



Nov 5, 2015

## Virtual Reality User Research: Q & A

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By [Brian Essex, Ph.D.](#)

Last week, I attended the SeaVR conference in Bellevue, Washington, with fellow Blinker Ross Bohner. We were there to talk to the Virtual Reality (VR) community about the importance of optimizing the user experience of virtual reality hardware and software. We had a lot of great conversations and now would like to provide some answers to common questions we heard from those in the VR community.



Ross at the Blink Booth at SeaVR

## What Is user research?

User research is the process of talking to and observing potential users of a product to learn more about their motivations, behaviors, and needs. In the realm of VR, user research could involve watching potential customers as they wear a VR headset and interact with a VR software program to gather information about the software's user experience. Among other things, this process could reveal whether controls are intuitive, whether an experience is immersive and fun, and what factors of a program might lead to disorientation and sickness.

User research helps optimize the VR software development process by uncovering what works well for users and what does not work so well. Results from user research can inform VR interface design by uncovering opportunities that would make the interface easier to use and more satisfying. The [expertise section](#) of the Blink website contains more details about usability testing and other forms of user research.

## Why is user research critical for VR?

Virtual reality is a new medium for both potential customers and for software developers. VR presents exciting possibilities for new interaction designs, yet numerous challenges currently await designers because of the immaturity of VR software design. When designing for more mature design landscapes like desktop or mobile computing, there are well-established interaction patterns and conventions that designers can use, which users have grown accustomed to, understand, and often times expect. For example, on desktop software users are

familiar with having a button in the corner of a window to close a program, and on smartphones users are familiar with the hamburger menu and with pinch-to-zoom.

Since 3D environments within VR often afford substantially different modes of interaction than other software interfaces, the conventions of touch screen and desktop software sometimes do not directly map to VR interactions. Additionally, the experiences that people find entertaining and compelling on a flat screen may be very different from those they enjoy in a 3D software environment. Because of this, many interactions in VR are essentially experiments that need to be validated through users. Therefore, user research is critical for the success of new VR software.

## **How is user research different for VR than for other types of software?**

At the most basic level, user research is about understanding users and not about software. Because of this, user research for VR is not much different from user research that informs other types of software development. The same techniques that work well for usability testing traditional software, such as giving users tasks, asking users to think aloud, and observing their behavior work just as well for testing users in a virtual environment. As with other forms of software testing, with VR testing one can observe and capture what is being presented to a user, how they interact with it, and how they are reacting to it.

There are also additional research questions when testing VR software that are not often of concern when testing traditional software:

- Participant motion and direction. VR users may move their heads and limbs in different directions, as well as walk around a small space. Designers need to validate that their software designs are not forcing users into uncomfortable or potentially injurious body positions and movements.
- Interaction between physical and virtual worlds. Ultimately users in VR interact with virtual objects and spaces. If a VR software application has virtual movement enabled through physical movement, then at a certain point there will be a disconnect between the physical and virtual space. How the software handles this difference has a large impact on the feeling of presence (the feeling of being within the environment) the user feels while using the software.
- Physiological response. Individuals can feel sick or have balance issues while in a virtual environment because there is a disconnect between interactions in the virtual environment and movement in the real world. Testing can reveal what elements of a VR program lead to uncomfortable physiological responses.
- Hardware comfort. VR involves the use of many pieces of equipment: headsets, unfamiliar controllers, and wires that may lead to user discomfort. Comfort level for these devices should be assessed for both short- and long-term use.

