plans for future activity around VRRs and VTSs in institutions within the RLUK membership and beyond. More specifically, participants in this study shared information around the establishment of their VRR and VTS services, including the various requirements for running them as well as the challenges that need to be overcome. Moreover, they discussed current practices and procedures for connecting and working with researchers and other members of their user communities through remote technologies.

The results of this study also captured the impact of VRRs and VTSs on other institutional procedures and practices, such as digitisation, as they increasingly become integrated into the existing service offering of institutions. As part of turning VRRs and VTSs into established services, many libraries and archives are planning to deploy them in the context of blended and hybrid programmes of activity. Although this approach has the potential to contribute to the sustainability of VRR and VTS services, it brings to the fore resourcing and skills development requirements as well as issues around user experience. Finally, participants reflected on the possibility of cross-institutional collaboration around VRRs, something that was recognised as beneficial for institutions and user communities alike.
**HEADLINE FINDINGS**

Responses were received by 22 different institutions internationally which either had developed VRRs and VTSs or intended to launch their services soon. The headline findings based on these responses, which are fully discussed later in this report, are presented below:

**Inclusive audience engagement through collections**

Similar to the previous RLUK report (Greenhall, 2021), special and archive collections were the types of material most readily available for users to consult through VRRs and VTSs. Yet, our findings showed that institutions increasingly consider using a broader range of collection holdings (e.g. objects and artefacts, non-special collections) to widen the reach of collections and engage with a variety of audience groups. For example, apart from academics and students, several institutions were found to engage with community groups and members of the public. It also became evident that the use of remote technologies can greatly benefit specific categories of users, such as remote researchers and learners, users with mobility issues, users concerned about travel (including environmental impact) and cost.

**The hybrid/ blended approach**

Many institutions in this study are aiming to run and further develop VRRs and VTSs alongside on-site operations. Following the shift towards more hybrid and blended approaches in working and learning practices, several libraries and archives are also considering the option of delivering blended and hybrid sessions. Even though this approach can facilitate sustainability, it was discovered that certain issues will need to be taken into account in order to run the services successfully in this context. Housing the services in suitable, flexible spaces which allow for the necessary equipment to be used is essential. Other potential issues that will need to be addressed when planning for the delivery of hybrid or blended sessions include: the possible increase in staff workload; the need for skills training or the development of new staffing models; and the parity of experience for users in both virtual and physical environments.

**VRR and VTS sustainability**

From emergent services, VRRs and VTSs increasingly become integrated into the existing service offering of institutions as a way of ensuring their sustainability and further development. This is also achieved through embedding related practices and procedures in policies and strategic plans (e.g. around digitisation) or, especially in the case of VTSs, through embedding the services into the curriculum. Yet, continuing to run these services alongside on-site operations or in the context of hybrid or blended programmes of activity will require streamlining resources, such as spaces and staff, as well as processes to deliver services efficiently. At the moment, most institutions are not charging for the use of VRRs and VTSs and are not costing the services in funding applications. Thinking about potential costing models can be a next step for some institutions, especially if demand for virtual sessions increases. Finally, raising awareness about the services and investing in skills development for staff constitute priorities for many institutions which have already developed or plan to develop such services.

**Skills and the role of staff**

At the early stages of the pandemic, staff from a variety of roles were involved in the development and delivery of VRR and VTS sessions. Given the emergent nature of the services at the time, a basic set of technical skills was deemed necessary. However, as VRRs and VTSs become established services and are linked to other institutional processes, additional skills will be required to further develop and run these services successfully in the future. Based on the survey findings, these ranged from a sound understanding of the collections, their needs (e.g. conservation, GDPR), and links to other processes (e.g. cataloguing, digitisation) to excellent customer service and communication skills. Since these services provide the opportunity to work closely with academics, researchers, and other members of the institutional user community, research confidence and the ability to act as a partner in research can prove valuable.
Cross-institutional collaboration

A collaborative approach to VRRs, for example through the creation of a national or international network in the area, could benefit both institutions and users. Institutional benefits can include the sharing of best practice across the sector as well as the development of skills training opportunities for staff. Additionally, partnering around similar or split holdings can lead to virtually linked collections, facilitating research and learning, and a richer range of holdings available to an international audience. Developing common practices and approaches will also lead to improved discoverability and greater consistency of experience for researchers and other users.

Giving a behind the scenes tour of Special Collections, Leeds University Library.
METHODOLOGY

Survey

For the purposes of this study, an international survey was launched by RLUK on 24th November 2021 and remained open until 24th January 2022. The survey was developed with the support of members of the IARLA VRR network and distributed internationally by RLUK’s stakeholders and partners.

The survey questionnaire was built upon the one used as part of RLUK’s previous work on VRRs and VTSs (Greenhall, 2021) to ensure that the results are comparable and can contribute to our understanding of how the services have developed since the publication of the first report. Yet, the questionnaire was adapted based on the goals of this study and more questions were added to facilitate data gathering on the most recent developments and innovations in the area. For the convenience of those participating in this work, two versions of the survey were created; a full survey for those institutions which had already developed VRRs and VTSs and a shorter version, for institutions planning to launch their VRRs and VTSs in the immediate future.

The survey aimed to explore the different aspects concerning the development and delivery of VRRs and VTSs in collection-holding institutions internationally. We were particularly interested in exploring the below areas:

• The establishment of VRRs and VTSs, including the way these services are funded.
• Current and prospective audiences for VRRs and VTSs and the way institutions are documenting and meeting their needs.
• The requirements for running these services, including equipment and spatial requirements.
• The connection between VRRs and VTSs and other institutional procedures and practices, such as digitisation.
• Staffing and skills development, including information on the evolving role of the information professional.
• The potential for cross-institutional collaboration around VRRs.
• Sustainability and future plans for VRRs and VTSs.

Compared to the previous survey, the questionnaire in the context of this study included more questions around staffing, resourcing and evaluation of VRRs and VTSs, the impact these services are having within institutions, the future of these services, and their collaborative potential.

The results from the two versions of the survey were merged during the analysis stage. During the presentation of the findings in the next chapter, and when appropriate, a comparison between the practices of institutions with developed services and those of institutions intending to launch their services is being made. Most of the graphs and charts were also created to enable the comparison between these two categories of institutions. Some of the charts, though, were developed based on the responses of all institutions participating in the study; when this is the case, explanatory remarks are included in the main text.

Finally, it should be mentioned that many of the fields in the survey were not compulsory in order to accommodate participants with different institutional circumstances. As a result, not all participating institutions answered all questions. However, during the presentation of results or their visualisation, the number of those providing an answer to the different questions is made apparent to the reader.
Definitions

Since the publication of RLUK’s last report in the area (Greenhall, 2021), more definitions of VRRs and VTSs have emerged (e.g. see Arroyo-Ramírez et al., 2021, p. 145). However, for the purposes of this study, which builds on the previous RLUK work, the definition of VRRs and VTSs as found in Greenhall (2021, p. 9) is employed:

VRRs and VTSs provide human-mediated remote digital access to collections which do not depend on digitisation. Through the use of live streaming via hi-res visualisers positioned within physical research spaces, scholars, teachers or members of the public can view and digitally engage with an institution’s heritage and cultural collections, asking for these to be positioned and repositioned by a member of staff, to enable their research. These are emerging and bespoke services which provide another means of user-responsive access to collection materials.

