

ar adam rule

HERB
mamlode
Project Briefs



Learning from IKEA Hacking: “I’m Not One to Decoupage a Tabletop and Call It a Day.”

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Figure 1. The GYNEA photograph Leo Veger, p
organized by An

We present a qualitative study based on interviews with nine IKEA Hackers – people who go online to share the process of repurposing IKEA products to create personalized objects. Whether they were making a self-portrait, a statue, or simply transforming a towel rack to fit in a small bathroom, IKEA hacking is an emergent practice that provides insights into contemporary changes in creativity. We discuss the motivations for IKEA hacking and explore the impact of information technology on do-it-yourself culture, design, and HCI.

Author Keywords

DIY, Creative Tools, IKEA, design

ACM Classification Keywords

D.2.2 [Software Engineering]: Design Tools and Techniques – User interfaces, H5.m. Information interfaces and presentation (e.g., HCI); Miscellaneous.

INTRODUCTION

A chair stretched to become a bench; a set of plastic bowls made into a spherical speaker; a vibrator made from plastic shoe trees and a milk frother – all hacked together in a bit of spare time with few products from the nearest IKEA, with step-by-step directions self-published on the internet (see video “BLOCKSTAR.”) IKEA hacking reflects an increasingly popular interest in tinkering and customization, one that is supported by an online community of how-to resources, blogs, and web forums such as IKEAHacker.com and Instructables.com as well as major design exhibitions¹.

This paper presents a study of IKEA hacking as a window into a larger community of Do-It-Yourself (DIY) practitioners. This paper is not meant as an exhaustive study of a phenomenon. Rather, it is a provocation for a new way of thinking about the intersection between online culture

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CHI 2009, April 4–9, 2009, Boston, Massachusetts, USA.
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¹ Copyright Alan D. Joseph
² IKEA hacking has been Design MADE 2008.

Beyond Dirty, Dangerous and Dull: What Everyday People Think Robots Should Do

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ABSTRACT

We present a study of people’s attitudes toward robot workers, identifying the characteristics of occupations for which people believe robots are qualified and suited. We deployed a web-based public opinion survey that used responses ($n=237$) about attitudes regarding robot suitability for a variety of jobs ($n=812$) from the U.S. Department of Labor’s O*NET occupational information database. We found that public opinion favors robots for jobs that require memorization, keep perceptual abilities, and service-oriented tasks. People prefer robots for occupations that require artistry, evaluation, judgment and diplomacy. In addition, we found that people will feel more positively toward robots doing jobs with people rather than *in place of* people.

Categories and Subject Descriptors

H5.2. Information interfaces and presentation (e.g., HCI): User interfaces.

General Terms

Human-robot interaction, HRI, robots, occupations, jobs, survey

Keywords

Human-robot interaction, HRI, robots, occupations, jobs, survey

1. INTRODUCTION

A key motivation for IKEA robots is to eliminate the need for people to perform uninteresting jobs. Indeed, the name “robot” is derived from the Czech *robota*, which means “compulsory labor” [5]. Robots are frequently envisioned as fulfilling jobs that have the three *Dirty, dangerous and dull*. In this model, the archetypical robot job is repetitive physical labor on a steaming hot assembly line, such as welding a car body or a metal limb [26]. In the popular imagination, future examples along these lines include housework (Rosie in *The Jetsons*) and military activity or law enforcement (e.g., *Terminator*).

A contrasting perspective suggests that robots should be deployed in occupations that require vigilance, responsibility, and consistency. These include personal assistants (CJPO in *Star*

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HRI ’08, March 12–15, 2008, Amsterdam, Netherlands.
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Robots in Organizations: The Role of Workflow, Social, and Environmental Factors in Human-Robot Interaction

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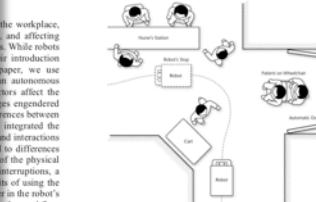


Figure 1. An abstract illustration of the hospital environment as the delivery robot navigates through units.

1. INTRODUCTION

Robots are increasingly being integrated into the workplace. While their projected benefits are promising, little is known about their impact on organizations, work processes, and the products and services created by organizations. Their introduction also poses significant design challenges due to the complex social dynamics of the organization.

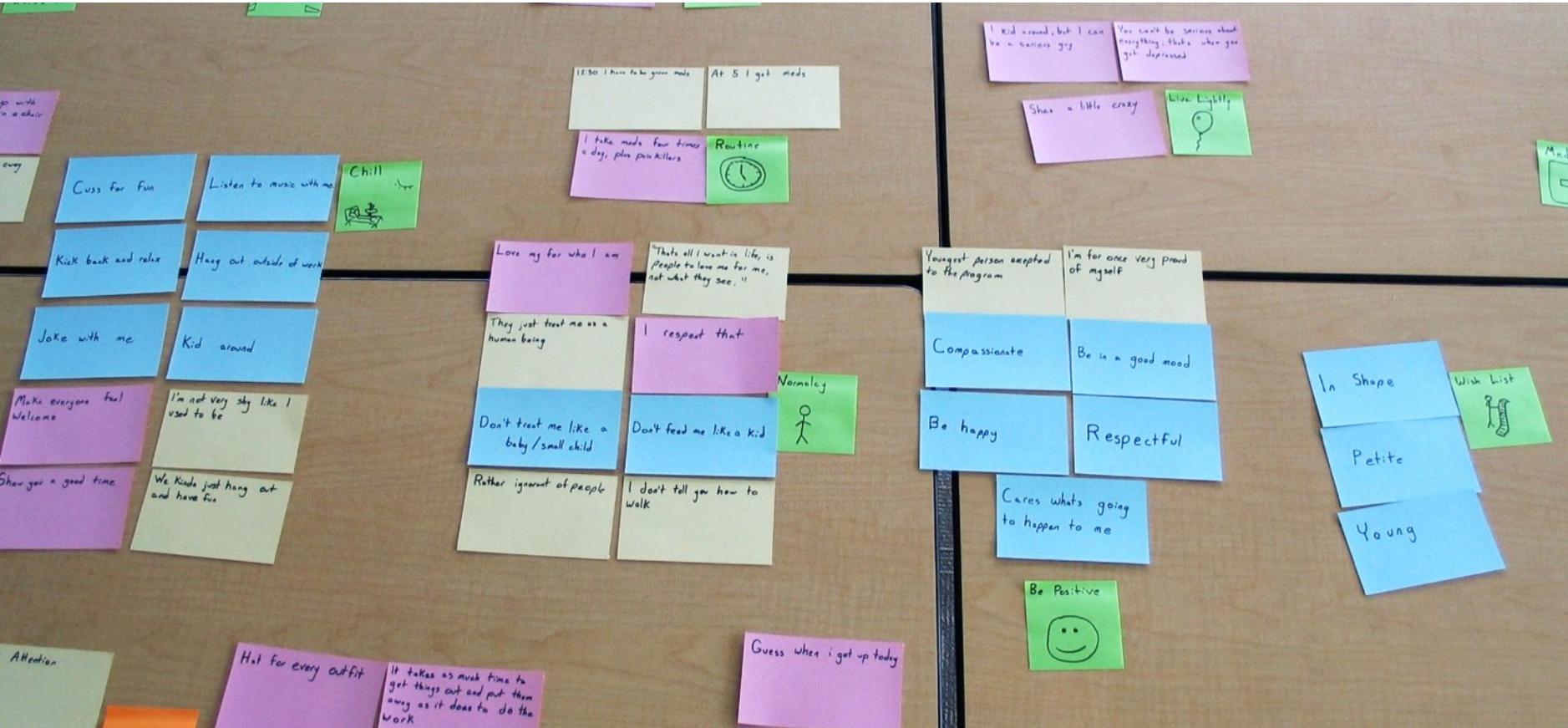
While the impact and the design of other types of organizational technology have been well studied [1,5,12,14,17,20], only a few studies have examined how robotic technology might impact organizations and how the design of robotic technology could improve group work practices while supporting social dynamics, and the goals and values of the members of the organization [21].

