Design for the “Uninterested” End-User

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My Research: From applications to infrastructure

2004 - 2010

Family Coordination & Connectedness

- Family Calendar
- Photo Sharing
- Video Playdate

2007 - 2011

Use and Sharing of Technology

- Yours, Mine, Ours
- Family Accounts
- Speech@Home
Home Automation

PreHeat: Controlling Home Heating with Occupancy Prediction
Deployed in 5 houses

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?

Adding a new device

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

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
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

Outsourced
DIY
Diversity in Installation & Desires

The chart illustrates the diversity in installation and desires across different categories:

- **Control**
  - Ability to set scenes
  - Centralized control
  - View computer content on TV
  - Watch recorded TV on any TV in house
  - Show mobile phone content on TV
  - Transfer video calls between devices
  - Remote access to home cameras

- **Media**
  - Automatic alerts
  - Remotely open front door
  - Log people's use of devices
  - Time limits across multiple devices

- **Security**
  - Watch child pc use on TV
  - Thermostat that learns routines
  - House energy monitor
  - Presence based devices

- **Environment**
  - Adjust windows and shades automatically

The chart shows the distribution of these features among 'Have', 'Buy', and 'Not' categories.
Incremental additions challenging

Phone Access

Programmed light switches

Camera

Motion sensor

Door sensor

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

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
• 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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