

Practical Tips for Designing a Usability Evaluation Environment: What Equipment and Software Do You Really Need?

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Usability evaluation environments are used for many purposes from testing products or software, to education and training sessions, to holding interviews or focus groups. “Labs” vary from sophisticated setups with ceiling-mounted cameras, one-way mirrors, and observation rooms, to lightweight cameras connected to a notebook computer. Our panelists come from many different backgrounds, both corporate and consulting. We will discuss hot topics in the creation of both standing labs (permanent installations) and portable setups, such as: what is the minimum needed to get started? Do you really need a standing lab? A one-way mirror? Is video necessary or is screen capture enough? Is audio enough? Do you need data logging software? Please join us if you are about to create your first usability setup, if you are considering building a standing lab, or if you have a usability setup and are choosing upgrades or renovations. Panelists will take 30 minutes to introduce themselves, and for the next 45 minutes we will take both questions and advice from the audience.

INTRODUCTION

Usability setups are used to record audio and video during a wide variety of activities: usability studies, training sessions, focus groups, interviews, field visits, etc. A usability setup is generally distinguished from a focus group or interview setup by the ability to capture screen video or record a close-up of interactions with a device. However, usability setups vary greatly from simple portable labs with a notebook and webcam, to custom-built rooms with one-way mirrors and theater seating for observers. What are the essentials that you need to start running your own usability studies? When does it make sense to invest in upgrades or the more expensive equipment?

WHO SHOULD ATTEND

- Designers or developers that want to start doing usability testing of their products.

- Practitioners that are considering what equipment they need for their uses.
- Companies that are thinking of building a standing usability lab (dedicated/permanent lab space).
- Academics that are interested in equipment used for user or field research.
- Anyone with an existing lab that is considering upgrading their equipment or renovating their facilities.

PANEL DISCUSSION TOPICS

Panelists will take 30 minutes to introduce themselves, and for the next 45 minutes we will take both questions and advice from the audience. We will work through a list of questions, and alternate between our prepared list and questions from the audience. Our list of prepared questions includes:

Should you use a standing lab or a portable lab? What are the benefits of having a dedicated physical space? What are the benefits of a portable setup, and how do you know when you're ready to have a dedicated lab?

What is the minimum setup you need to run a usability study? The cost of equipment should never get in the way of doing usability studies or other user research. What do you need to get started? What's worth fighting for the funding?

Do you need a one-way mirror in your standing lab? One-way mirrors are good for observers, but can make participants nervous. Streaming video is a good replacement, but potentially less reliable. Which do you need, which is most cost-effective?

What software tools do you need? Video capture, screen capture, mouse/keyboard capture, data logging, video coding, video editing. When is it worth purchasing these? What is readily available?

Do you need video or screen capture, or is audio enough? Do you need a mixer or picture-in-picture (PIP)? How does the type of data captured affect the message you can deliver to your team or clients?

How should you arrange the room? Do you sit in the room with the participant? Do you bring a notebook computer with you or use a pad or note taker? Do you hide the cameras behind a dome or plant? Do you make it look like a living room?

What do you wish was in your lab? If you had the budget, what would you buy or install?

PANELIST ABSTRACTS

Miranda Capra, PhD

Manager and Senior Human Factors Specialist
HumanCentric

Company: HumanCentric is a product design services company that works in wide variety of areas, including consumer products, medical, mobile devices, transportation, and web/software. We provide design solutions inspired by user research,

and we run hundreds of participants every year. We usually work under tight deadlines, and so have invested in equipment and tools that make us more efficient.

Standing lab: Our standing labs need to be flexible enough to handle many scenarios, including screen capture, video close-ups of handheld devices, and room views of focus groups and large equipment. When we built our current lab we were tired of always moving cables around, so now we use wall-mounted cameras with multiple mount points for flexible but quick configuration. Our equipment was selected to allow us to easily perform direct-to-digital-movie screen capture for usability studies and tight camera close-ups for testing of small handheld devices.

Portable lab: Our portable lab needs to be able to travel with us both to rented facilities and customer sites. We have portable cameras for field observation and a notebook computer with Morae and a USB camera for software studies. We have used our portable lab in locations as diverse as hospitals, Wal-Mart, homes, grocery stores, combine cabins (while harvesting), and airports, so it has to be small and easy to set up.