To better understand how robotic technology might situate in organizations, we selected a 1-year study of the deployment of an automated delivery robot, Aethon’s TUG. Our study took place in two sites and involved qualitative observations and open-ended interviews. We systematically analyzed our data using *grounded theory* following the methodology described in [10,22]. Figure 1 is an abstract illustration of the context of our second site.

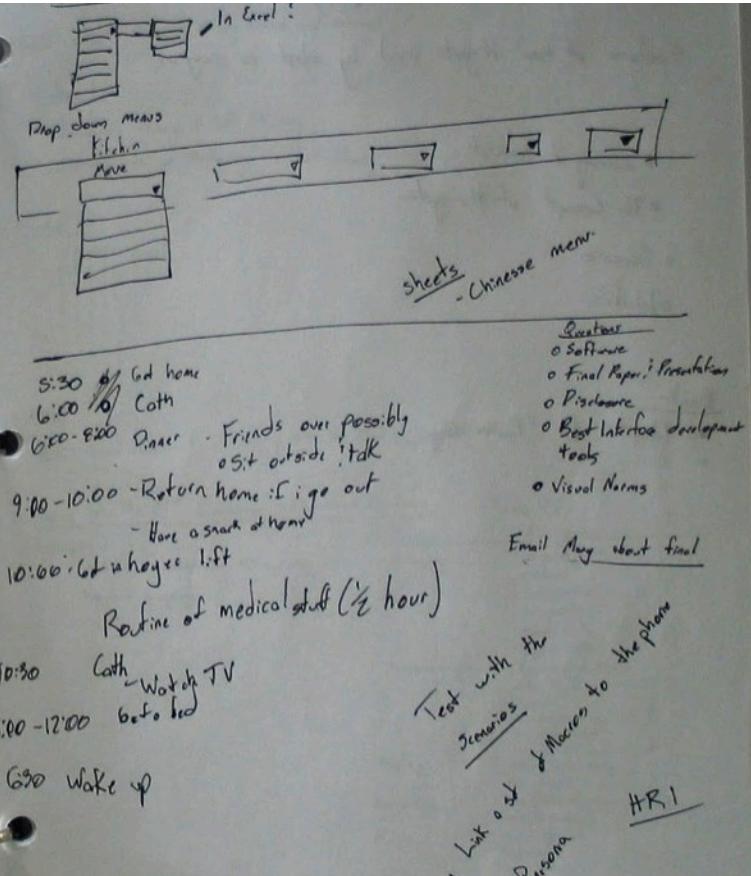
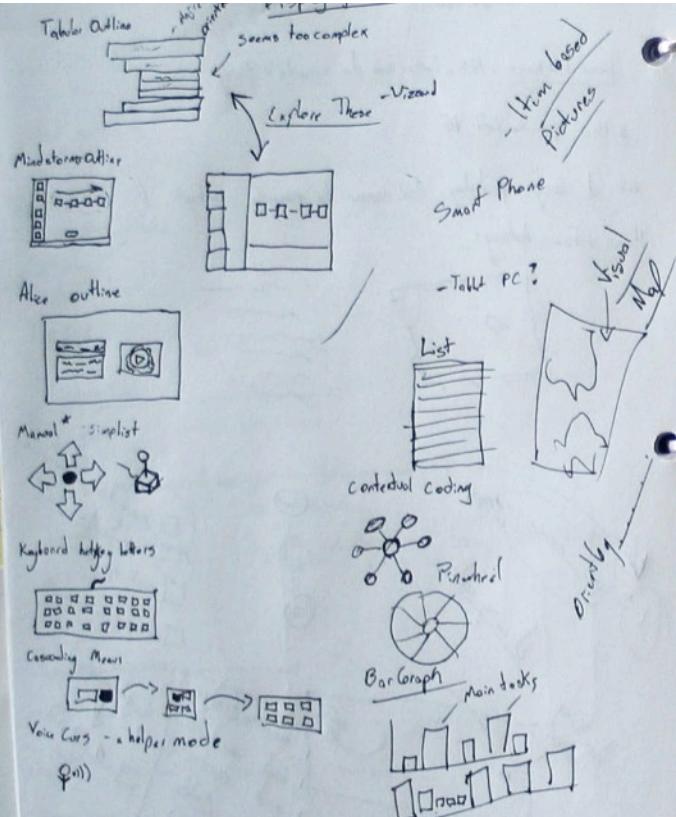
Our analysis revealed substantial differences between two types of units at a hospital in how the robot affected the workflow and