The next section of this report presents the results of the survey with regards to the different aspects of developing and running VRR and VTS services. A short discussion follows the presentation of the findings.

A VRR session, Newcastle University Library
SURVEY RESULTS

Participating institutions

As part of this survey, 24 responses were received. 16 institutions completed the full survey which was designed for those with established VRR and/or VTS services and 8 institutions completed the short survey which was designed for those aiming to develop VRR and/or VTS services. However, as 2 institutions provided 2 responses each, the total number of different institutions completing the survey is 22. The responses of these 2 institutions were merged.

Participants came from the library and archive sector and, geographically, they were based in institutions in the UK and Ireland, USA, and Australia. Some of the institutions participating in this survey had also completed the previous RLUK survey (stage 1) on the development and delivery of VRRs and VTSs. Yet, in this survey, there were 15 new institutions which had not participated in the previous survey, bringing the total of different participants in the RLUK work around VRRs and VTSs to 45 (32 participants in previous survey). These 45 institutions are located in the UK and Ireland, Europe, USA, and Australia.

The list of participating institutions in the stage 2 survey which either have developed VRRs and/or VTSs or plan to launch such services can be found in Table 1. All institutions gave their permission to be cited in this study.

| University of Washington Libraries (USA) | Brandeis University (USA) |
| Eton College (UK) | Glasgow University (UK) |
| Irish Jesuit Archives (Ireland) | University of Newcastle (Australia) |
| University of Nottingham (UK) | National Library of Scotland (UK) |
| University of Birmingham (UK) | University of Adelaide (Australia) |
| Bangor University (UK) | University of Southampton (UK) |
| Newcastle University (UK) | Kansas State University (USA) |
| Durham University (UK) | Keele University (UK) |
| The University of Manchester (UK) | University of St Andrews (UK) |
| Leeds University Libraries (UK) | Senate House Library, University of London (UK) |
| The Huntington Library, Art Museum, and Botanical Gardens (USA) | University of Sydney (Australia) |

Table 1 Participating Institutions

Some of the participating institutions with established VRRs and/or VTSs had completed the RLUK Special Collections and Heritage Network’s (SCHN) (previously, the RLUK Special Collections Leadership Network) survey regarding digital access to collections (January 2021). The below graph shows how many of the participating institutions were members of Research Libraries UK (RLUK) or members of other organisations.
Establishing VRRs and VTSs

Based on the survey findings, 13 institutions had a Virtual Reading Room (VRR) and 9 institutions had a Virtual Teaching Space (VTS). 9 participating institutions intended to launch a Virtual Reading Room and 10 institutions were planning to launch a Virtual Teaching Space in the immediate future. 3 institutions said that they did not have any plans to launch a VTS. The below charts show the percentage of participating institutions that have or intend to launch VRRs or VTSs.
Virtual Teaching Space (VTS)

- Have established VTS: 41%
- Intend to launch VTS: 45%
- Do not plan to offer VTS: 14%

The following chart shows the chronological development of both VRRs and VTSs. As becomes apparent, there was a good level of activity, in terms of the development of new VRR and VTS services, during the start of the academic years in 2020 and 2021. Several institutions are also planning to launch their services in the first half of 2022.
Regarding the purpose of establishing a VRR consultation service (also see chart below), the majority of institutions with developed VRRs mainly established these as a response to the Covid-19 pandemic and with the aim of delivering remote reading room sessions. On the other hand, the primary reason for most of the institutions aiming to launch their VRRs soon was to give access to remote researchers for private study, scholarship or research. It is also worth noting that 1 US institution will aim to develop a VRR service solely as a delivery method for more digitised content.

All institutions providing an answer to the question on how receptive was the budget holder to providing funding for the development of their services said that they received a positive response to their request for funding to develop VRR consultation services. As the Covid-19 pandemic unfolded, the development of these services was considered essential for many institutions in order to be able to provide access to resources for their users, something that was recognised by the budget holder. Thus, the majority of participating institutions said that they used internal funding from within their direct organisation (also, see chart below). This finding is, again, in agreement with the results of the previous RLUK report on VRRs and VTSs (Greenhall, 2021). Yet, in this research, there was a slight increase in the number of institutions saying that they will use a combination of internal and external funds to develop their VRRs.
In some cases, these services were rolled out alongside other virtual services by the Library or the University, such as the streaming of lectures and other learning sessions for schools. To further support their argument, several participating institutions highlighted the fact that VRR services could continue to be useful in the future as an alternative access method, especially for users who can not travel to visit the collections. Other reasons provided in support of developing a VRR service were the diversification of digitisation offer; the ability to capture images of large items which were hard to work with through a ceiling-mounted visualiser; streamlining of staff resources by allowing staff to provide access to collections from different locations across the library (e.g. storage spaces) and, thus, reducing the need to resource the whole reading room on particular days; examples of the benefits of using visualisers in other cases (e.g. as part of VTS services). No additional funding for staff recruitment was allocated in participating institutions as services were operated by existing staff members.

Finally, no institution has been costing their VRR or VTS services in research funding applications, but 1 participant noted that they may develop a costing model soon in response to requests from researchers submitting funding applications.

**Accessing collections through VRRs**

In all institutions with established VRRs and in the majority of those planning to establish VRRs, special and archival collections were most frequently consulted by the different audience groups or will be most readily available for users to consult (also see chart); this agrees with the findings of the previous RLUK report (Greenhall, 2021). Some of the institutions currently developing their VRR consultation services aim to also make available other types of collections, such as artefacts and objects, art works, map collections, and non-special collections to reach different types of audiences (e.g. more isolated users).

![Collections consulted or to be consulted through VRR](chart)

Most of the institutions in both categories said that they do place restrictions on the types of materials that can be consulted through VRR. This concerns mainly materials which are very large and others that cannot be shown properly through existing equipment (e.g. audio-visual), fragile items, sensitive or close access materials, material with data protection or copyright restrictions, uncatalogued material, and items on display or on loan. An institution aiming to develop a VRR service noted that there may be cases where unprocessed legacy collections may be accessible as a short cut to the transfer of large quantities of material to the reading room. Additionally, 7 institutions with developed VRRs and 4 institutions planning to develop VRRs are asking for declarations (e.g. copyright, DPA, etc.) to be signed before the use of their VRR consultation services.
Most institutions in both categories allow or will allow users to take screenshots of the consulted material and, in some cases, receive the recording of the session. This is applicable to material which will be used for the purpose of private study or research only and when there are not any restrictions on the collection that would already prohibit taking screenshots. Several institutions follow the same procedure they follow for physical visits and material consultations, while others who are not currently asking users to sign declarations will consider doing so in the future.

