A photograph of a person working in a tunnel. The person is wearing a dark jacket and a headlamp, and is leaning over a large piece of equipment, possibly a server rack. The tunnel walls are made of rough, textured rock. The lighting is warm and orange, coming from the person's headlamp and other sources. The overall scene suggests a technical or industrial environment.

Going Beyond Web Analytics to Dig Into the Minds of Your Users

Dianne Howie and
Heather Searl



Outline

- Introductions
- Web metrics: Scratching the surface
- In home visits 1: Digging in
- In home visits 2: Drilling down
- Usability testing: Discovering gold
- Creating your own exploration tool kit

Introducing... Harmony

- Logitech's Best Selling Advanced Universal Remote Controls
- The Reviewers LOVE them



“The Logitech Harmony 880 represents the future of remotes... This one's a winner!”

– Bill Howard, *PC Magazine*



“The perfect product for anyone who has heard their spouse wail, ‘I can't figure out how to turn on the #@!% T.V.’”





Introducing... Harmony



SUPER EASY SET UP

- Web application used to setup the remote
 - Type in your AV components make and model #
 - Answer questions about how your components are connected
 - Download info to the remote

Couldn't be easier. Could it?

Introducing. . . Harmony

- The users LOVE them . . . sort of

User Rating: Good
6 out of 10

Pros: works quite well and looks cool
Cons: software very, very poor

“The remote is great . . . If you get it set up.”

The good news is that the remote works great, **after several attempts to try to get the setup working** and few days of getting used to feel of it. I like having 1 remote on my coffee table instead of 5. But the software, that's another story.

Web based
setup is a pain
to use!





Web metrics: Scratching the surface

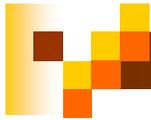


- The problem: Over time user satisfaction was declining and customer service calls and returns were increasing.
- The solution... Metrics?
- Every week a report would be distributed that included things like this ...



Example web analytics

- How people rate the setup
- How long setup takes
- How often changes are made to the setup
- When people call customer service
- When people are having problems
- And more...



Results of web analytics

- Tons of Information
- We know:
 - When people had problems
 - Where problems occur
 - What the results of problems are



More results of web analytics

- But also contradictions...
- We know:
 - Average time people say they are willing to spend setting up a remote: 90 minutes
 - Average initial setup time: 42 minutes
 - But customers are not happy with setup and give up early...



In home visits 1: Digging in



- We needed another tool...
- In home visits or “Contextual inquiry”...
 - Qualitative research
 - Watch customers interact with their remotes
- Determine the Who, Why and How behind the contractions
 - Prioritize issues to fix based on their impact to users



Pick the right people

- 20 people in Austin, Texas and Toronto area
- Screened to meet the current Harmony remote demographics
 - Male
 - Age range 30-50
 - Household income \$80k-110k US
 - Home theatre/stereo owners with 4+ devices combined into an entertainment system
- **Key:** Visit representative users of your product

Pick a typical task

- We asked a few background questions
- Then we gave them a Harmony 880 remote...
- “Imagine that you have just come home with a new remote control... open it and set it up to work with your system.”
- **Key:** Watch users attempt *typical* tasks in their *natural* environment



Watch them

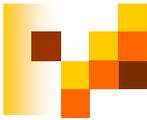
- We recorded the setup process by videotape, camera and notes
- Each team member had a role: facilitator, note-taker, camera person
- **Key:** Everyone needs to know their roles and to *stick to them* (even if it's hard not to help)



Analyze the data

- The team recorded their observations on sticky notes... over 1000!
- Everyone helped to organize the issues into themes or “affinities” and brainstormed solutions
- **Key:** Engage the broader *team* in the research