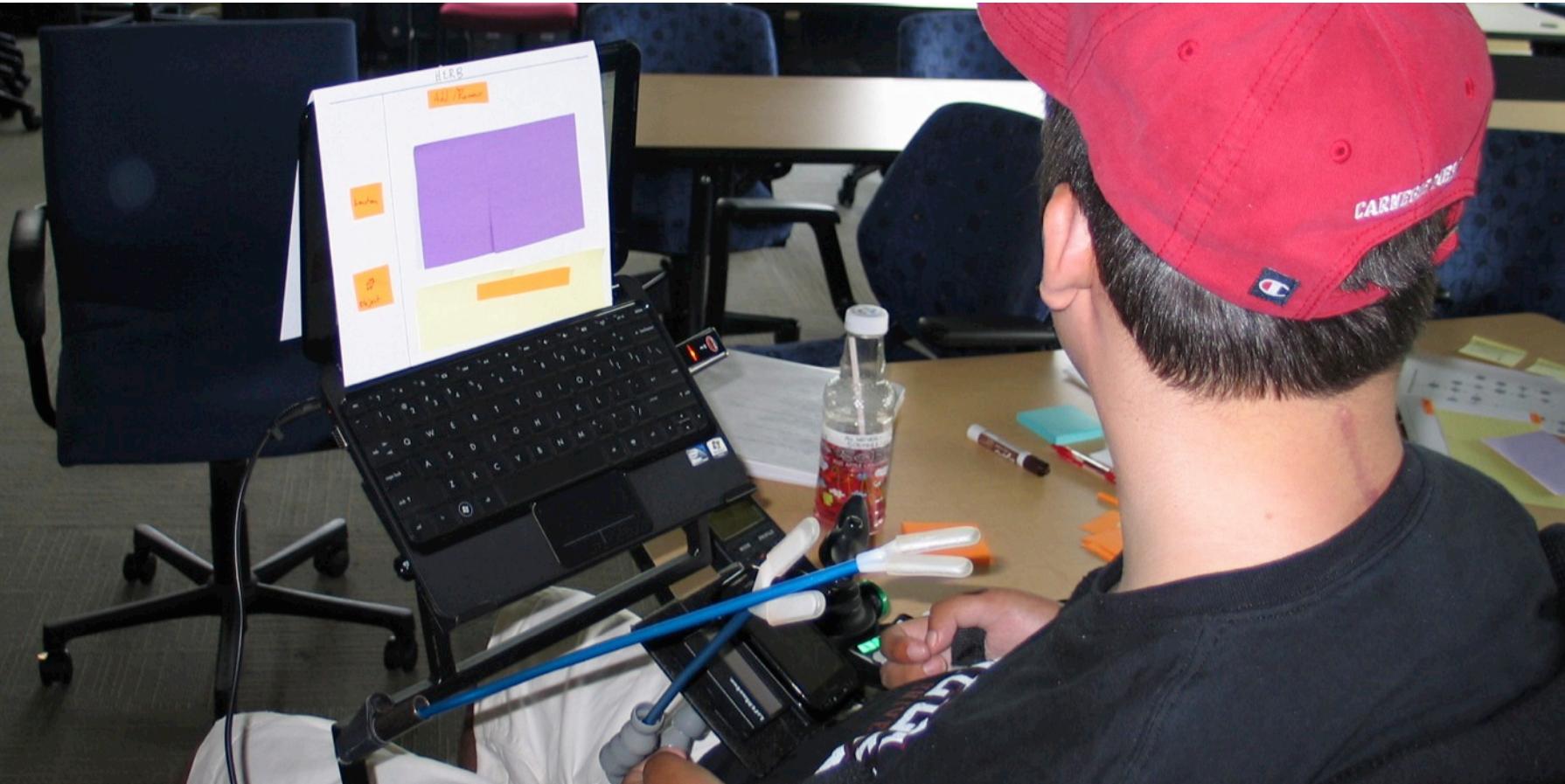
ethnographic research



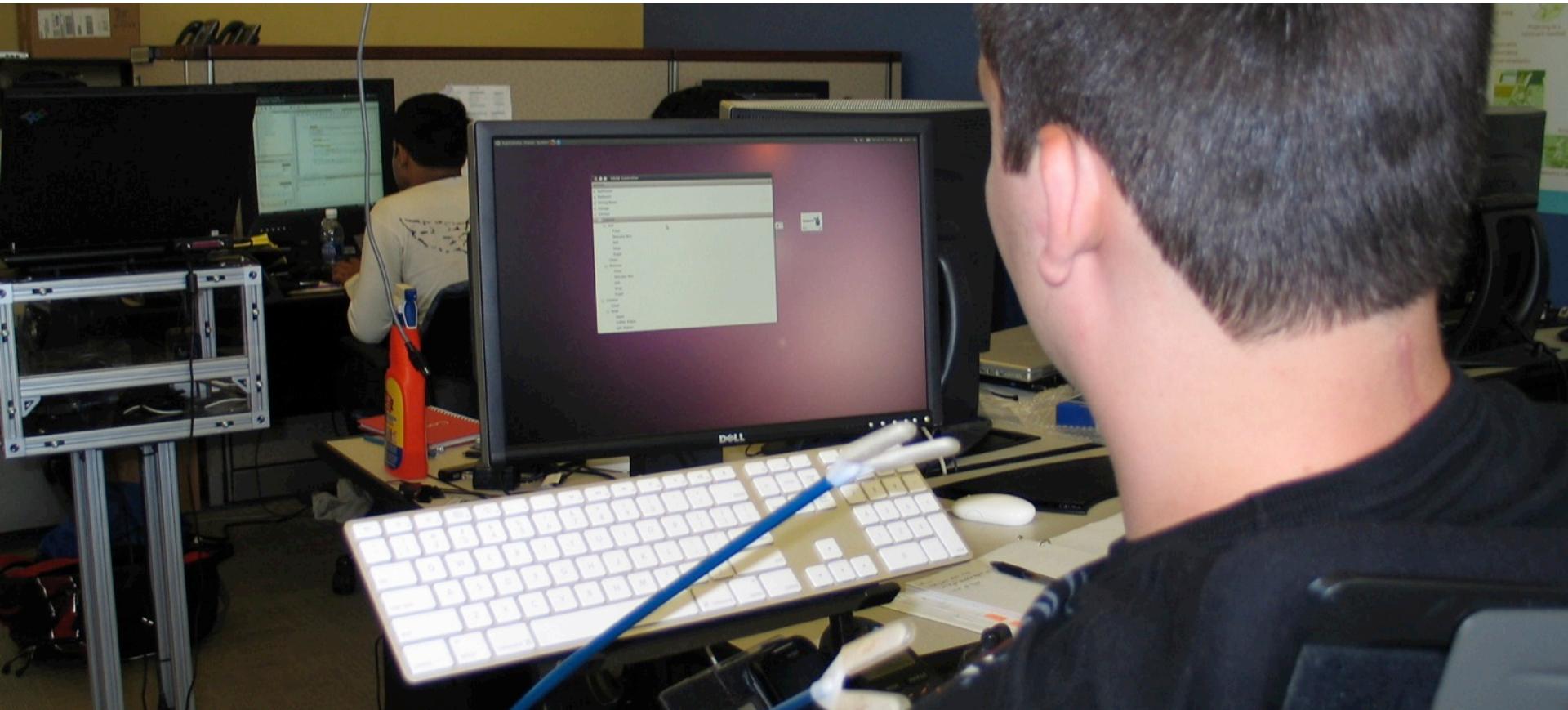
affinity diagramming



sketches



paper prototyping



digital testing



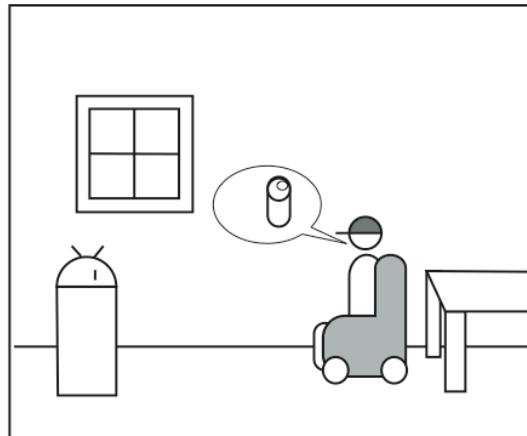
digital prototype

Type of Goal

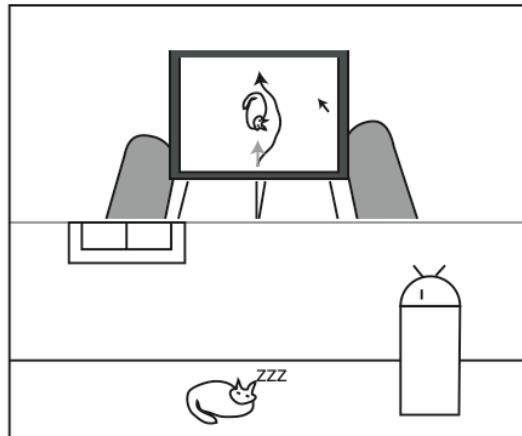
- Social
- Educational
- Functional

Level of Control

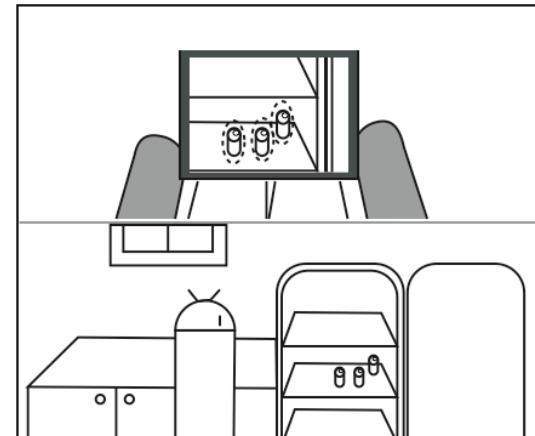
- Man. Manip. and Context Awareness
- Auto. Manip. Man. Context Awareness
- Auto. Manip. and Context Awareness