Audiences for VRRs

All institutions participating said that they have not placed or do not plan to place restrictions on who can use the VRR service. An institution with an established VRR service said that this is generally open to everyone, but in the case of high demand, its academic community has priority. An institution planning to develop a VRR service noted that a set of criteria may be developed. No institution with established VRR services is charging for their use. Regarding the institutions which plan to develop VRR services, 1 said that this has not been decided yet and another said that they would only charge for commercial use.

According to the survey findings (also see chart), external academics and students were the main audience groups for institutions with developed VRRs. Several institutions in this group noted that community groups and members of the public were also regular users of their VRR services. Similarly, external academics and students as well as community groups and the general public are the target audience groups for institutions aiming to launch their VRR consultation services. Compared to the previous RLUK work in the area (Greenhall, 2021), a slightly greater number of institutions reported engaging with community groups and members of the public through VRRs.

Thinking about the most frequent users of VRR services in the participating institutions (see chart below), they came mainly from the Arts & Humanities disciplines. Social sciences academics and researchers were also making good use of the services and only a small number of users from the STEM subjects were engaging with VRRs. Institutions choosing 'Other' in the survey explained that their VRR user community also included members of the general public as well as genealogists and other local/family researchers.
The reasons provided with regards to why researchers were using VRRs were usually related to travel restrictions and limitations, for example due to the Covid-19 pandemic or due to physical limitations a user might have. The high cost of travelling was also a factor, especially in the cases where the user was unsure if the collection holdings, which were often not digitally accessible, were relevant to their work and, thus, warranted an in-person visit or wanted to check small quantities of material. Some users also wanted to assess the material prior to making a digitisation request. In terms of the types of projects some of these users were involved in, these included: personal research (including PhD dissertations); online teaching; collaborative projects; exhibition and book research; and non-academic uses including family history, TV research, artistic research.

Apart from that, 2 UK and 1 US institutions with developed VRR consultation services mentioned that, in the past, they have informally trained researchers to use the VRR technology kit to facilitate their own research or run their own teaching. VRR technology was described as low key and informal, compared with the VTS technology used by some institutions, which increases the potential of it being operated by researchers. However, there may be conditions for its use, such as in the case of 1 institution where a more formal arrangement was required for use of the ceiling mounted camera. Another institution based in the US said that, even though they have equipment available for curators and other teaching staff to teach virtually, they can not expand the offering to researchers as other departments handle equipment loans.

Generally, it was reported that there is a good level of appetite for these services which, in many cases, has remained stable as libraries and archives are re-opening their physical spaces. VRR services have been valuable during the pandemic when institutions were under lockdown and, since then, they have been proven particularly useful for external researchers who can not visit in-person, academic staff delivering virtual teaching sessions, as well as members of the public. However, many survey participants highlighted that, whenever possible, researchers (especially internal academics) prefer to visit in-person to consult the physical material. A respondent from a UK institution commented that VRR services seemed to be more appealing to users with no or little experience in working with physical collections and archives, such as undergraduate students. Thus, as next steps, some institutions are planning to focus promoting their VRR services to those user groups which find them most useful. There was only 1 institution which said that demand is very high and, as a result, they will need to expand their services. On the other hand, 4 institutions noted that uptake has been quite low, while 1 institution with a relatively new VRR service highlighted the need to further invest in its development to increase uptake.
Thinking about the institutions intending to launch VRR services, several institutions are expecting a modest to good level of appetite for these services once launched as they have already received requests for appointments. Some institutions are also actively planning to develop a better understanding of the level of appetite for these services, raise greater awareness and reach new audiences.

Almost half of the institutions (6 institutions) with developed VRR services had consulted with their user communities, mainly informally (e.g. through email, feedback forms, verbal feedback, virtual meetings) to determine the development and delivery of their VVRs. Professionals at 1 participating institution with a developed VRR service had attended seminars and a workshop to better understand what services they should offer. Some of the remaining libraries and archives noted that they plan to consult with their user communities, especially as to how to improve and develop further their offering. Only 1 institution planning to develop a VRR service mentioned being currently in consultation with potential users. Yet, some of the other participants said that they plan to consult with their prospective user community.

Delivering VRR sessions

According to the survey results (see below graph), mobile visualisers and, then, fixed visualisers were the most popular equipment used by those with developed VRR and VTS services. Mobile visualisers were also the preferred equipment by institutions intending to develop VRR and VTS services, with mobile and adjustable lighting and static visualisers being also popular choices. Based on the participants’ comments, visualisers, cameras as well as other equipment, such as laptops were in most institutional cases new and especially bought during the development of the services. There were two cases where part of the equipment was re-purposed or acquired on loan.

![Which of the following do/will you use to deliver your VRR and VTS services?](chart.png)
Regarding the use of visualisers and whether this differed between VRRs and VTSs, 9 institutions replied that it does not or will not, while 7 institutions said that it does or will differ. Some in the latter category explained how different equipment is used or will going to be used for VRR services. For example, staff in one of the participating institutions with developed VRR and VTS services use a desktop visualiser during the VRR consultation service and a variety of cameras for the VTS service. In another institution of the same category, staff use the overhead camera more during the VRR service and have a front facing camera separate to the integrated laptop in VTS. A respondent from a library planning to develop both VRR and VTS services said that they aim to use a fixed visualiser with a limited size of capture in the VTS as this is integral to the hybrid or blended learning experiences of students. On the other hand, a portable visualiser and a fixed-ceiling visualiser will be used as part of delivering their VRR service. However, as it became apparent through the answer of an institution with developed VRR and VTS services, there is space for flexibility if required; their VTS ceiling / trolley mounted camera can sometimes be re-purposed for the VRR service (e.g. when larger items are involved).

All participating institutions in this survey used or were planning to use Zoom or MS Teams to establish a connection with their VRR users (see below chart). There was a slight preference over Zoom amongst participants regardless of whether they had developed or were planning to develop a VRR service. It is worth noting, though, that several institutions used both Zoom and MS Teams. In 2 institutions with a developed VRR service, Blackboard was used on top of Zoom and MS Teams to connect with users. A respondent from 1 US institution aiming to develop a VRR service said that they were considering using CiscoWebex and a bespoke and specifically designed platform, on top of Zoom and MS Teams.
Concerning the number of users that institutions were able or were planning to accommodate simultaneously (see graph below), most institutions said that they can accommodate 1 user at a time, with some libraries and archives being able to accommodate 2-3 users at a time. Regarding the number of VRR users per month for institutions with established VRRs, this varied greatly. It could range from 1-2 users to 44 users per month, with the majority of institutions accommodating less than 10 users per month. The total number of researchers accommodated through VRRs since the launch of services across the different institutions also varied, from below 10 to almost 300 users. In some cases, the number of appointments was higher than the number of researchers, since some of the users attended multiple appointments.

Additionally, most participating institutions said that the average user session can last up to an hour, while in two cases of institutions with developed VRR services the average user session lasted for more than 1 hour. Respondents from 2 institutions said that the length of a session varies greatly depending on user and use.

