

# Evidence Based Practice for Virtual Reality Spaces and Services: A Service Design Case Study

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*Using Evidence in Practice*

**Evidence Based Practice for Virtual Reality Spaces and Services: A Service Design Case Study**

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**Setting**

Montana State University (MSU) is a public, land-grant university located in Bozeman, Montana, the fastest growing micropolitan city in the United States (U.S. Census Bureau, 2018). MSU is one of only two universities nationwide classified both as a “Very High Research” and “Very High Undergraduate,” and it holds the Carnegie Community Engagement Classification. It is Montana’s largest university with an enrollment of 16,766 undergraduate students, 1,949 graduate students, and 619 tenured or tenure-track faculty, as of December 2019. The University’s

undergraduate enrollment grew 36 percent in the last decade. The MSU Library is centrally located on campus and is MSU’s second-most visited building. Students use the MSU Library as a home-base to study between classes and to meet with their peers. The MSU Library provides many technology resources including laptops, GoPro cameras, digital cameras, scanners, as well as technology-enhanced spaces like classrooms and group study rooms. One technology space in the MSU Library, the Cyberdiscovery Space, was initially established with the capability for data visualization and collaboration with other researchers at remote locations. Because of low

usage and support, efforts were made to make the space more appealing with small, phased upgrades to include the addition of virtual reality hardware and software for use by MSU students, faculty, and staff, and increased oversight by MSU Library employees.

Unfortunately, the space continued to see little use. In an effort to better understand the service and to increase usage, a task force was formed to reimagine the space.

This project demonstrated the use of service design, an effective method of re-envisioning the purpose of a space, which engaged multiple stakeholders to gain a shared mission and vision and cleared steps to act upon this mission and vision. Ultimately, this method can be employed by other libraries seeking to improve use of a space or service.

### **Problem**

In 2016, the MSU Library was encouraged to put in a request to fund a large, 4-monitor computer visualization wall which would allow MSU faculty, staff, and students to connect with remote users to share large data sets, explore data visualizations, and collaboratively view and edit these data. This setup was to be modelled on a space at another university with similar software and hardware. In that other configuration, though, the computer visualization wall was in a room dedicated to the hardware and had on-site staffing to assist users. In contrast to this model space, the MSU situation exhibited problems that needed to be addressed in order to design an operational service. These problems included lack of a mission and vision for the space, absence of a clear definition of the boundaries and purpose of the space, a lack of staff present in the space, and no clear responsibility or ownership for the space and its technologies.

The space examined in this study, named the Cyberdiscovery Space, is housed on the Library's first floor. In its initial setup, the Cyberdiscovery Space was loosely defined by four large computer monitors mounted on a

wall – two monitors on top and two below, along with chairs facing the display wall. This monitor setup allowed for users to display content across all four monitors as if they were one, big monitor. The seating in the area could accommodate about 20 people in chairs facing the monitors. The space was not cordoned off, so users could also sit in the chairs without interacting with the computer visualization setup in any way. A high-performance computer was hooked up to the monitors, running Sage software for visualization and sharing with remote users at other institutions also running Sage. This hardware and software were maintained by MSU University Information Technology (UIT) personnel, who are housed off-campus. While the space was intended for any MSU faculty, staff, or students to use, the on-boarding process for a new user was complex. For people to use the space, they would need an initial orientation and possible ongoing, in-person technical support. UIT staff were willing to meet with users on-demand, but were not present for any walk-in users, which was especially challenging given the Cyberdiscovery Space's central, highly visible location on the MSU Library's first floor.

Some people saw the Cyberdiscovery Space as having the potential to connect remote users for collaborative work. However, there were few people using the Sage software at MSU or elsewhere, and the openness of the space was not ideal for that type of work. Most other universities using the Sage software were doing so in labs or classroom spaces. The MSU Library did not have personnel available to support the space or the complexity of the software, so it was difficult to know how to manage or promote the space and understand its purpose.

As a result of the lack of resources and clear purpose, the Cyberdiscovery Space saw little use and largely languished in its first year and a half. Additionally, MSU's rapid growth in enrollment has not been accompanied by a growth in the size of the Library. Given the Library's central location and its use by

students across disciplines, the Library needs to ensure all Library spaces are meeting the needs of its users. The Cyberdiscovery Space was observably and evidentially not being used and was not clearly defined in its purpose. Eventually, the UIT staff who did provide some support the space left the MSU or were assigned to new units. This situation and the desire to have better use of the space offered the opportunity for the MSU Library to assume responsibility of the space and explore other modes of use.