Position statement: One-way mirrors are very popular with observers, and most participants quickly forget about them. Streamed video can be watched more comfortably (you can leave the lights on!), but can't see as wide a field without a wide angle or having someone stationed at the camera remote controls, you miss some of the body language, and it is easier to ignore than someone watched through a mirror because it is less personal. We use Morae when we need data logging, but more often we use hardware screen capture so that we can record off of any device with video out, no software installation or post-processing needed.

My background: I watched my first usability session in 1995 as a developer, and decided I had to get on the other side of that mirror. I now have a PhD in Human Factors from Virginia Tech, focusing on usability evaluation. I've been in consulting for three years, and have moderated hundreds of sessions.

Terence Andre, PhD

Managing Director
TiER1 Performance Solutions

Company: TiER1 is a human performance solutions company that helps organizations use knowledge and information to drive sustained performance improvements. Our focus is mostly on producing interactive eLearning content that is emotionally engaging. Although we collect usability data for traditional applications (e.g., web design, software applications, training courses), we have found it extremely helpful to use usability tools such as Morae to collect up front needs analysis as part of our instructional design process. We rarely bring people into our site to collect usability data, so most of our focus is in “virtual labs” or portable labs.

Virtual lab: We do not have a dedicated lab since we find that we need to collect data wherever the client exists. When we want to collect needs analysis data for eLearning courses, we often use TechSmith UserVue to record the audio conversation with the client while our instructional designers listen in and mark significant comments using pre-defined markers. These marked comments are later sorted and form the basis for prioritizing the design look and feel for a particular course or software application solution.

Portable labs: We use a laptop solution with a web camera and built in microphone to collect data from clients on the road. In most cases, we are collecting data from several users or subject-matter experts in a focus group setting. We capture both the audio and video using Morae. In order to keep the focus session moving, we often employ two of our instructional designers; one to ask the questions and the other to make notes using markers with the Morae Observer tool. For hardware applications, we often use the two-camera view in Morae where one camera is zoomed in on the specific hardware device and the other camera is zoomed out on the entire workspace environment to capture context.

Position statement: The need for standing labs is diminishing quite rapidly and the notion that

you need a one-way mirror is really obsolete. The “one-way” mirror is now replaced by web-based virtual recording any time / any place. Some may question whether you can capture good video over a distance or on the web. In reality, video is not as important as audio. Audio and screen capture represents 80-90% of what is needed to extract what is going on with the user. And for focus group data, all you really need is audio.

Personal: I wore a blue suit for 20 years – Air Force Officer, mostly focused on human factors design issues in large defence systems. My PhD is in human factors/industrial engineering from Virginia Tech. I’m now a human factors guy in an eLearning company where there is great design synergy.

Jeff Brandt

Principle Member of Technical Staff – Human Factors
AT&T Labs

Company: AT&T is a communications and entertainment company offering products and services ranging from wireless and wireline phones, data/internet, to television. The Human Factors group at AT&T Labs Inc. sees over 2000 usability test participants each year. We evaluate a range of interfaces and items including: web sites, video quality, mobile phones, set top boxes and IVRs. Our goal is to understand how customers expect products and services to work, and then to conform the design to best match those expectations. The technology we employ in the lab is there to allow us to observe, detect and measure customer behavior.

Standing lab: Our four standing labs each represent a different environment where a user might use a product (home living room, home office, work office etc.) They are flexible and reconfigurable through our patch panel. A/V, PC, and telephony signals can be taken in or out of the room through various wall plates. Each room has at least 2 remotely controllable cameras, mics, intercom, & one-way glass. We are currently rebuilding the lab to go from NTSC gear recording

on DVD, to being able to natively capture HDTV and PCs recording to disk. In the past we have been a “hardware” lab, our rebuild has us evaluating both hardware and software based solutions such as Ovo.

Portable lab: Our portable lab is only used when we cannot bring the service under test in house. In truth it has not been unboxed for several years and is long in the tooth. It is built around Hi-8 recorders and NTSC PTZ cameras.

Position statement: A skilled observer can do valuable usability testing with paper and pencil. Technology can make this easier or harder. That said, if I have a number of studies to run I want to be in a standing lab equipped with: one-way glass, an intercom, a split of the PC monitor on my side, PTZ cameras that cannot be seen or heard by the participant, and microphones that let me hear mouse clicks. Beyond that are capabilities that increase your impact or reach: video recording & editing gear to make high/low lights reels; streaming video for remote observers; eye tracking; data logging software & phone taps. I wish I had a scan converter for mobile phone screens.

My background: I have been with AT&T Labs Human Factors since 1996. In 2000 I took over the management of our Austin lab facilities in addition to being a Principal Member of Technical Staff and conducting my own studies. I have an MS in Industrial Engineering from the University of Washington. We have over 10 miles of wire in our lab – and I know where (most of) it goes.