Capacity was also sufficient to meet demand in most cases, apart from 1 US institution (44 users per month) which may need to invest in more equipment to run two sessions simultaneously and train more staff in the future. According to most of the participants, these numbers were very small compared to the number of users they accommodate physically every day during normal times. Hence, a respondent from a UK institution commented that the re-opening of physical spaces may put a strain on capacity allocated for the operation of VRR services.
As shown above, libraries and archives participating in this survey also reported on the methods used or planned to be used to evaluate the experience of VRR users. Thinking about the institutions with developed VRRs, several were found to use or plan to use the evaluation findings, especially positive ones, as justification of requesting or buying more resources (e.g. equipment). Apart from that, findings were used for the general improvement of the delivery of services, including to fix sound or lighting issues, adjust the camera height, change document angle, or choice of platform (e.g. Zoom or MS Teams). In 1 institution, the evaluation findings were used to improve their guidance for researchers using the service and to make the procedures as hassle-free as possible.

The evolving role of research library staff

From the total of those participating in this survey, 7 institutions said that they expect the delivery of VRR services to change the role of special collections, archives, or museum staff in the research process. The rest of participants answered that it is too early still to tell. However, further comments provided by both those who said that they expect the delivery of VRR services to change the role of staff currently involved in the process and those who said they were not sure yet revealed that change is already happening. Through describing the process of delivering a VRR session, including the preparation that is often needed by staff and the actions that follow the session, it is evident that the responsibilities of special collections, archives and other curatorial and reading staff have increased. Their role goes beyond the delivery of a VRR session to include research and advisory responsibilities with the goal of facilitating the user’s research as well as greater involvement in reading room services, something that may be outside the normal duties for some staff members.

Regarding the research support they provide during the delivery of VRR services, several of the participants argued that they are becoming directly involved in the research process in a number of ways: by preparing for the session and conducting their own research on the topic/ material to be consulted; by pointing at the details in collection items and conversing and interacting with researchers about their projects or the content, size, and handwriting in material; or by recommending other related materials and repositories. Hence, the responsibilities that staff members have during the delivery of VRR services are much more complex compared to the process followed during a usual in-person visit to a reading room which simply entails retrieving and delivering material for researchers. As one of our participants from a UK institution argued, the fact that staff end up needing to understand the subject matter of the researcher, through becoming a research assistant, also changes researcher expectations as they become used to being able to view material virtually. As was reported, some staff members may feel uncomfortable through this direct involvement in research and, thus, only certain staff members may undertake these responsibilities in some institutions.

Several participants expected that a good number of users will continue to use the VRR consultation services, especially users who are not able to travel for an in-person visit to the collections, or may not be able to afford copies or researchers for hire. It was suggested that if the user audience increase, so will the workload, and more staff will need to be recruited as the process can be very time-consuming. In some cases, some technical upskilling may also be needed. Generally speaking, as it was also apparent through the results of the RLUK stage 1 survey (Greenhall, 2021, p. 25), this is another route through which library staff can become increasingly involved in the research process as active participants or potential partners. More training and opportunities to develop their research skills, alongside other required training (e.g. technical), will prove beneficial for staff member who are involved in the delivery of VRR consultation services.
Virtual Teaching Spaces (VTSs)

Based on our findings, there were different approaches as to how VTSs were operated in terms of the places where they were located, the equipment that was used, and the staff members and processes involved. From the total of participants in this survey who have developed or intend to develop VTS services, 2 said that their VTS service is basically the same with their VRR service and 6 said that their VTS services are currently co-located or will be co-located with their VRR service. In 1 participating institution, the same space and equipment is used for both the VRR and VTS services, but the booking system for the VTS is separate. 3 institutions said that their VTS services were separate from the VRR services in terms of the used space or equipment, while 2 said that their VRR and VTS services were completely distinct and separate in terms of the use of space, equipment or staff members operating them. 1 institution aiming to develop a VTS service said that they were not sure yet about whether their VTS service will be distinct and separate from the VRR service. When asked about whether there is a fee for using their VTS services, the majority of institutions said they are not charging for their use, apart from 1 institution with developed VTS service and 1 which aims to develop a VTS service that said there is/will be a fee for some users, such as external groups.

Regarding the frequency of use of VTS services per month, this varied across the institutions which have already launched their service. The majority held less than 10 sessions per month as some explained that VTS is often an as-needed service and demand-led. However, there was 1 UK institution which noted that in the first semester of 2021-2022 alone they hosted over 30 sessions.

**Users of VTSs**

Based on the answers of 10 institutions which have or plan to launch a VTS service and which provided an answer to the question about which disciplines are the most frequent or significant users of VTSs, VTS services were most heavily used by academics in the broader Arts & Humanities area (also see chart above). Regarding external users, engagement with VTS services was found to be limited with some institutions offering few sessions to schools and, in one case, to international partners. However, several participants mentioned that are currently in talks with or plan to approach external groups, such as community members, alumni, or donors to promote their VTS services.
From the participants who completed the question (14 institutions) on whether their current/planned VTS services are/will be integrated into the curriculum design (e.g. through setting up core learning activities, assessments), the majority said that this is indeed happening in some disciplinary areas (see chart above). Thus, compared to the findings of the previous RLUK work (Greenhall, 2021, p. 18), it became apparent in this survey that VTSs are turning into established services and become integrated into the existing institutional offering. Yet, there were a few respondents who said that it is still too early to say.

The aspiration of many participating institutions which currently offer or plan to offer VTS services to their users is that, when these services become included in the curriculum, greater and more efficient engagement with large cohorts of users, especially students, will be achieved at an earlier stage. Through this engagement, there is significant potential to widen the reach of special collections and archives, by enabling a large number of students to participate in collection-based seminars and, thus, integrate primary source familiarity at an earlier stage. Easy digital access and interaction through VTS services may also make special collection and archive material more appealing to groups of students who are comfortable with digital learning and work, but who may not normally come to the reading room in-person to consult these resources.

Moreover, the potential for remote learning, across national boundaries, with equal access to materials for all students was recognised by many survey respondents. As hybrid and blended teaching and learning are becoming more popular, the experience of engaging with and seeing up close primary material will also become more equal for virtual and in-person users. Successful delivery of VTS services and positive user experience may lead to the increase in the availability of modules employing the services and, accordingly, to the number of virtual users, limiting the impact on the physical campus.

However, and as one participant noted, blended learning and hybrid classes through VTS services may, at this point, still be limited by room capacity as original materials are available and in use. Yet, the ability offered by virtual learning environments to create synchronous and asynchronous content can reduce the workload for library staff by limiting the need to run the same session multiple times. Finally, a comment by another respondent highlighted the need to give consideration to the balance of materials used through VTS sessions as some, which may be more accessible and work well in online spaces, may end up being used more, while others, a lot less.
Digitisation and content creation

As shown below, most participating institutions offer digitisation on demand services.