Affinities

How we install the software								
The installation starts automatically	We download the software from the Logitech web site	We think the software file size is too big	We install the software on the desktop	We install the software in the default location	We have problems installing the software	We install the software multiple times	We have other software that interacts with the installation	
He inserts the CD into his computer. It auto runs. P2 - 35	<div style="border: 1px solid gray; padding: 10px; background-color: #f0f0f0;"> <p>his dog bit one of his remotes and now it doesn't seem to work very well</p> </div>			to install the on his desktop. P - 40	"Usually the option that is highlighted is preferred, so I just go with it." P1 - 44	<div style="border: 1px solid gray; padding: 10px; background-color: #f0f0f0;"> <p>"probably what I should have done is call the fellowship and held a massive prayer session before this"</p> </div>		is a Zone Alarm "It pops up every v and then." P1 - 48
They insert the CD and it runs automatically. She agrees to the license agreement without reading it. P5 - 40				whether he is erns because he software on his "I'll move that ter." P - 68	He instalis the software in the default location. P2 - 38			ers whether Cyber is preventing o from happening, e turns it off. P1 - 36
He inserts the CD: "I don't know if it's auto run or not." P6 - 46				ng guy. I want sktop... I erase stimes when I hem." P - 52	The default install location is OK, since "I'm putting my faith in them." P4 - 45			ecurity message "Norton is asking an connect to the server." P6 - 50
The installer launches automatically. He clicks through the initial screens: "Does anybody ever read these things? I agree. Let's move on." PB - 49				"It comes with a CD, but I usually go to the web site for the latest version." He downloads the setup software from the Logitech site. P9 - 45	His wife asks "What are we trying to install here?" P5 - 41			He leaves the default installation location. P6 - 49
The installation starts automatically after the download. P9 - 46		She changes the destination folder to the desktop since "this is not my computer", but one from work. P5 - 43				The software doesn't start on its own, so he uses the desktop shortcut. P7 - 47		



Getting to know the user: Before

- Primary target is the “basic user”
 - The early majority segment from Crossing The Chasm
 - Family user
 - They don’t want to “configure” their system – they are TV viewers – they want to watch a movie
 - What else can this person set-up (iPod?, DVD player?, online taxes?)
- Secondary target is the “advanced user”
 - The tech enthusiast segment from Crossing The Chasm
 - Independent AV Pro installer
 - BestBuy installer



Patrick Everest

Occupation: Market Analyst
Age: 37
Family: Single

"I don't just want to be looking for the best"

Viewing Habits:
1-2 hours a night for most evenings,
5 hours on weekend

Personal Goal:

- Control all his equipment with one touch using an "easy-to-use" cool-looking remote control
- He wants one device to manage all his AV equipment from his couch

Ultimate Goal:

- Invite friends over to enjoy a great evening of multi-media entertainment in a world-class high tech home theater
- He wants a reputation of treating his friends with the best

Personal Characteristics:

- A no-nonsense type of guy who likes to get to the point
- Doesn't mess around with user manuals unless he comes up against a brick wall
- Give him the install software and away he goes

Comfort with Technology:

- Patrick is comfortable using the computer and web for job-related needs
- Considers himself "tech savvy"
- He set up his parents audio/video systems as well as his own

Patrick approaches setting up his new remote universal remote in the past, but it did not let him control his components the way he needed. He has a lot of potential this remote promises.

He opens the package and immediately inspects the coffee table. He glances at the quick start manual and walks through the steps to set up his remote. He does not like to get junk mail. In the "You" section, he is passionate about understanding how my remote works. He is customizing it, hoping that this category will be a success. He goes through the setup.

When he gets to the model numbers for the manuals and copies the model numbers onto the model numbers. After collecting the info, he enters the model numbers. At each input, confident that if they are not right, there are a few questions he has trouble with. There are some options where he has to grudgingly make a selection. He knows it's not right, but he really wants to use the remote. The process was that it asked a lot of obvious questions.

Finally he updates the remote according to the computer, and starts using it. Though only so much time for each Activity he tries out, he is able to see what happens. He uses the remote's Help Activities. He also spends a lot of time paging through the functions. After a while, he decides to use the remote via the computer. He is hopeful it will change to get what he wants.

Patrick looks forward to inviting his friends over. He discovers that he can customize his own select images that will display as background images. He deletes what he doesn't use and customizes the background.



Sam Clay

Occupation: Furniture Store
Age: 33
Family: Married, 3 Kids

"Keep to the basics, you won't get in trouble"

Viewing Habits:
2-4 hours a night for most evenings,
8-10 hours on weekend

Personal Goal:

- Does not want to feel stupid, or appear unsophisticated to his friends and family
- He would like to automatically record a show and play it later without all the pain and frustration of setting it up

Ultimate Goal:

- Wants a simple remote that will allow visiting family or friends to watch TV without having to explain what to do to get the TV to work or a movie to play

Personal Characteristics:

- Whenever he needs to install something on his computer, he asks a tech-savvy friend to do it for him
- He would rather get his hands greasy than sit in front of a computer

Comfort with Technology:

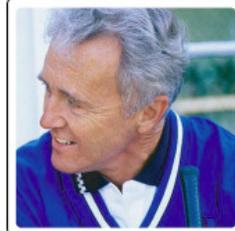
- Dreads setting up A/V and computer equipment/software
- Would rather give up than call Customer Support for help

Sam likes things that work. Nothing too fancy what he wants. He received this new remote. His brother-in-law thought Sam could use many TVs around the house, and the remote one, thinking it was a chew toy. Sam is a bit of a computer guy, because it's his box says that a computer is a box.