- Autot Manip. and Context Awareness, Decision Making



Mark is preparing for some friends to come over and asks HERB to check how many Cokes are in the fridge



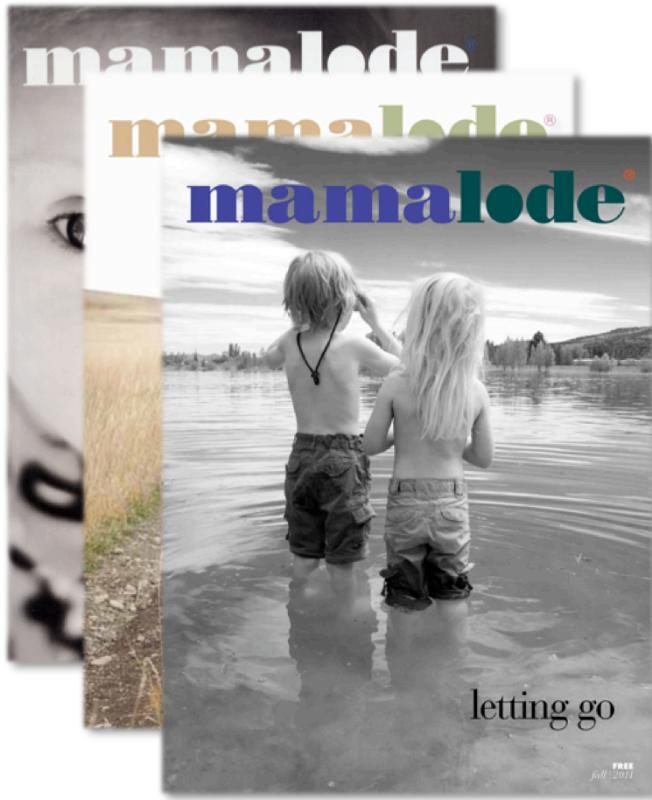
HERB starts driving to the kitchen. Mark watches on his phone as HERB identifies Mark's cat as a potential obstacle and drives around it



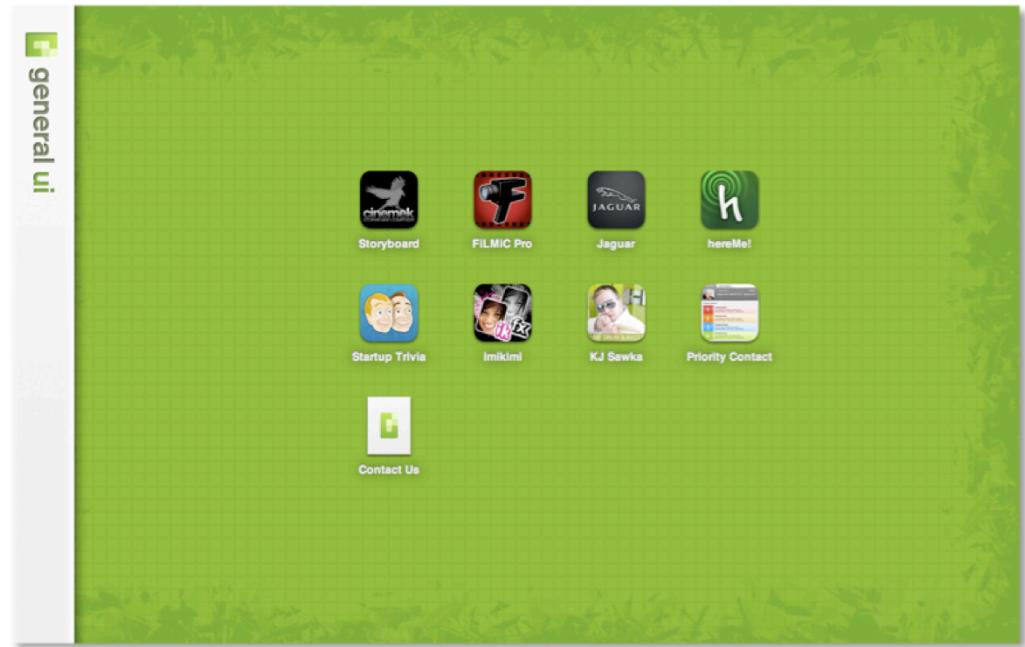
HERB opens the fridge and Mark watches as the video feed highlights all the Coke cans. HERB returns and tells Mark the number of cold Cokes

speed-dating

mamalode[®]