The majority of libraries and archives completing the survey (see chart below) said that sometimes they undertake opportunistic digitisation of material consulted during their VRR sessions (as was also found in Greenhall, 2021, p.17). Thinking about whether VRR and VTS services have affected the digitisation and/or cataloguing priorities of participating research libraries and archives, only two institutions said that these have had a clear impact on their practices.

In 1 institution, the development of VRR services has informed their cataloguing practices. Another said that online teaching and learning has led to large-scale digitisation of material which, in turn, has had an impact on cataloguing practices, especially given that at the same time other activities to support digital access were conducted which required data clean-up and re-cataloguing. The respondent from 1 institution which aim to fully launch a VTS service soon said that they expect this to have an impact on digitisation and cataloguing. Others (3 institutions) saw some slight increase in digitisation activity and demand in high-resolution scans from users, but this has not affected their practices drastically. Lastly, 8 institutions replied that current VRR and VTS activity has either not changed their priorities, or it is too soon tell, but in some cases it might.
From those participating in this study, 4 institutions (2 UK, 1 Irish, 1 US) are willing to share their approach to digital content creation through an event, workshop, or seminar and 2 institutions (1 UK, 1 US) through either an event, workshop, or seminar, a written or video case study or through sharing of any revised strategies. 1 Australian institution would be happy to share their approach once they have established their services and done some initial assessment.

Most respondents participating in this study said that their institutions are currently revising or may revise their digitisation strategies in light of the VRR activity over the past year (see above chart). Yet, there were several participants who said that this will not happen. There were 2 participants who chose other; 1 institution planning to develop a VRR service said that they are currently working on a new digitisation strategy but did not specify whether they will take into account future VRR activity; 1 institution with a developed VRR service said that VRR developments will be incorporated into the broader strategy for their Archives and Special Collections service.

Spaces for VRRs and VTSs

As it becomes apparent through the below graph, the location where VRR services were based varied widely across institutions. In 4 libraries and archives with developed VRR services, VRR sessions were delivered at multiple locations through using mobile visualisers. In 3 institutions the VRR services were situated within existing reading rooms and, in 3 others, in re-purposed spaces. 1 institution was using the same space where their VTS service was located, while 1 participant who chose ‘other’ said that they use a study room next to their reading room. Another said that VRR sessions are usually delivered from an office. Regarding institutions with plans to develop VRR services, 4 said that these will be based within their existing reading room. From the 4 institutions in this category choosing ‘other’, 2 said that they will be delivering VRR sessions through a visualiser fixed in a specific room, but also using mobile visualisers in other rooms or stores. In the other 2 cases, the location of the VRR services was to be decided. No institution used a dedicated space, specifically designed for the delivery of VRR services.
Concerning the rationale for choosing a location for VRR services (see below graph), most institutions with developed services regarded availability of a space that was appropriate for the purpose of use as the main factor for situating their services. Adaptability of space and security were also important considerations. Institutions aiming to develop VRR services were mostly looking for an available space which will ideally be adjacent to the collection store and which will offer the services required for delivering their VRR sessions. 1 institution with an established VRR service said that staff are using their desks as the place from which they deliver VRR sessions. When asked about whether the currently chosen spaces where their VRRs are located will be the permanent homes for the services, only 2 institutions with developed VRRs and 1 institution aiming to launch a VRR service said that these will indeed be the permanent locations for their services. Most libraries and archives participating in this survey said that this was still undecided (as also in Greenhall, 2021, p. 21), while there were also a few negative answers to the question.
Similar to the VRR services, the locations of VTS services varied across institutions (see below graph). From the group of institutions with developed VTS services, 3 said that their VTS services are situated in the same room as their VRR services, while 2 said that they are based in a re-purposed space. 1 institution used a dedicated space, specifically designed for this use, while in another institution, VTS sessions were delivered from multiple locations. Regarding libraries and archives working towards developing a VTS service, 2 aimed to use the same location as their virtual reading room, 1 planned to situate their VTS service within an existing teaching space/classroom, 1 will use a re-purposed space, and another will be delivering VTS sessions from multiple locations. Despite no institution from this group selecting the option of a dedicated space, 1 institution which replied 'other', further explained that they will be using a new dedicated teaching space, which has been designed to deliver physical, virtual and hybrid sessions, adjoining their reading room. The majority will be willing to share images or plans of the location of their VRRs or VTSs with the community.

The key factor for choosing a space to locate VTS services, both in institutions with developed services and those intending to develop them, was the availability of an appropriate space. Several institutions with developed VTS services also considered the adaptability of the space to be an important factor influencing the rationale for choosing it. Interestingly, the below graph shows that several institutions from the group aiming to develop VTS services were taking into consideration some additional factors, such as good acoustics, lighting, and thermal controls, as well as adjacency to research centres or departments when choosing a space to situate these.

The fact that these additional factors were not considered a priority for the institutions with developed VTS services probably reflects the urgent manner in which these services were created to respond to demand for virtual teaching sessions during the peak of the Covid-19 pandemic. On the other hand, libraries and archives currently planning the development of their VTS services are taking a more holistic approach to the selection of space, possibly taking into account the current shift towards more hybrid and blended teaching and learning. It is also worth noting that some of them are considering situating both their VRR and VTS services in the same space, so this should be suitable for both. Only 1 institution with a developed VTS and 2 planning to develop VTSs said that their chosen spaces will be the permanent home for these services. As with the VRR services, the majority of participants were still undecided and there were few negative answers to the question.
Some of the most common issues encountered in finding a place to locate VRR and VTS services mentioned by the survey respondents were related to the availability, suitability, and adaptability of spaces within institutions. These ranged from a general lack of room availability to lack of appropriate spaces that offer privacy or meet other requirements (e.g. sound quality), and can be re-purposed or adapted to facilitate the set-up and use of essential equipment during VRR and VTS sessions (e.g. possibility to set up certain types of equipment, such as ceiling visualisers, or opportunity to change the position of furniture and equipment as required). Hence, the comments provided by several participants shed more light into the decision-making process behind choosing a space for VRR and VTS services and further explain why many of the participating institutions are still undecided about which is or will be the permanent home of these services.

The resumption of onsite services, in many cases, has affected the amount of the delivered VRR and VTS sessions. Institutions started taking a number of measures to balance both virtual and on-site activity. Some introduced appointment systems to control the bookings, others reduced the number of sessions on offer to meet both physical and digital demand, while others began charging for access images to reduce the numbers using the service and release team resource for staffing the reading room and delivering physical services.

Generally, demand has been lower than during the pandemic and the possibility that researchers may not be aware that VRR and VTS services are still on offer after the resumption of on-site services was raised. Despite this, some reported an increase in the requests for scans as well as in digital visits to collections on top of in-person visits. All in all, it became apparent that participating institutions were working towards a more sustainable approach where VRRs and VTSs can be integrated into their overall offering of services to their user community. However, re-promoting the services will be needed to raise awareness and reach the audience groups that would most benefit under the current circumstances.
Responses to the question about whether VRRs and VTSs can be used alongside physical reading rooms/spaces if blended learning models were to be adopted within the sector going forward confirmed that this is generally possible with certain adjustments and, in some cases, it is already happening. This approach has the potential to break down barriers in terms of use of special collections and archives and offer new possibilities; examples provided included the ability to consult multiple collections from different spaces at once or allow multiple tutors to interact. Other types of hybrid events, which can be held by more than one institution, can also take place where visualisers will work as aides during a physical event to project details to a screen.

