

Design for the “Uninterested” End-User



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Microsoft®

Research

My Research: From applications to infrastructure

Family Coordination & Connectedness

2004 - 2010



Family Calendar

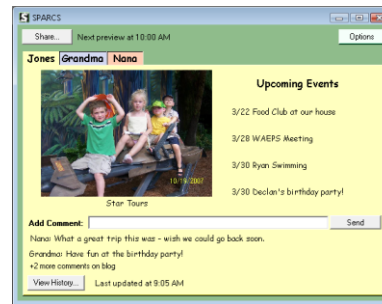
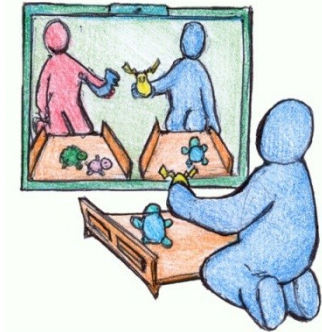


Photo Sharing



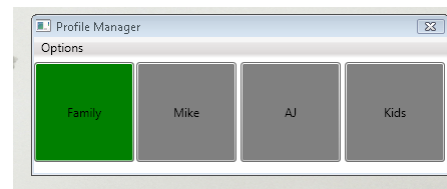
Video Playdate

Use and Sharing of Technology

2007 - 2011



Yours, Mine, Ours



Family Accounts



Speech@Home

Home Automation

2009 - Ongoing



PreHeat: Controlling Home Heating with Occupancy Prediction

Deployed in 5 houses

2010 - Ongoing



HomeOS

Interviews 14 houses, in 12 homes now

The “Check Engine” light goes off in your car.:

a) Pull the car over, pop the hood and start futzing



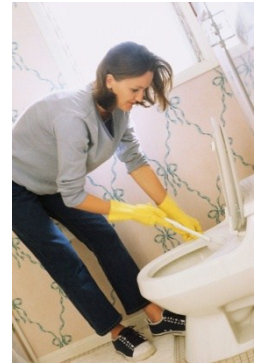
b) Drive to the mechanic



c) Ignore it

Your toilet backs up – nasty stuff everywhere. Do you:

a) Grab a plunger and start clearing the sewage lines.



b) Call the plumber

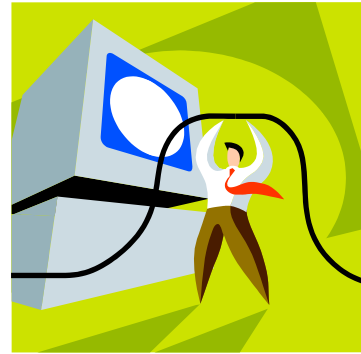


c) Try a few things and then call the plumber

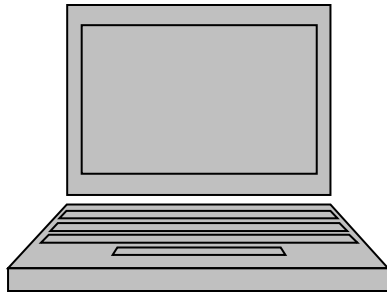
But what about



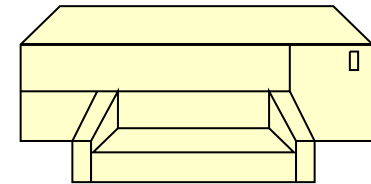
Installing a home wireless network?



Installing updates, coping with spyware, backing up your computer?



Adding a new device



Configuring a home printer

Home Technology = Iceberg



90% of the hassle hidden below the water, and we force users to muck with it

Uninterested user != stupid user

Eliminate the hassle?

If home networking is “hidden” infrastructure, why can't we just make it go away?