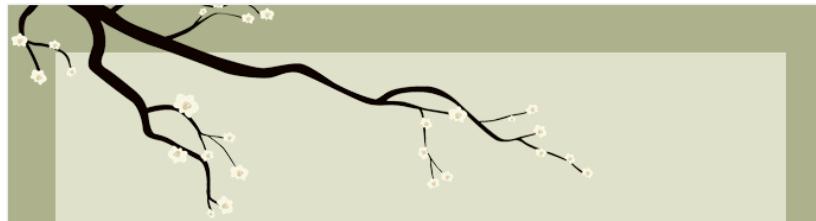
mamalode



General UI



semi-structured interview



Survey on Mothers and Digital Media

This study is being conducted by researchers at the University of Washington. The study is designed to help us understand how mothers and expecting mothers access multimedia for support and encouragement. This survey is open to women 18 years or older in the United States.

We ask that we be allowed to publish the information we obtain from our survey, but it will be used anonymously. Please do not reveal to us anything that is confidential, may put you in jeopardy, or that you feel uncomfortable discussing. Your participation is entirely voluntary and you may decide to stop at any time without consequence to you.

This survey has 21 questions, and will take 5-10 minutes to complete. If you have any questions, comments, or concerns please contact

Demographics

Just the basics.

What is your age?

- Under 18
- 18-20
- 21-25
- 26-30
- 31-35
- 36-40
- 41-45
- 46+

survey



affinity diagramming

Connie

The Concerned Mom

I need a trusted source of information so I can make the right decisions as a mother.

Demographics

Profession	Stay at home mom
Age	28
Children	Boy (18 months)
Devices	Smartphone, iPad
Hobbies	Hiking, swing-dancing
Interests	Travel, competitive diving



Metrics



“ I wish my kid came with an owner’s manual! I want sure that I am doing things right and providing opp and support for my child.

Connie's Story

As a mother, Connie is actively concerned about the well-being of her son, Chris, and is always seeking more information regarding parenting. In order to devote more time and energy to Chris, she has recently quit her job in marketing and has become a stay-at-home mom. When not focused on parenting, Connie and her husband go swing dancing on the weekends. Connie also likes to take her mind off of things by reading about travel and, as an former competitive diver, likes to keep up with diving.



When Connie's is concerned, she goes to her mother for advice and occasionally she will contact her friends through Facebook. When Connie wants to share information about Chris with people, she does so through Facebook but only with those she feels close to. She is comfortable with using technology, and is considering buying an Android tablet after her coworker recently bought one. She hopes that she will read more after buying a tablet, though she currently reads more than she is aware of.

P

Brenda

mom

Not everyone understands me and sometimes I need reassurance that its still okay to be me.

ager

iPad

es, Biking



Ellen

The Experienced Mom

Demographics

Profession	School Administrator
Age	37
Children	Girl (10), Boy (7)
Devices	Smartphone
Hobbies	Baking
Interests	Politics



Metrics



“ When it comes to kids, I've seen it all. I enjoy my kids, they get along so well and are just great people... I like to think I had some part in that.

Ellen's Story

Ellen is used to interacting with children, both as a mother of two and as a school administrator. She divorced her ex-husband Steve two years ago, but still maintains a good relationship with him. Her children, Jacob and Amanda, live with her but both she and Steve, share parental responsibilities. She feels confident as a mother.

She enjoys baking and likes trying out new recipes she finds through apps on her iPad. She frequently involves her children in baking activities to spend more time with them. She is also very interested in politics and reads The Economist on her iPad.

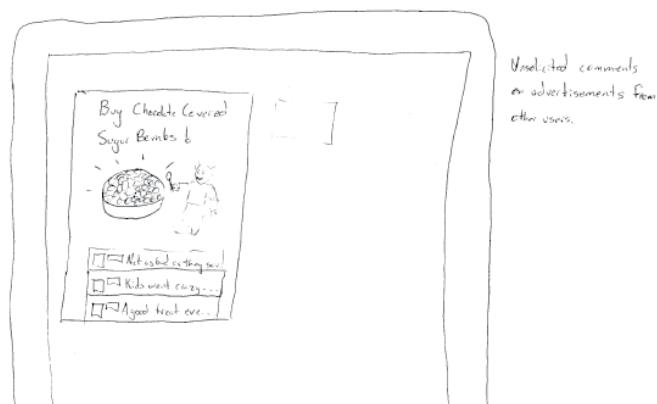
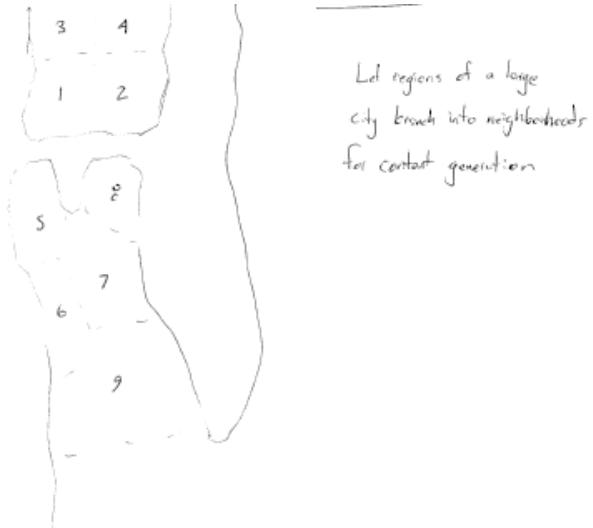
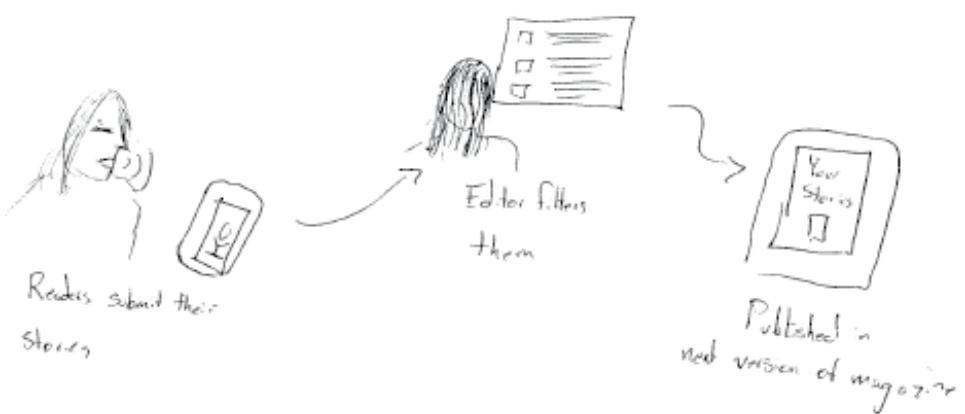
She is very close to her sister, who has two teenage sons, and often asks her for parenting advice. She wants to raise her children with a good balance of both Chinese and American values and feels like she can relate to her sister more than her more traditional mother about such issues. She also has a lot of friends she's met at school events, and frequently goes out with them for coffee.