Based on the participants’ comments, using VRRs and VTSs successfully alongside in-person sessions will require the development or availability of suitable spaces where in-person and virtual sessions can be held, while allowing for the necessary equipment to be used. Having suitable rooms to deliver this type of hybrid sessions will ensure minimal disturbance to other staff members, users, and processes taking place in in the physical reading and other library/archive rooms. For this reason, some participating institutions have used adjacent rooms or a combination of permanent and pop-up spaces to deliver hybrid and blended sessions.

Some concerns were also raised with regards to the delivery of hybrid and blended sessions. Amongst these were the additional workload for staff members as well as the potential need for some institutions to adjust physical opening hours to accommodate growing digital services if additional resources are not provided. There were also cases where experiences with this type of sessions have been mixed both for those delivering and those attending them, especially in the virtual environment. The need to find ways to provide parity of experience for both in-person and virtual users was particularly highlighted. To achieve this, some of the participants expressed the willingness to experiment and identify what works best for their institution and users, while others have employed certain approaches to improve experience for everyone involved. Two examples mentioned are the recording of live sessions for future streaming and the offer of follow-up physical sessions for virtual users if required.
Sharing best practice across the sector as well as training opportunities to develop the necessary skills would prove beneficial for staff members during this shift towards the use of hybrid and blended environments and practices. Internal, and, potentially, external advocacy regarding the need to develop suitable spaces with appropriate equipment reflecting the change in working and learning practices, as well as to meet the current needs of staff will help raise awareness with the aim of bringing in necessary support and resources.

**Staffing and Skills**

Regarding the roles/staff responsible for the delivery of VRR or VTS services, findings showed that there were different arrangements across institutions regardless of whether these had developed VRR or VTS services or they were planning to develop them. In several research libraries and archives, staff members in a variety of roles have had the opportunity to deliver such services. Librarians, special collections and archive professionals (including assistants and administrators) as well as curatorial staff (including trained academic partners as honorary curatorial staff) and other staff members focusing on object learning were frequently mentioned to have relevant responsibilities. Public service staff and members of the reader and enquire teams as well as reference specialists and digitisation staff were also often involved in the delivery of VRR and VTS services.

It is worth noting that some institutions had different arrangements for VRR and VTS services. In one case, VRR sessions were delivered by staff responsible for research collections, including the team assistants, while academics were responsible for the VTS service with the support of staff in research collections. In another institution, reader services staff operated the VRR service and curatorial staff, in collaboration with academic colleagues, the VTS service. In a third example, special collections and rare books staff would be responsible for the VRR service, a team of research information and skills specialists would be managing the VTS service, and members of the digital collections team would also use the relevant space/infrastructure to work with others on digitisation matters. In a fourth example, curatorial staff members were closely working with academic colleagues to deliver VTS sessions.

During the peak of the Covid-19 pandemic, several institutions had to suspend or reduce on-site services and, naturally, some of the staff time was diverted to the development of the new VRR and VTS services. Yet, based on participants’ comments, this was not done to a significant scale, and most institutions have managed to re-adjust staffing resources with the resumption of on-site operations. Some of the issues encountered at the moment are related to the fact that the delivery of VRR and VTS services can take up existing spaces and time which would be normally dedicated to other activities. Under the new circumstances, where both virtual and physical sessions are often delivered, a more balanced and sustainable approach to the use of resources, including staff time, will be required, especially if demand for both types of sessions is high. For example, in the case of one institution, it was suggested that new staffing models may be required to support services introduced during the pandemic, such as VRRs and VTSs, and increased physical use due to the extended spaces.

Thinking about the skillset of the professionals working with VRRs and VTSs, they need to have a range of technical and soft skills. Main IT skills, technical confidence in following workflows and troubleshooting, the ability to use VRR (e.g. visualisers) or VTS equipment comfortably, knowledge of software and tools, such as Zoom or MS Teams, and object handing skills were some of the core technical skills needed to deliver VRR or VTS sessions. Yet, besides the technical skills, several participants noted that a good understanding of the collection items often consulted during VRR sessions or used in teaching sessions through VTS services can be very useful to be able to engage successfully with academics and researchers from a position of expertise. In some cases, particular expertise (e.g. palaeography) or deeper knowledge of the collections was needed to be able to work closely with researchers and collect necessary intelligence from them. Some examples of collection-specific skills included the ability to interpret physical features of originals, knowledge of any sensitivity and GDPR issues associated with collections, and knowledge of their conservation and technical needs.
Regarding VTS services, teaching pedagogy skills and experience of the teaching space were regarded as necessary by one participant. Finally, good presentation and communication skills as well as the ability to be flexible and adaptable, such as knowing what works best in an online environment and what in a physical space, were also essential for the successful delivery of VRR or VTS services.

Based on the above graph, the main way through which staff members in the majority of participating institutions develop the necessary skills to work with VRRs or VTSs is through informal training and skills sharing between colleagues. It is worth noting that, in most institutions currently developing VRRs, dedicated training on the use of VRR and VTS services and knowledge sharing with other institutions were also regarded as potential approaches to skills development for staff. 1 institution in this category will also take into account feedback from peers and students as part of their skills development approach, while another will aim to adapt its plan based on any skills gaps that arise.

Thinking about how staff roles are evolving for the delivery of digitisation, VRRs and VTSs, more generally, the answers provided by the participants match those describing the number of skills that professionals working in these areas should have. Given the fact that roles related to VRRs and VTSs require greater engagement with academics, researchers, and students and can have close links with other roles and activities in institutions, such as digitisation, a variety of skills is needed to perform these successfully. As described previously, these can range from a sound understanding of collections, their needs and stories they can tell, and the ability to act as an active participant in research to excellent customer service and communication skills.

Delivering VRR and VTS sessions at a time when hybrid and blended approaches to work and education become increasingly popular also requires professionals in relevant roles to be confident in their technical skills both when working in-person and remotely. Additionally, in some institutions, where digitisation is becoming more pro-active rather than re-active as a result of the impact of VRR and VTS services, staff members are expected to be aware of how frequently a collection item is used so that digitisation can be triggered. The requirement for such a broad skillset often means that people with specific expertise or more senior professionals may be more suitable for these roles; yet, due to capacity issues and the amount of time that usually needs to be devoted to the delivery of VRR and VTS sessions, staff from a variety of roles and grades may be asked to contribute to their operation.
In certain institutions, a potential increase in demand for virtual sessions alongside on-site operations would mean that either more professionals with the right skillsets need to be recruited or re-directed from other activities and/or more training opportunities for existing staff to be provided. Thus, it is no coincidence that there was such a positive reaction from institutions when asked about whether they were interested in participating in collaborative skills development programmes for staff around the development and use of VRRs and hybrid spaces, including internationally. There were also few participants willing to lead or deliver bespoke training around the development and use of VRRs to colleagues outside of their organisation. Some suggested areas included: the pragmatic and iterative development of VRR services; the delivery of VRR services and basic reference/customer services as well as the evaluation of the services based on user impact (e.g. the positive impact on users with library anxiety); and current pedagogical approaches to teaching, and object based learning.