He opens the package with his pocket knife. He reads the literature that comes with the box and the literature that comes with the box. He walks through the tutorial. He connects the cable to the computer, located in his son's room, and he selects install. He connects the cable to the quick start manual and follows its directions. He updates the software onto the computer. When he updates the software, he skips that to go on.

On the account pages, he wonders why he is just setting up a remote for use in his house that he can proceed. He does not know so he leaves it blank. The system doesn't let him proceed. When he is asked to select the device, he has a bit of a problem trying to figure out the quick start manual and follows its directions. He updates the software onto the computer. When he updates the software, he skips that to go on.

The friend comes over, and they struggle to get the remote. It doesn't work the way they want. They get some of the components working together through the device mode. Paging through the device screens, Sam manages to find a way to get all the functions he wants working. Whenever Sam needs a new set of functions, like watching a DVD, he selects the power button to turn off all his components and then goes into the device mode again. Sam has no concept of Activities. He assumes this is the way the remote is meant to work. He thinks that eventually he can get the remote to work the way he wants.



Collin Fairmont

Occupation: Realtor
Age: 54
Family: Married, 2 Kids

"I like technology to work for me, not me working for technology"

Viewing Habits:
3 hours a night for most evenings,
8-10 hours on weekend

Personal Goal:

- Simple way to control TV and audio visual equipment to get the most out of his system
- Classy entertainment system control that will "Wow" his friends

Ultimate Goal:

- Control his TV/Stereos system with the push of one button
- Easy enough for his gadget-adverse wife to use
- Ability to adjust viewing/listening settings for special occasions

Personal Characteristics:

- Likes to do things by the book -- uses instructions
- Willing to pay more if it will make his life easier
- Replaces AV components infrequently but makes sure he gets the most for his money

Comfort with Technology:

- Comfortable surfing the web
- Considers himself "knowledgeable" of the basics of using his computer
- Comfortable setting up AV and computer systems and software
- Comfortable setting up AV and computer systems and software

Collin works hard for what he has. So he expects value out of everything he does and purchases. In purchasing the remote, he expects it to work according to the claims listed on the packaging. His wife has been asking him to get a remote that will allow her to watch her favorite shows without having to juggle many remotes. He also would like to reduce the clutter of remotes and just have one that does everything.

He opens the package and removes all the contents. He finds the quick start manual and starts reading it. He sees that he needs to collect all the model numbers of the components he wants to control from the remote, so he goes to each component and writes down its model number. He ends up pulling some of the components out of the cabinet and moving the large screen TV away from the wall to find the model numbers. There are a few wires that he has to reconnect, hoping he put them in the right places. There is one component that has no model number on it, or at least he can't find it. So he goes hunting for its manual. After finding the manual and writing down the model numbers, he returns to the quick start manual and follows its directions of plugging in the remote, putting the disk into his desktop computer upstairs in the den and installing the software. So far so good. From here on he focuses on what the software directs him to do. He occasionally looks back at the quick start manual to make sure he hasn't skipped any steps. He updates to the software and removing the old version bothers him. He wonders why he has to do this for a new product. He follows the setup pages, and enters in the model numbers for each of his devices (he is glad he read the instructions first). When he sets up his activities, he very carefully reads everything to make sure he is correctly setting up the remote. He doesn't want to mess anything up. When the steps ask for inputs, he goes downstairs and turns on the components to see what inputs need to be set on his TV and stereo. He finds that the input on his TV do not match the inputs listed in the software. He does not know what to do, so he calls support for help. They have him try a few things and then make some changes directly to his account. When he goes back to the input page, the inputs he needs are listed. He gets off the phone from support and continues setting up the activities. It is important that he does this correctly, because he thinks he may not be able to go back and change it.

Finally, he updates the remote and takes it downstairs to try it out. He tries out each activity one at a time. The inputs that were changed for him do work with what he had selected. But he has trouble adjusting the sound, and his receiver turns off when he turns on the TV. He returns to the computer and plugs the remote back in. He goes through the troubleshooting pages, trying to solve the problems. He finds the user manual online, but it does not go into the detail he needs. After making some changes, he updates the remotes and tries it again. It kind of works, but he needs to turn off all his components before he starts. He also uses the device mode to turn on the receiver when he wants to get sound during the DVD activity. He invites his wife to use it under his directions. He is somewhat pleased that he now has a remote that works with all his components. He is frustrated that it's not the elegant solutions, but it gets the job done.



Getting to know the user: After

Collin Fairmont

“I like technology to work for me, not me for it.”