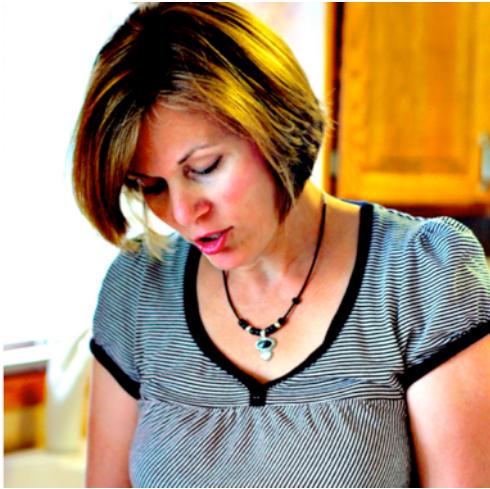
Photo by: craigClouder- flickr

Primary Persona

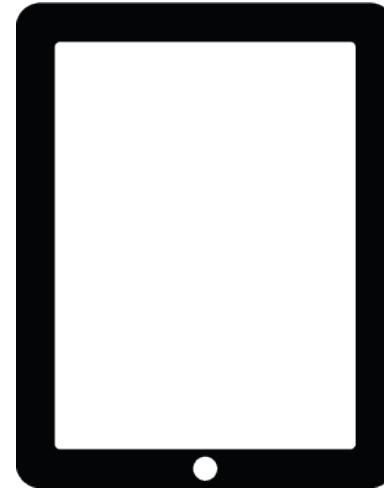
personas



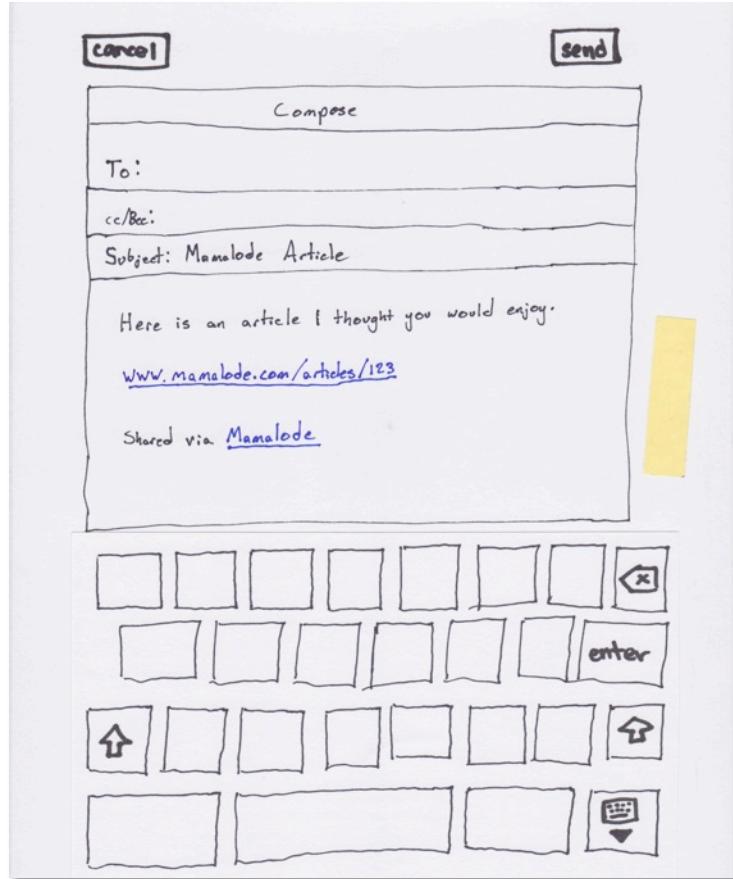
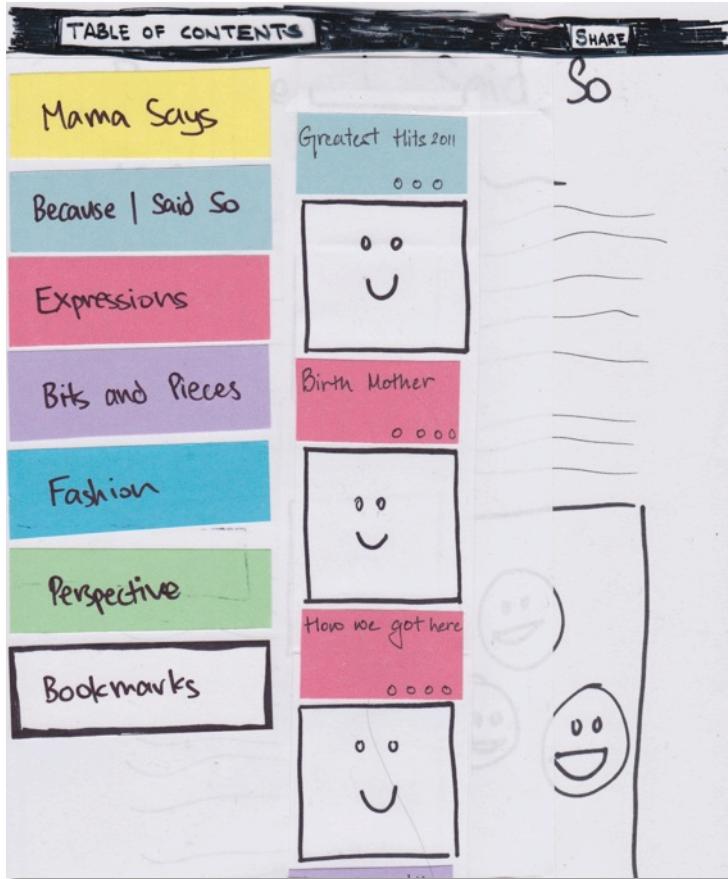
sketches



Reflective reading
Opportunistic reading
Content relevance
Meaningful sharing



Full page browsing
Bookmarking
Meta-data on articles
Email sharing



paper prototype

iPad 7:19 PM

because i said so

WHAT WE NEED

"You know what we need?" Jake asks, as various spices cascade out of the cupboard (not ours) and bounce across the floor (also not ours).