Considering the skillsets researchers need with regards to VRR services, the majority of participants agreed that basic organisational (e.g. making appointments, checking material in advance) and IT skills (e.g. familiarity with Zoom), and the ability to communicate clearly to library staff what material they need to consult as well as any particular project needs they may have (e.g. any sensitive areas) are sufficient to make good use of the services. In some cases, openness to the experience of a virtual consultation and to the fact that the experience may be different from that of an in-person visit can also be helpful. According to some respondents, there are times when staff has to manage expectations and, depending on the confidence of the researcher, also assist them technically or provide support in the area of reference and archival research skills.

Based on the below graph, informal conversation has been the key method for establishing the skills requirements of academics or researchers using VRRs both in institutions with developed services and those which plan to launch VRRs. Using feedback forms to collect comments after the delivery of a VRR session was also a popular way to identify the skills requirements of academics and researchers across institutions.
Generally, findings showed that institutions currently planning to develop VRR services are building the collection of user feedback into the process of service development and evaluation with the aim of understanding user needs and improving VRR services. For this purpose, several institutions in this category plan to use a combination of methods for capturing user feedback at different stages of service development and provision, such as during the establishment of a VRR service, or during and after a VRR session. For example, one institution planning to launch a VRR service plans to employ user testing at the stage of development and implementation alongside conversations with academics to identify the needs of their users. Developing formal processes for testing the service and gathering feedback on user requirements is something that many institutions with developed VRR services did not necessarily have the chance or time to consider while establishing their emergency services during the Covid-19 pandemic. However, developing a better understanding of what users need under the new circumstances of hybrid and blended working and learning will be essential for the next stage of service development and improvement.

Opportunities for collaboration

Based on the survey results, most participating institutions responded favourably to the possibility of joining a national or international network of VRRs with the aim of enabling a degree of compatibility and discovery with one another. Regarding the potential benefits of a network or consortia of VRR services, respondents emphasized the sharing of knowledge and best practice as well as the opportunity to exchange ideas, experiences, and advice on a range of matters concerning the development and running of VRRs. Some of the issues raised included: technical advice; shared equipment lists and troubleshooting; sharing on innovations and projects; co-development and co-design of VRR services, including issues around procedures and policy; promotion, skills training, and procurement; collaborative funding bids; resourcing and service expectations, including fees and the level of offer; collaboration on similar or split holdings, and linking collections virtually; standardising services and raising awareness; benchmarking of evaluation; and interoperability.

Several participants also highlighted the possibilities that collaborative endeavour can bring for users, such as the opportunity to make available a richer range of holdings to a larger audience. It was also noted that the development of common practices and approaches can lead to greater consistency of the experience of VRR services for researchers and other users. Finally, apart from offering the opportunity to discuss best practices with colleagues, a VRR network could constitute a pool of professionals to direct users to if required.

Some of the barriers that may affect collaboration in a consortial context were also mentioned. These included: the different circumstances across institutions, including varying levels of demand and resourcing systems (staff and funds), technical standards, delivery methods, and equipment availability; terminology (e.g. around digitisation); different copyright and data protection laws; time zones; and competition between institutions if services are monetised. According to participants’ comments, if a consortial network aiming to address issues around VRRs was to be successful, it would need to take into account the above issues with the aim of producing work that can be scalable and relevant to different institutional circumstances. It would also need to be open and accessible, and convince institutions of the benefits of this approach. Finally, as suggested by one participating institution aiming to launch their VRR service, a funding scheme with the goal of addressing imbalances across institutions could also increase interest and encourage participation.
Based on the below graph, most libraries and archives participating in this survey said that agreed technical standards and frameworks should be the main priority of a national or international network focusing on VRRs. Collecting and showcasing examples of best practice as well as aiming to create a national directory of VRR services with the aim of improving discovery should, according to participants, also be part of the goals of such a network; it is worth noting that the former was greatly supported by institutions which have already developed their VRR services. Similarly, developing consortial approaches to training and skills development for VRR staff, along with aiming for inclusion of non-university or higher education institutions within the network were also in the five most important goals for a network of VRRs, with the former having more supporters amongst institutions aiming to launch their VRR services. Regarding the inclusion of non-university or higher education institutions within the network, it should be mentioned that this was the most popular choice in the related findings of the previous RLUK VRR and VTS report (Greenhall, 2021, p. 24). This may be due to the types of institutions that participated in the previous RLUK work, which included more non-university or higher education institutions compared to this survey. On the other hand, this finding could reflect the community spirit that was developed at the early stages of the pandemic as institutions were trying to find solutions to the challenges they faced, despite not knowing what developments lay ahead.
Participants' final reflections

Final reflections on VRRs and VTSs concerned mainly the sustainability of the services in the long term. Even though the re-opening of on-site services has reduced demand for virtual sessions in some cases, there is general confidence in the potential of VRRs and VTSs to facilitate the development and delivery of a variety of sessions and programmes, from teaching and collection consultations to replacing visiting fellowship programmes. The ability to consult and teach with library and archives material not only remotely but also cross-institutionally and internationally, while also being accessible to users with different needs and environmentally friendly were some of the main advantages and selling points for VRRs.

The learnt lessons reported by institutions which have been delivering VRR and VTS sessions for more than a year now were related to the various aspects of developing and running these services as well as to their potential to make library and archive collections accessible to a larger audience through new and innovative ways. For example, some participants referred to the technical knowledge they developed around the best types of equipment to use or their knowledge around best approaches when developing and delivering such sessions, as well as the insights they gained into how users experience collections virtually compared to the physical environment.

Finding the best way to integrate VRR and VTS services more permanently in the current offerings and promoting the services to the right audiences will be a priority for many institutions in the near future. Several of the survey participants will be directing their efforts towards the discovery or creation of better spaces, with appropriate equipment and systems (e.g. digitisation, content management, booking systems), to house their services. Ensuring that they have staff capacity (especially staff with the right skillsets) and other necessary resources, and that relevant processes are in place (e.g. required training) are also some of the key considerations for those planning to further develop, sustain, and promote their VRR and VTS services. Finally, it is worth noting that some of the participating institutions would be interested in sharing what they have learnt which will certainly be beneficial to the broader sector as well.
The development of Virtual Reading Rooms (VRRs) and Virtual Teaching Spaces (VTSs) in many collection holding institutions, including libraries and archives, constituted an emergency response to the challenges imposed by the Covid-19 pandemic. As explored during the stage 1 survey of this RLUK work (Greenhall, 2021), due to recurrent lockdowns and social distancing rules, finding alternative, digital ways to provide access to collections and archives remotely was essential. Since then, on-site operations have resumed and, as the findings of this survey (stage 2) showed, institutions are currently running or aim to run virtual consultation and teaching sessions alongside in-person services and processes.