Key Attributes

- Has moderate AV knowledge
- Willing to look for information
- Just wants the remote to work
- Had moderate success setting up the remote

Goals

- Simple way to control TV and audio visual equipment to get the most out of his system
- Classy entertainment system control that will “Wow” his friends
- Easy enough for his gadget adverse wife to use

Issues: There were barriers to start

- In one study, about 70% of users did not remove the sticker from the LCD screen without prompting
 - *"Is there anything that says take it off?... You made it look too pretty!"*
 - *"Perhaps it would come off when I throw it at the wall!"*





Issues: The process was long

- The setup process was so long that users got impatient and missed important steps
 - *“I think most people just keep hitting “next, next, next” until it’s done.”*
 - *“This is actually really frustrating. I can see how a person like myself, who has patience... but you get impatient when you mess with this for a while... when you know it can work and now for whatever reason it doesn’t.”*



Issues: Terminology was confusing

- The software terminology didn't match user's everyday language
 - *"What's a PVR? I don't have one of those."*
[participant actually has Tivo]
 - *"Powertoggle... Powertoggle... I'm sure it's easy."*



The process controlled the users rather than the other way around

- There was an overall disorientation, helplessness and lack of control
 - *“I just discovered something... by accident.”*
 - *“Can I go back? Is there ANY way to go back?”*
 - *“I was trying to get back someplace, but now its gone.”*



Selling user research

- Once your data is collected, present the findings
 - Let the users speak for themselves [Video]
 - Development team members can use research to make better decisions
 - Management knows which initiatives to fund to have a significant user impact
- **Key:** Demonstrate the value of your research the development team and managers

“That was one of the most worthwhile things I've done here... Every manager needs to do these visits and then ensure their staff goes out with you.”

Senior Manager



In home visits 2: Drilling down



- Recommendations from the in home visits were implemented
 - Improvements to the setup software
 - But there was more to do...
- Contextual inquiry can be used repeatedly
 - To answer questions about a new technology (RF vs. IR)
 - To focus on specific aspects of the product
 - To follow up results periodically to see whether the market is changing
 - To see if the updated product better meets user needs in a realistic environment
- **Key:** Know the reason for the visits. Repeat as needed.

Follow up study: High end RF remote

- Setting up the Harmony 890
 - Controls devices through walls and solid cabinet doors
 - Same basic setup process
 - Extra hardware and a couple of extra setup screens



"I'm not sure anyone has ever setup an 890 without calling customer service."

Tier 2 Customer Service Rep.



Follow up study parameters

- Visit 10 people in Toronto and watch them set up a Harmony 890
- Same basic protocol as the first series of visits
 - Short interview about entertainment center usage
 - Observe setup and ask clarification questions only
 - Summary questions to rate the experience



Users appreciated design changes

- Design improvements were noticed:
 - Remote tutorial
 - Tips, pictures and examples throughout the setup process
 - Improved visual design
 - Easier login and account information
- But adding more features adds complexity

Issue: Too much stuff in the box

- Users were over-whelmed by all the parts:
 - *"[This is for a] more seasoned veteran... there are more cables so it's more complicated."*
 - *"What on earth?!... Looks like a lot of wires for a remote."*



Issue: Lack of understanding of RF

- Users didn't understand the RF components:
 - *"IR blaster... sounds like a weapon in Halo!"*
 - *"It's telling me to press Connect on RF extender but I don't know what it is."*
 - *"I guess I still use the remote. How do I use the wireless extender to control?"*



Issue: Wires are unattractive

- Users didn't want to see "messy" wires:
 - *"It is not invisible like you expect wireless to be... I needed to play around with the positions of the wires."*
 - *"There are too many wires. I'd like them to be in the back. It's not attractive at all."*





Results: RF remote study

- The added complexity of the RF added a couple pages
 - BUT added a lot of complexity to troubleshooting where a problem had occurred during installation and setup.
- All of the issues observed were on Logitech's list of problems or potential problems
 - BUT the issues were prioritized all wrong
 - Minor annoyances were top priority
 - Major issues were near the bottom of the priority list
- **Key:** The in-home visits helped development to address the issues that were most important for the customers



Usability testing: Discovering gold



- Implemented recommendations were usability tested
- Usability tests are good for assessing
 - First time ease-of-use
 - Fine tuning buttons and labels
 - Demonstrating problems
 - Testing potential solutions
- Usability tests have limitations
 - Artificial setting
 - Seldom finds new opportunities or new solutions
 - Increasingly detailed feedback with higher fidelity prototypes