"A house." Where I come from, we do not wait for the joke question to answer itself.

"That's better than what I was going to say," he says as he stoops to pick up the scattered seasonings.

I wonder what he was going to say we needed and continue to stir whatever it is that's for dinner. The pot is not mine. The damn spoon is not mine.

I feel like some kind of special idiot, teaching my 2-year-old the beauty of sharing when what I want most in the world is to NOT share. I want my own home and my own space. My own front door where I can leave my shoes so I can trip over them later. My own carpet for my daughters to spill juice on. My own pot and my own damn spoon for making dinner.

jessi marcinek

anonymouse

mamafade.com | 7

iPad 7:19 PM

[Table of Contents](#) [Share](#)

Mama Says	
Because I Said So	
Expressions	
Bits and Pieces	
Fashion	
Perspective	
My Bookmarks	

five of our separation. I'm living minute by minute. Trying to keep my eyes dry and head from spinning—mostly to protect my 2 ½-year-old. Yesterday I bent over to pick crumbs up off the floor and couldn't get back up. I just sat there, tears rolling down my cheeks. My little boy came over put his hand on my shoulder and said, "Don't worry, daddy will be home soon, he's just at work." How do they know? How do I protect him? Later in the midst of feeling so alone he said, "Mama, you're my best friend". Again, how do they know and how do I protect him? My 3-month-old just smiles. He knows too. He reminds me every day to keep my chin up and smile. To keep looking at myself and how I can do better, to keep working, keep learning , keep growing, Mama, and everything will be as it should. I believed my children were all I needed. I was wrong. My failing marriage is finally forcing me to admit this. How could I need more than them—don't they give me everything I could ever want?

anonymous

mamafade.com | 7

digital prototype



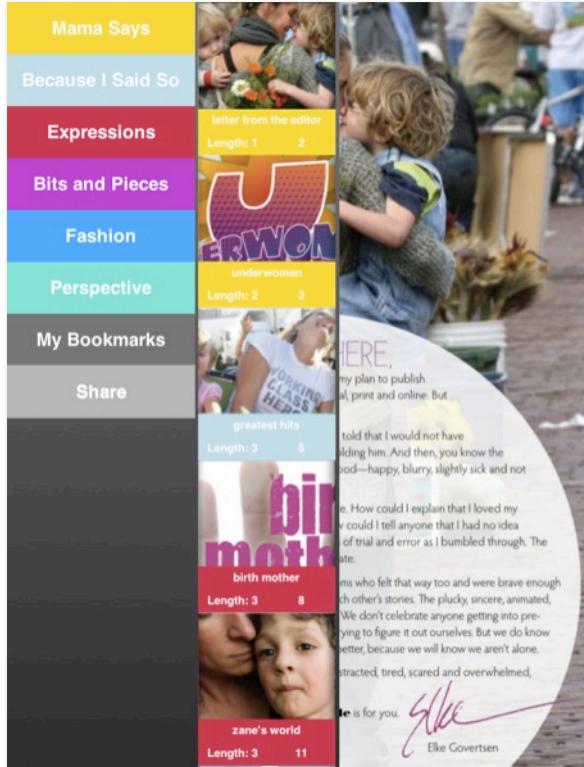
This screenshot displays the Table of Contents screen of the app. On the left is a vertical navigation bar with colored buttons: yellow for "Mama Says", light blue for "Because I Said So", red for "Expressions", purple for "Bits and Pieces", blue for "Fashion", teal for "Perspective", grey for "My Bookmarks", and black for "Share". To the right of the navigation bar are several article cards. The first card, "letter from the editor", has a yellow header and a photo of a woman holding flowers. The second card, "greatest hits", has a yellow header and a photo of a woman. The third card, "birth mother", has a red header and a photo of a woman and a child. The fourth card, "zane's world", has a red header and a photo of a young boy. The right side of the screen features a circular white graphic containing text and a signature.

Section	Title	Length	Thumbnail
Mama Says	letter from the editor	1	Photo of woman with flowers
Because I Said So			
Expressions			
Bits and Pieces			
Fashion			
Perspective			
My Bookmarks			
Share			
greatest hits		3	Photo of woman
birth mother		3	Photo of woman and child
zane's world		3	Photo of young boy

HERE,
my plan to publish
al, print and online. But
told that I would not have
olding him. And then, you know the
ood—happy, blurry, slightly sick and not
e. How could I explain that I loved my
v could tell anyone that I had no idea
of trial and error as I bumbled through. The
ms who felt that way too and were brave enough
ch other's stories. The plucky, sincere, animated,
We don't celebrate anyone getting into pre-
try to figure it out ourselves. But we do know
better, because we will know we aren't alone.
stracted, tired, scared and overwhelmed,
e is for you. *Elke*
Elke Govertsens

digital prototype

Mamalode



An HTML/CSS prototype of an iPad magazine reader facilitating immersive reading and directed sharing.

Methods

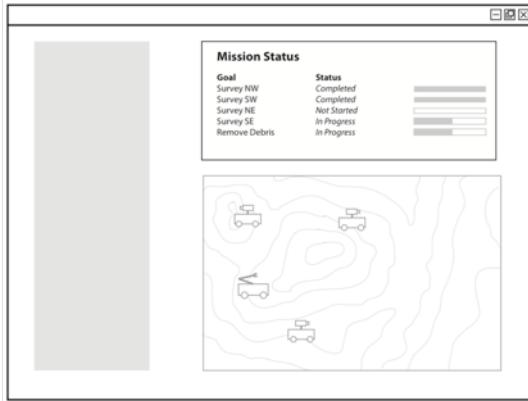
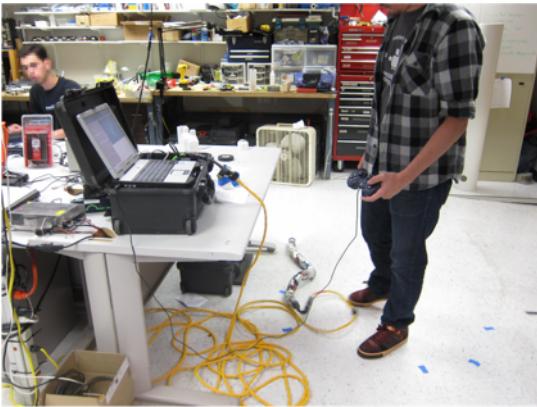
- Semi-Structured Interview
- Social Network Mapping
- Personas
- HTML/CSS Prototype
- Usability Testing

Findings

- Mothers read opportunistically
- Mothers have tight-knit support networks
- Mothers want time for reflective reading
- Mothers like relevant advertisement
- Digital magazines could facilitate a Magazine 2.0 movement enabling readers to become writers

How can an iPad reader facilitate support among mothers?