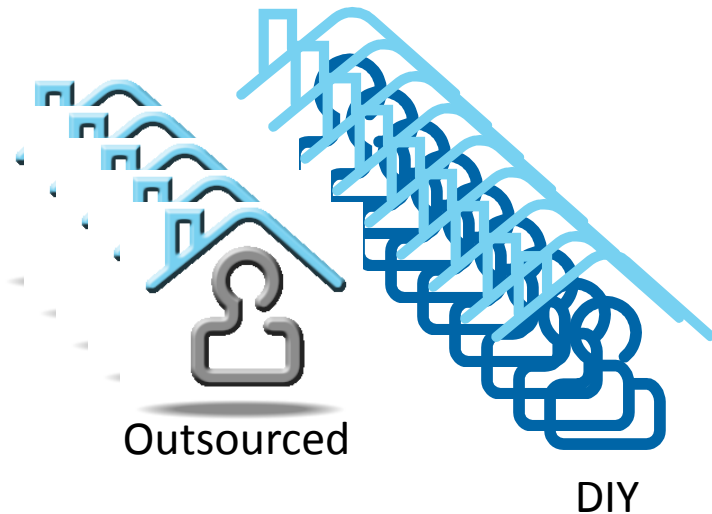
- Outsourcing
- Standards
- Auto-discovery

BETTER THAN IT WAS
=
HIGHER
EXPECTATIONS

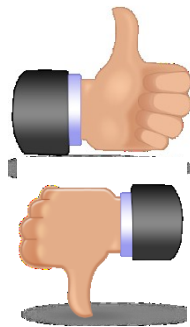
Understanding challenges

14 households with one or more of the following:

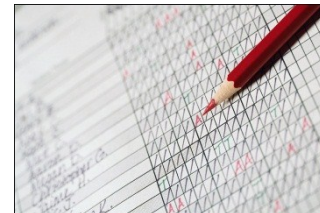
- Remote lighting control
- Multi-room audio/video systems
- Security cameras
- Motion detectors