Experience from the initial launch showed that the entry into using the Sage software was too complex for the Library to provide enough tech support. So instead, the Library decided to focus on the visualization wall and large presentation capabilities of the space using the native Windows OS environment. This made it much easier for walk-up use of the space without the need for extensive orientation and training. The space got some use for Library-sponsored talks by speakers who incorporated the visualization display as part of their presentations, but it still did not get much use beyond that.

In another attempt to use the space and explore emerging technologies, the Library purchased a virtual reality (VR) headset to use in the Cyberdiscovery Space. Digital Library Initiatives (DLI) staff were the primary users of and support for VR and, in this phase, were only available to work with users on VR by appointment.

Still, a lack of clear vision and mission for the space led to general confusion about its purpose, who provided support for and could use it, and what you could do in the space. With limited signage and few champions, usage remained low.

### **Evidence**

In an effort to apply an evidenced-based approach to improving the new space, the Library collected and analyzed data from the following five sources: usage statistics, web

analytics, conversations with library personnel, a literature review related to organizational mission and vision, and a participatory service design activity.

When the Cyberdiscovery Space was initially created, the Library set up a reservation system on the space's accompanying website for users, which was advertised through promotional materials and signage. While there had been observably low use of the space, this low use was verified by looking at reservation statistics. In the first semester of use, August 15-December 31, 2017, there were only nine reservations. In the same timeframe the following year, 2018, there were only 13 reservations. Similarly, hits on the website for the same time periods were low with 27 sessions (2017) and 34 sessions (2018). In addition, regular walkthroughs of library to get counts of when people were using spaces at various times of the semester showed that people were regularly sitting in the Cyberdiscovery Space seats to study, but the Cyberdiscovery Space technologies were rarely turned on or in use. Additionally, staff repeatedly expressed concern with a lack of understanding of purpose of the space and how to support it when a user asked about it. Library staff felt these low numbers of reservations, low web traffic, and qualitative staff comments were adequate prompts for us to reconsider use of the space.

The literature suggests that creating a mission and vision for library spaces in alignment with the library's overall mission and vision will create a shared understanding of their purpose and will lead to clearer messaging to library users (Kuchi 2006; Rossmann, 2019; Welch & Wyatt-Baker, 2018). The literature also encourages involving stakeholders in grassroots efforts to develop a plan, mission, and vision for library spaces and services (Casey, 2015; Wójcik, 2019). MSU Library leadership decided to form a group to re-envision the mission and vision of the space and a plan for how that information would be conveyed to library users and staff.

### *Task Force*

Data collected from usage statistics, web analytics, informal staff interviews, and the literature indicated that the new space would benefit from improved operational cohesion and a more intentional service design that included input from the various staff members who deliver the service. With this evidence, in May 2019, the Head of DLI brought together a group of potential stakeholders in the Cyberdiscovery Space to form a task force with a mandate to make the space more useful and to have more known value. Members of the task force were asked to commit to a weekly meeting where they would initially set a mission and vision, then identify tasks that needed to be completed, and finally, report progress on completing those tasks. The task force's work would end in mid-August 2019 in time for the beginning of the Fall semester with an official re-launch and re-branding of the space. The task force consisted of 12 people, including Instruction Librarians, Learning and Research Services (i.e., circulation and reference), faculty and staff, DLI faculty and staff, Library marketing staff, and the User Experience & Assessment Librarian.

### *Service Design*

A service design lens was applied to help guide the collaborative work of the task force. Service design is a holistic, human-centered approach to service co-creation (Marquez & Downey, 2016). The service design process is interested in evaluating and improving all aspects of a library service operation. Importantly for a diverse group of library and IT staff, service design can help build empathy and shared understanding across departments and functional units (Gasparini, 2015). In applying the service design framework to the Cyberdiscovery Space, the aim was to build empathy for the various people involved in delivering and using the service, as well as to generate operational evidence that supports decision-making to improve the service.

The service design process was focused around a participatory workshop. Workshop participants included library staff who support and deliver the service. The goal of the workshop was to produce a shared understanding of the Cyberdiscovery Space that could then inform a clear mission and vision statement for the service. Participants were formed into small groups of three, and were asked to respond to the following prompts:

“How does the Cyberdiscovery Space help us achieve our mission and strategic plan?”