MURS



A design study of the relation between information type and desired display saliency for information pertaining to human-robot interaction in teams.

Methods

- Literature Review
- Contextual Inquiry
- Affinity Diagramming
- Interface Wire-framing
- Speed Dating

Findings

- Desired information saliency depends on context
- High saliency should be used for information pertaining to human safety and robot safety
- Medium saliency should be used for information relating to context and goals
- Low saliency should be used for information pertaining to mission control

What do expert robot operators want to see in an interface?

DARS

DARS Audit

= Requirement Incomplete
= Requirement Complete

[View Only Incomplete Courses](#)
[Expand All](#)

Major Requirements (B.S., Computer Science)

Hours Taken: 50

Main CS Track

[View all requirements](#)

Course	Semester	Progress	Hours	Grade
CS 125 - Intro to Computer Science	TRANSFER	COMPLETE	4	A
CS 173 - Discrete Structures	Fall 2008	COMPLETE	3	B
CS 225 - Data Structures	Fall 2009	COMPLETE	4	A
CS 231 - Computer Architecture I	Fall 2009	COMPLETE	3	A
CS 232 - Computer Architecture II	Spring 2010	COMPLETE	4	B
CS 241 - Systems Programming	Spring 2010	COMPLETE	4	B-
CS 242 - Programming Studio	Fall 2010	COMPLETE	3	A
CS 357 - Numerical Methods I	Spring 2011	IN PROGRESS	3	
CS 373 - Theory of Computation	Fall 2010	COMPLETE	3	A
CS 421 - Progms Languages & Compilers		INCOMPLETE	3	
CS 473 - Algorithms		INCOMPLETE	3	
MATH 415 - Applied Linear Algebra	Spring 2010	COMPLETE	3	B+
MATH 463 - Statistics and Probability I	Fall 2010	COMPLETE	4	A-
PHYS 211 - University Physics: Mechanics	Spring 2009	COMPLETE	4	B-
PHYS 212 - University Physics: Elec & Mag	Fall 2009	COMPLETE	4	B+
PHYS 213 - Univ Physics: Thermal Physics or PHYS 214 - Univ Physics: Quantum Physics	Spring 2010	COMPLETE	2	C

A redesign of the University of Illinois' Degree Audit Report System (DARS) shortening search time and increasing feature discoverability.

Methods

- Survey
- Contextual Inquiry
- HTML Prototype
- Usability Testing

Findings

- DARS' system model did not match users' mental models
- The information architecture of DARS required serial search rather than affording pop-out search
- DARS did not facilitate discovering basic functionality of the system
- DARS did not leverage connections with other university resources

How can a university website be made more useful and usable?

Hospital Scheduling



A study of improvements to a hospital clinic's scheduling policies using discrete event simulation.

Methods

- Process Mapping
- Data Collection
- Process Modeling
- Verification and Validation
- Literature Review
- Future State Modeling

Findings

- Block scheduling reduced both patient wait time and nurse overtime
- Factors such as hospital parking change the definition of "optimal" scheduling
- Cost savings were estimated at \$145,000

How should a public hospital schedule its patient appointments?

HERB



Interaction design of an assistive robot facilitating respectful and dignified interactions with elders and users with disabilities.

Methods

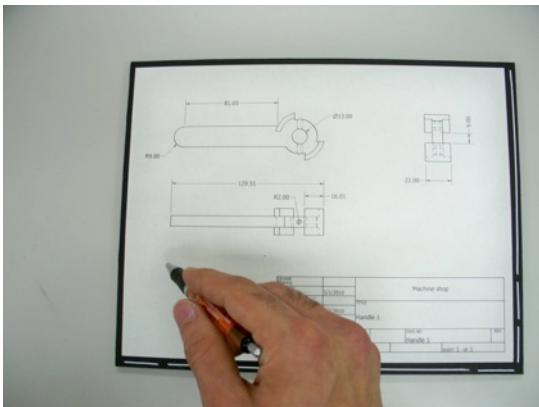
- Literature Review
- Directed Storytelling
- Shadowing
- Participatory Research
- Paper Prototyping
- Digital Prototyping

Findings

- There are nuances to caregiving, the same action may be respectful in one situation and degrading in another
- Persons with physical impairments wish to develop an identity aside from their impairment
- A system facilitating modification respects users dignity and individuality

How can an autonomous robot treat users with respect?

Sketchpad



Research and design of a document manager facilitating annotation and file transfer for machinists in academia.

Methods

- Observation
- Contextual Inquiry
- Personas
- Co-design
- Form-factor Prototyping
- Paper Prototyping

Findings

- Machinists manage a wide array of paper and digital documents
- The harsh shop environment requires products to operate in high heat and noise
- Documents must be easily annotated for processes requiring manual machining, and transferable to CAD machines for computer machining

How can machinists manage digital and paper documents seamlessly?

Photo Credits

- HERB <http://personalrobotics.ri.cmu.edu/projects/herb.php>
- Paper 1 Rosner D., and Bean J. (2009). Learning from ikea hackers: 'i'm not one to decoupage a tabletop and call it a day'. Proceedings of CHI09. New York, NY: ACM Press, 419-422.
- Paper 2 Takayama, L., Ju W., and Nass C. (2008). Beyond Dirty, Dangerous, and Dull: What everyday people think robots should do. Proceedings of HRI08. New York, NY: ACM Press, 25-32.
- Paper 3 Mutlu, B. Forlizzi, J. (2008) Robots in Organizations: The role of workflow, environmental, and social factors in Human-Robot Interaction. Proceedings of HRI08 Amsterdam, Netherlands.
- Mother flickr creative commons user: Sam Cockman
- Mamalode mamalode.com
- General UI generalui.com