Inventory



Semi-Structured Interview

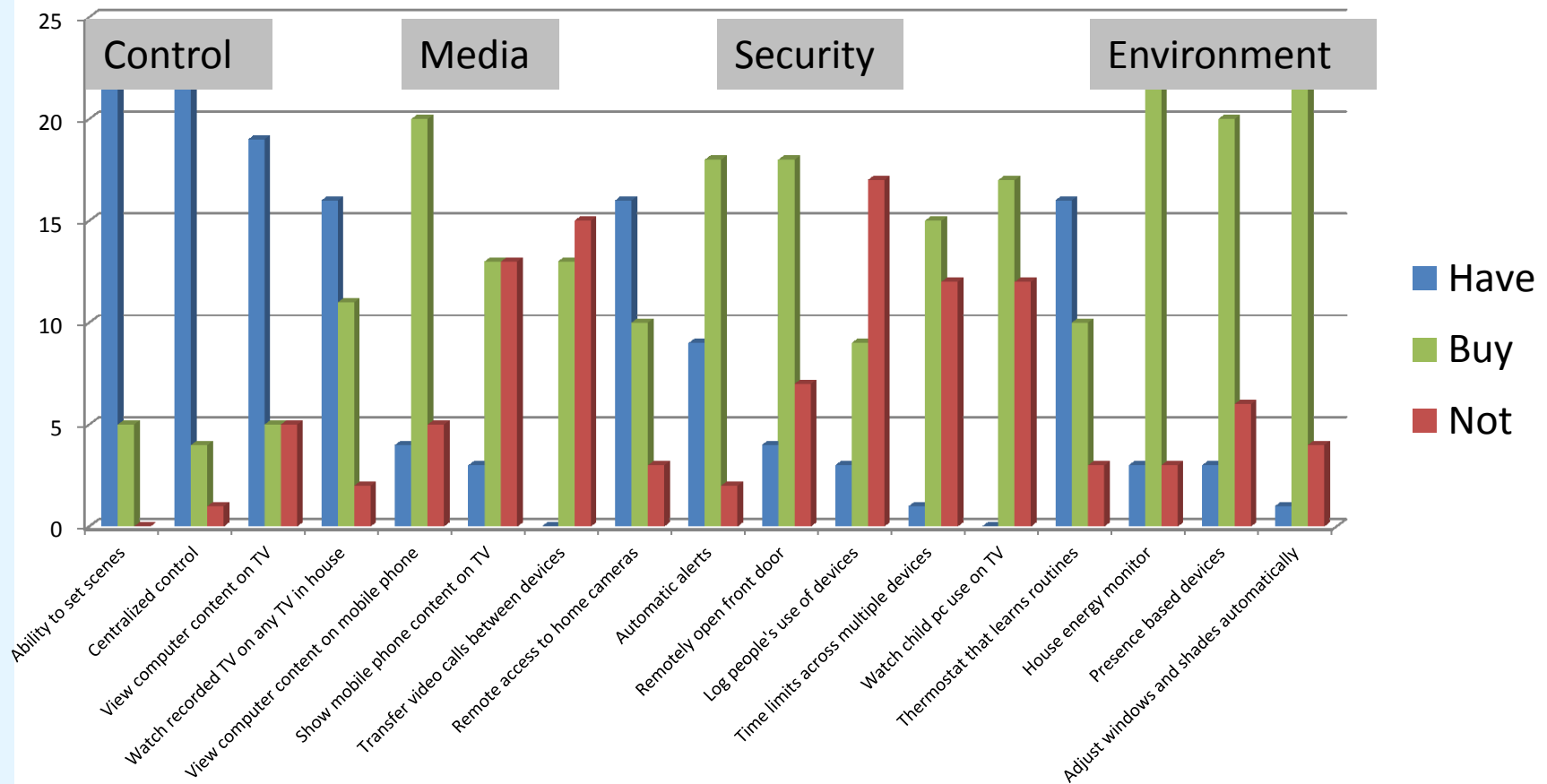


Questionnaire



Home Tour

Diversity in Installation & Desires



Incremental additions challenging



Phone Access



Camera



Motion sensor



Programmed light switches



Door sensor

Structural or Retrofit?
(9 put automation in place during structural changes)

Iteration Required

“I thought when I went into this, I’d want my alarm system integrated and I’d want these automatic features firing off in the background like, you know, I’d wake up and music is playing in my bathroom and the lights come up, you know all these Jetson type things. And the challenge with that, while they’re all great, **I don’t live that structured of a life**, not waking up into [it] every day, and I'm not going in the shower every day at the same time. And you know, I don't want to hear music all the time. **So I don’t think the routineness of automation is what I was really wanting.”** (D8_G)

Security: my home is my castle

- Guests (Wireless access is like water)
- Remote access



Door locks



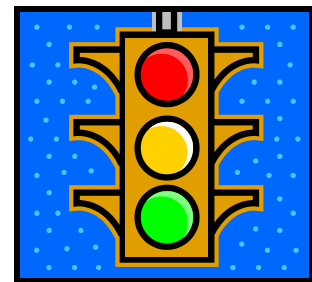
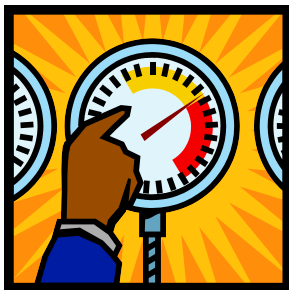
Cameras

Very technically savvy participants concerned about vulnerability of remote access

**DESIGN FOR THE
“UNINTERESTED”
END-USER**

Which means to me...

- Make the important and frequent things easy to do (e.g. add device to network, guest access)
- For other tasks, solve automatically or warn the user to get professional help



Concluding remarks

- Design for the uninterested user
- Understand user's goals, then think carefully about what can be “outsourced”
- Three challenges:
 - Diversity of desires
 - Incremental additions challenging
 - Confidence in security



Progress requires **SYSTEM + HCI** folks working together

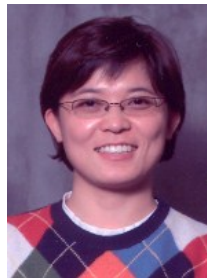
Thanks!

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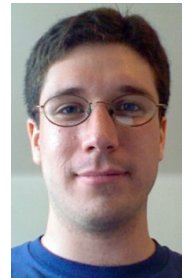
Ratul
Mahajan



Sharad
Agarwal



Stefan
Saroiu



Colin
Dixon