“Write a Values Statement for the Cyberdiscovery Space”

“List 3 use cases for faculty in the Cyberdiscovery Space”

“List 3 use cases for students in the Cyberdiscovery Space”

Participants then shared their responses in their small groups and selected the top answers to each of these questions. Each small group reported back to the whole group about their top choices. As a part of this exercise, the current MSU Library vision statement, mission statement, values statement, and strategic plan were provided to participants. Those statements and plan had recently been developed with participation from all MSU Library employees, so the exercise was well-suited to adopt ideas from the statements and plans into language for the Cyberdiscovery Space.

These results were then given to the Head of DLI to synthesize into mission and vision statements for the space and to provide use-cases which could be listed on the Cyberdiscovery Space website as talking points with faculty and students and MSU Library employees. The service design workshop resulted in improved team cohesion through the participatory process, and a strengthened message for communicating the service to internal and external audiences. Ultimately, the service design process helped

generate a shared mission and vision about the purpose and use of the space.

### Implementation

Using the new mission and vision statement as a guide for the purpose of the space, the task force identified what needed to be done to get the space ready in time for the Fall semester. The tasks were then distributed among members of the task force and, each week, members reported their progress on, and eventual completion of each task. The completed tasks include:

- Ordered and installed partitions with translucent panels in the upper part to define the space and provide more privacy for VR users;
- Renamed the space to Virtual Discovery Space;
- Entered VR equipment into the Library's checkout system;
- Setup a location for storing VR equipment when not in use;
- Established circulation policies;
- Created new signage and updated website;
- Purchased a second VR headset for further testing;
- Hired a student assistant to staff the space for events, orientations, promotion, troubleshooting;
- Developed a central landing page for all VR at the University to reflect spaces, resources, courses, and personnel involved with VR.

The group met their goal of finishing all these projects in time for the start of the Fall semester.

### Outcome

The User Experience & Assessment Librarian and the Head of DLI established some initial

measures of assessment of the space. An immediate measure was user feedback of the space. A flip chart was presented to users as they entered and exited the space, along with sticky-notes and a pen. The flip chart offered questions like "What did you like most about your experience here?", "What did you like least about your experience here?", "What was most surprising about your visit today?", "What would you want in the future for this space?", "Describe your experience here today in one word or phrase", "What did you learn here today?", "What are you still confused about in this space?", "Are you more prepared than when you arrived here (smiley or frowny face)?"

Based on feedback to these questions, some modifications were made to the space:

- Added an odor-absorbing container during warmer months
- Added an oscillating fan
- Created a user manual
- Created a user-orientation tutorial video
- Added signage with brief instructions and contact information
- Started checking the space daily for technical issues
- Added some new VR apps based on user requests
- Provided VR headset cleaning wipes

While there had been observed low use of the space prior to this project, a significant increase in use of the space was verified by tallying the number of reservations made through the Library's website. Comparing the use over the same timeframe of August 15-December 31 in 2017, 2018, and now in 2019, there were 9, 13, and 135 uses, respectively. Similarly, hits on the website for the same periods increased significantly with 27 sessions (2017), 34 sessions (2018) and 143 sessions (2019). In addition to other use of the space, four faculty members incorporated use of the space in their classes in Spring 2020.

## Reflection

This project was fairly straightforward and would be easy to replicate with future projects and services. Ideally, when launching a new space or service, there is a clear purpose, adequate staffing, and consistent messaging. Following the principle and practices of service design can help create an inclusive, operational service. These elements were not initially present in the Cyberdiscovery Space. Bringing together people who had ideas for and interest in the space through the formation of a task force allowed for the creation of a shared mission and vision. Stakeholders were willing to participate knowing that they were part of a task force which had a clear end-date for their commitment. Signage and webpages now clearly reflect the mission and vision for the space, and Library employees can now easily articulate the purpose of the space. The biggest challenge was making a short, but intense, time commitment to get this project done over the Summer months. In the end, the project was worthwhile given the significant increase in use of the space by the Library community. There is hope that the Library will continue to build on this success.

## Conclusion

Library services are often complex, multi-stakeholder operations. Applying a service design lens to library operations can support collaboration across organizational units, leading to more opportunities for empathy-building and shared understanding. The case study in this article involves a new virtual reality space. We describe the complexity of such a service and the usefulness of implementing the new service with the intentionality and inclusivity of service design. As a result of our service design process, we improved the operation of our new virtual reality space to the benefit of both our staff and our users. We recommend service design as a methodology for other libraries looking to implement or modify a complex library service like a virtual reality space.

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