Although demand for VRR and VTS services in most institutions has slowed down with the re-opening of on-site services, libraries and archives are now more aware of the potential that these services offer to make different types of collections accessible to various audience groups. As a result, it is not surprising that more institutions are investing in remote technologies to facilitate engagement with collections for research, teaching, and learning. Yet, promoting VRR and VTS services to the users that would most benefit from them in the post-pandemic era (e.g. remote communities, users with mobility issues, users concerned about travel, including the environmental impact, or cost) is one of the main goals for both institutions with developed VRRs and VTSs and those intending to launch their services in the immediate future.

Thus, from emergent services, VRRs and VTSs increasingly become integrated into the existing service offering of institutions as a way of ensuring their sustainability and further development. However, as reported by several participants in this study, this is not without its challenges. Even though the development of these services still benefits from low technological thresholds (as also noted in Greenhall, 2021, p. 8), running VRR and VTS sessions alongside on-site operations and in-person visits requires streamlining resources, such as spaces and staff, as well as processes to deliver services efficiently. Following the shift towards more hybrid and blended approaches in working and learning practices, many libraries and archives are also considering the option of delivering blended and hybrid sessions.

According to our findings, developing and running VRRs and VTSs successfully alongside on-site operations or in the context of hybrid and blended sessions requires the development or availability of flexible spaces which allow for the use of the necessary equipment. This is also to minimize problems caused to processes taking place elsewhere, such as in physical reading and other library/archive rooms, something that several respondents had to face frequently in the past. Regarding hybrid and blended sessions, more specifically, taking into account a possible increase in the staff workload as well as the parity of experience for users in both virtual and physical environments will also be necessary while planning for the delivery of such sessions.

As became apparent in this study, another way through which VRRs and VTSs can become integrated in the current service offering is through embedding related practices and procedures in policies and strategic plans (e.g. around collections and cataloguing, digitisation and content creation) or, especially in the case of VTSs, embedding the services into the curriculum. This approach will not only ensure sustainability, but will also make the impact of these services more visible and measurable. Providing evidence of the benefits of remote technologies to enhance the impact of collections in research and learning as well as foster activity in other areas of the library or archive will be essential for securing resources to further develop the services. Finally, it is worth noting that most institutions are still not charging for the use of VRRs and VTSs and are not costing the services in funding applications. Thus, thinking about potential costing models can be a next step for some institutions, especially if demand for virtual sessions increases.

Yet, the gradual integration of VRRs and VTSs into the current service offering and the links that are created with other practices and processes in many institutions raise the need to invest in skills development for staff. At the early stages of the development of VRRs and VTSs, when they were still considered to be emergency services, basic technical skills were deemed necessary to work with remote technologies.
Hence, staff from a variety of roles were involved in the delivery of VRR and VTS sessions. However, this report showed that a variety of additional skills will be required to further develop and run these services successfully in the future. These ranged from a sound understanding of the collections, their needs (e.g. conservation, GDPR), and links to other processes (e.g. cataloguing, digitisation) to excellent customer service and communication skills. Also, given the opportunity that these services offer to work closely with academics, researchers, and other members of the institutional user community, research confidence and the ability to act as a partner in research can prove valuable. Lastly, it is worth mentioning that running VRRs and VTSs alongside on-site operations or in the context of a hybrid/ blended session programme can require the adoption of new staffing models or the development of certain skills, such as the ability to understand what works best in each environment and provide excellent user experience for both virtual and physical users.

Finally, this report discussed the cross-institutional, collaborative potential of VRR and VTS services, for example through the creation of a national or international network focusing on VRRs. A collaborative approach to VRRs can benefit both institutions and users. Institutional benefits can include the sharing of best practice across the sector as well as the development of skills training opportunities for staff. On the other hand, partnering around similar or split holdings can lead to virtually linked collections, facilitating research and learning, and a richer range of holdings available to a global audience. Developing common practices and approaches will also lead to improved discoverability and greater consistency of experience for researchers and other users.
Virtual Reading Rooms (VRRs) and Virtual Teaching Spaces (VTSs), in many collection holding institutions, were developed as part of an emergency response to the challenges imposed by the Covid-19 pandemic. Yet, given the impact that VRRs and VTSs can have on existing processes and practices, including widening the reach of collections and facilitating research and learning, many libraries and archives continue to run the services despite the re-opening of on-site operations. As this report shows, more institutions internationally are planning to launch their VRRs and VTSs in the immediate future.

Thus, from emergent services, VRRs and VTSs become increasingly integrated into the existing service offering of institutions. As part of sustaining and further developing the services, several libraries and archives will be focusing on raising awareness about the services and engaging with the audience groups that can most benefit from the services. Exploring how to best use VRRs and VTSs in the context of hybrid and blended environments, securing the necessary resources (e.g. spaces, funds) and investing in skills development for staff also constitute priorities for many institutions which have already developed or plan to develop such services.

Finally, the potential for cross-institutional collaboration has been acknowledged by many libraries and archives. From sharing best practice and identifying training opportunities to developing common practices and partnering around split collection holdings, there are a number of areas on which collaboration and a networked approach can bring solutions to existing problems and concerns. Apart from that, national or international collaborative initiatives around VRRs will not only benefit individual institutions but will also maximise benefits for users globally.
REFERENCES


USEFUL LINKS

Below is a selection of links leading to more information on individual VRR and VTS services. These links are correct as of April 2022 and only provide a sample of those services available or emerging.

Information on VRR services:

University of Washington, US: https://cal.lib.uw.edu/reserve/virtualreadingroom
University of Nottingham, UK: https://www.nottingham.ac.uk/manuscriptsandspecialcollections/readingroom/introduction.aspx
University of Birmingham, UK: https://www.birmingham.ac.uk/facilities/cadbury/visiting.aspx
Newcastle University, UK: https://www.ncl.ac.uk/library/special-collections/use/virtual-reading-room/
Durham University, UK: https://www.durham.ac.uk/departments/library/archives-and-special-collections/using/virtual-search-room/
University of Leeds, UK: https://library.leeds.ac.uk/info/1500/special_collections
University of Glasgow, UK: https://www.gla.ac.uk/myglasgow/archivespecialcollections/consultingourcollections/

Information on VTS services:

Newcastle University, UK: https://www.ncl.ac.uk/library/special-collections/teaching-research-and-engagement/teaching/
Durham University, UK: https://www.dur.ac.uk/4schools/
University of Glasgow, UK: https://www.gla.ac.uk/myglasgow/archivespecialcollections/supportforteaching/ and https://mediaspace.gla.ac.uk/playlist/dedicated/1_362weud0/1_x75zby1x