Usability test: Entering device info

- In-home visits demonstrated problems entering device make and model number
- Several solutions were proposed
 - Instructions on finding device make and model number
 - Three new user interface designs addressing entering device information

Usability Test

- Tested 4 design alternatives including the current design
- 18 participants each tried 3 of the 4 designs
 - Original
 - Dual list
 - Fly-out
 - Inline setup

The screenshot shows the Logitech Armony software interface. At the top, there is a green header with the 'armony' logo on the left and 'Select Language' and the Logitech logo on the right. Below the header is a progress bar with five steps: 'Getting Started' (checked), 'Check Connection' (checked), 'Add Devices' (active), 'Add Activities', and 'Finish Setup'. Under the 'Add Devices' step, there is a section titled 'Add Devices from Device Worksheet'. This section contains three input fields: 'Device Type' with a dropdown menu showing '-- select one --', 'Manufacturer' with a dropdown menu showing '-- select one --', and 'Model Number' with a text input field. Below these fields is a blue 'Add Another' button. To the right of the input fields is a yellow 'Tip Center' box with a 'More Help' button. At the bottom of the interface, there is a footer with 'Terms of Use' and '© Copyright 2007 Logitech or its licensors. All rights reserved.' on the left, and two buttons labeled 'PREVIOUS' and 'NEXT' on the right.

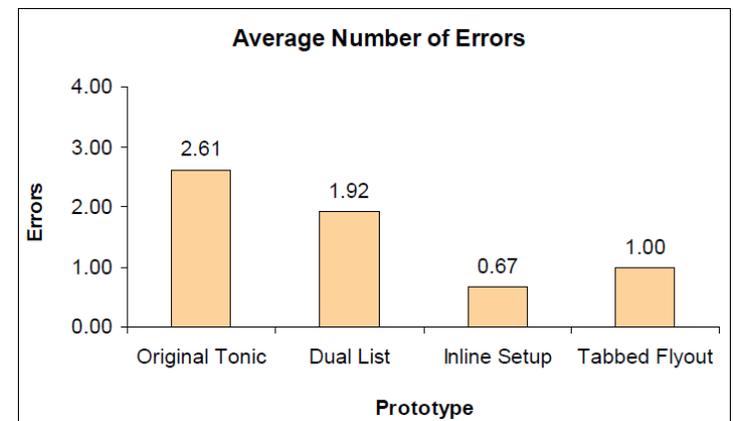
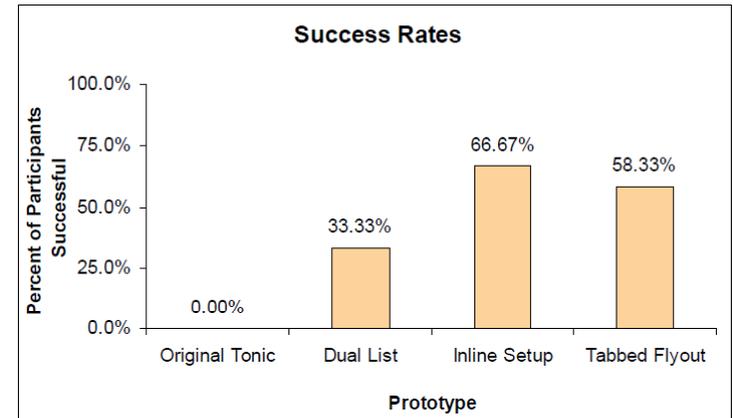


Usability test procedure

- RITE Test: Rapid Iterative Testing
 - Day 1: Test multiple designs with 6 people
 - Day 2: Address issues observed with the designs
 - Day 3: Test multiple designs with 6 people
 - Day 4: Address issues observed with the designs
 - Day 5: Test multiple designs with 6 people
- **Key:** Quick, inexpensive method to select design directions and refine design

Usability Test Results

- Inline setup design had:
 - Highest success rate
 - Fewest errors
 - Fewest clicks for task
 - Second shortest completion time (30 sec. slower than the fastest)
 - Best User Ratings
- Original design was last on all criteria





Usability Test Results

- Before Testing: The best performing design was universally disliked by the development team as:
 - Not intuitive
 - Difficult to implement
 - Not worth testing
- After Testing: The best performing design was implemented:
 - On time
 - On budget
 - With minimal compromises to make it work
- **Key:** Don't narrow down your options too early



Creating your own exploration tool kit



- Use your **web metrics** to identify **WHERE** and **WHEN** problems occur
- Use in **home visits** to investigate **WHO** your users are, **WHY** they are having problems, and **HOW** the product can be improved
- Use **usability testing** to **REFINE** your proposed user interface designs
- **ITERATE** research and development for best results



Questions and Comments?

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