## **How is blink equipped to do VR research?**

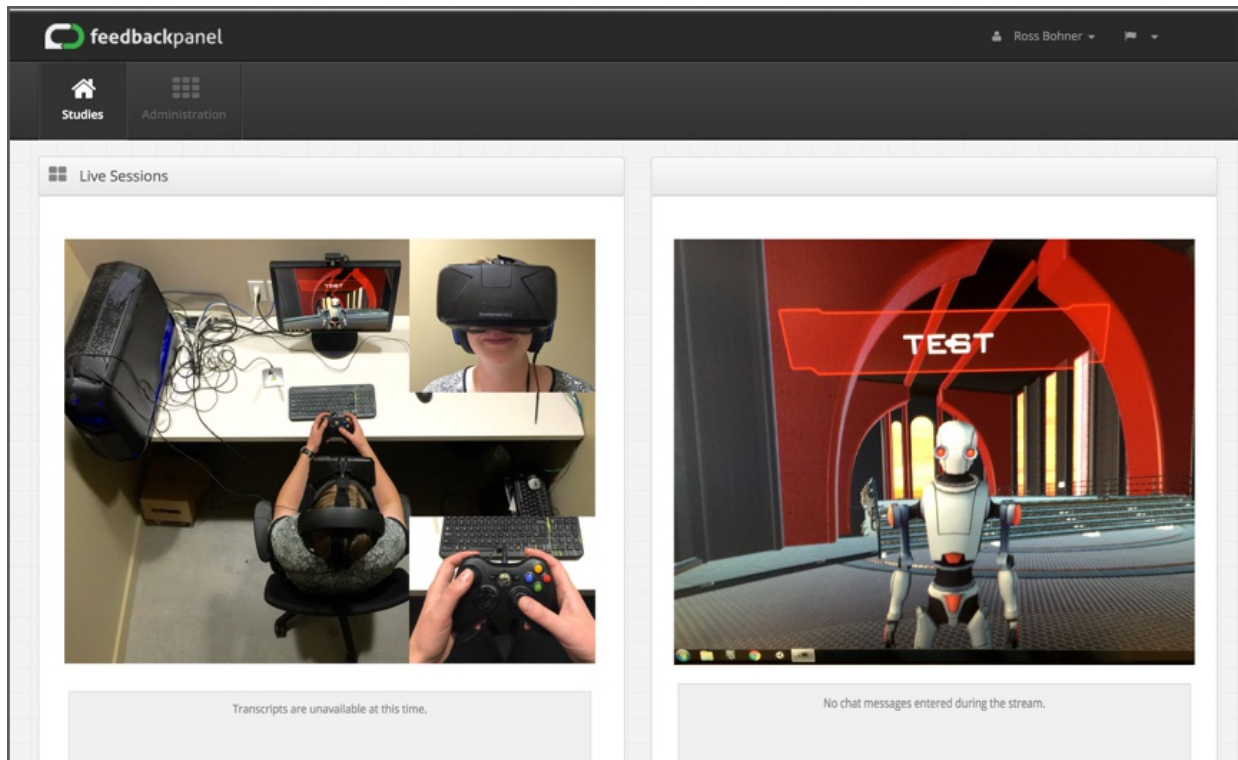
Blink has 15 years of dedicated focus in user research. Members of Blink have graduate degrees in fields that would be beneficial for VR user research, such as Cognitive Psychology and Human Centered Design and Engineering. In addition, Blink's Seattle offices contain three state-of-the-art testing labs:

- Lab 1: Living Room Lab (13' x13')
- Lab 2: One-on-one (9' x 10')
- Lab 3: Adaptive Space (14' x 18')

All of the labs are ideal for seated VR experiences, and the two larger labs are well designed for testing VR experiences where more motion is involved. Each lab contains multiple cameras so that behavior can be recorded from several angles, including the participant's hand interactions and facial expressions. Additionally, each lab contains a screen so that the research moderator can observe what the user is experiencing in the virtual environment.

Research moderators can ask participants questions verbally or by overlaying surveys in the virtual environment. The second approach works especially well for diary studies in which the user is interacting with VR software in their own home.

Research sessions are recorded and streamed from Blink's Feedback Panel research tool. Each user session is time stamped with telemetry information so that the positioning of the headset can be linked with participant behavior and software events. Clients can download these recordings shortly after each research session.



A VR research session captured in Feedback Panel, Blink's research tool.

Do you have any questions about how Blink could help you understand users of your VR software or hardware? Are you interested in performing VR user research, but unsure what research approach to take? Please feel free to get in touch with us at [hello@blinkux.com](mailto:hello@blinkux.com).

*Brian Essex works in user research at Blink UX, joining the team after attaining a Ph.D. in Cognition and Cognitive Neuroscience from Vanderbilt University. He is passionate about uncovering insights from user research and brainstorming design solutions that address user needs.*