Ian Collingwood

Managing Director
Amberlight Partners, LTD

Company: We help clients make better products by providing insight and feedback from real people throughout the design process. We call this “Evidence-based Design™” We work in telecoms, software, web, digital & IPTV, government, videogames and consumer electronics. We have two standing labs, one with eye-tracking capability, and one with facilities for testing non-desktop interactions, such as mobile phones, TV

and videogames. We also have 3 portable testing labs.

Standing Labs: We use Morae for the basic stuff, but one of our challenges is developing tools for recording non-desktop PC systems, in which Morae is unsuitable. We’ve developed our own high-resolution capture system for cell phones, remote controls and other devices that are held in the hand. We also have limited space, so reconfiguring labs quickly for different testing scenarios is a challenge for us.

Portable labs: We have 3 portable test setups. Each can be used to capture interactions with desktop and handheld devices. We can also provide viewing in a separate room by setting up a dedicated wifi network.

Position: There is no single solution for all interactions, however much I keep trying to come up with one (or at least get it down to below 4 different setups ;-). Even in our standing labs, I foresee no realistic possibility that we will be able to buy a single pre-packaged solution that will allow us to cover all our needs. Apart from the fact that technology is moving too quickly for any single supplier such as TechSmith to cover all the options, there is just an innate difficulty in capturing interactions on a screen. Part of our job is to invent new solutions to these problems – always was, and always will be.

My background: I’ve been involved in internet and web strategy since 1997, and was initiated into the dark arts of UCD by Tog in Amsterdam in 2000. I’ve never looked back.

Joy Kempic

Lead User Experience Designer
Whirlpool Corporation

Company: Whirlpool Corporation is the largest manufacturer of home appliances in the world. We have more than eight brands including: Whirlpool, KitchenAid, Maytag, Amana, Jenn-Air, Gladiator, Brastemp, and Bauknecht. We have design studios located in the USA (Michigan), Italy, Mexico, and India. The goal of the Global User

Experience & Interaction Design team at Whirlpool Corporation is to ensure that our products are useful, usable, and desirable. Part of our job encompasses conducting research. We can do research at any stage of a product from user needs gathering in-homes to usability of UI paper prototypes, UI simulations, and actual products.

Standing labs: Since many outside market research facilities lack the plumbing, electrical, & venting requirements necessary to run actual production units, we have two labs located at our Michigan facility that have these capabilities. One has more of a “lab” feel to it but is easily reconfigured. It has the plumbing, venting, and electrical capability to run up to five major appliances (washers, dishwashers, refrigerators, dryers, etc.) Our other lab is set up to look more like a real kitchen. Both labs have observation rooms & two way mirrors as well as multiple video cameras & microphones mounted to the ceiling. The multiple cameras are useful when doing studies where people are physically interacting with a product. They allow us to get different camera angles to see inside dispensers & dish racks without having to look over the person’s shoulder to see what he or she is doing. Most of our sessions have both a moderator and a notetaker/camera operator. If a study is mainly survey-based, we may only have a moderator and we do not video record. We find digital video useful for the notetaker in case he or she misses something during the study. Video can also be a powerful tool for capturing participants’ reactions to prototypes and conveying those reactions to other people within the company. For user interface simulation studies, we purchased a 25” touch screen that is close to the width of most of our major appliances. This allows us to put a simulation on the screen that is nearly actual size. Since the screen is touch capable, we can have participants use their finger rather than a mouse to interact with the UI just as they would on a real control panel. For studies with a large survey component, we have developed our own in-house survey software using Adobe Flash. The survey data can be downloaded to Microsoft Excel after the

study. While we are still examining different data loggers, our current data logger is a modified version of a freeware package called Usability Datalogger and is available on the web.

Portable labs: We use our portable equipment when we do in-home research. We often video record the interviews and bring a digital camera for still shots. For kitchen research, we use a laptop to record notes and observations since a table and chairs are usually available. But for laundry research, we have found that paper and pencil work much better since most of the interview occurs while standing.

Position statement: Even within our own company, there is no single setup that will work for everyone. Take a look at what your needs are. What information do you need to collect and present? To whom and how do you need to present this information? The answers to these questions should determine what type of equipment you need.

My background: I’ve worked at Whirlpool Corporation for over nine years and conducted more than 70 research studies in that time. I received my Master’s in Human Factors from Virginia Tech.