

Why Ubicomp in the Home

- Automating/replacing common chores/ reducing complexity
- Empowering us to do more difficult things
- Enriching social lives, fostering local community
- Blur between work/entertainment/home
- Human capabilities aren't changing that quickly

Properties/Requirements

- Reliability/dependability
- Maintainability
- Individualization
 - Automatic adaptation vs. customization
 - Profiles
- Predictability
- Affordances/transparency
- Observability and mental model
- Recoverability
- Simplicity – will people get smarter
- Training wheel/scaffolding for frequently used appliances
- Interoperability

Applications

- Capture of experiences:
 - Reminder services/lost objects/how-tos/share info
- Personal communications/keep in touch
- Cleaning robots
- Home automation and entertainment – coming soon
- Information filtering: in and out
- Looking after pets while you're away
- Looking after kids from a remote location
- Remote control, energy management
- Improved security/safety

Applications cont'd.

- Store keeping
- More awareness of consumables
- Home a/v integration
- Home diagnostics/health care
- Electronic butler: where are my favorite socks?
- Locator services
- Shopping list reminders
- Food tests – alarms when things go bad
 - Allergies, too spicy

Past Experiences

- Video on Demand failure
- Home theater success
- Games and interactive toys success
- Personal video recorders success

Limitations

- Storage doubling every year
- Processor speed every 18 months
- Network bandwidth increasing more slowly
- Battery power much more slowly
- Ability to create high-quality, usable, reliable software not increasing
- Human capacity ???

Impediments

- Need for additional technology not seen as contributing to better life
- Cost
- Technical feasibility
- Still too complex – do we need home system administrators
- Privacy and security concerns
- Recording everything will fundamentally change our lives – not necessarily in a good way

View of House

- Universal user interface, implicit user interaction
- Looks similar to current house or homes of the past: physicality

Methodology

- Ethnography, cultural probes
 - Collecting ideas from other user groups
- Programming tools/ rapid prototyping
- Evaluation techniques

The Future

- In 5/10 years, will we have mass acceptance and availability of cameras/microphones/sensing technology?
- Coming soon: home health, entertainment, home automation, home support
- 50 years: 3-D printing, nanites to create functional devices we see on the Internet

Impacts on home/city design

- Build homes close to companies
 - Mixed initiative/multi-purpose developments
- Interior design
- Environmental impact
- More focus on the artifacts that we value
- Greater focus on aesthetics combined with functionality: best of both worlds