

A Research Agenda for the Smart Networked Home

Users ↔ Technology

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What forms of user/participant understanding
can lead to actionable implications for
technology design?

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How do we effectively design the user experience informed by the constraints imposed by the technology?

How can we collaboratively design the sociotechnical system informed by all forces at play?

What do people want and do?

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What do they want control over?

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What do they want control over?
What do they have to have control over?

Which of the things that
people (users, tech support, etc.) do
can we get technology to do?

What are users capable of understanding?

What's the right division of labor
between technology and people?

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What does “right” mean?

Transparency?

Usability?

Economy?

Etc.

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Presumes: This is a “mixed initiative system”

How do we effectively expose complexity in the technology to the people in the system?

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How do we effectively expose complexity of people to the technology in the system?

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Presumes complexity can't be designed away.

What “moral economies” appear in the home?

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What classes of family behaviors are exhibited?

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that can be designed for?

Can we build systems that have 100% effectiveness
for 80% of the people, or must we achieve 80%
effectiveness for 100% of the people?

How?

(How) can we engineer systems that allow extensibility after deployment (especially by non-expert users)?

Are there principles for “design for extensibility”?

(How) can we design open systems with the resilience of closed systems?

(How) can we build closed systems with the economics of open systems?

What are a minimal set of technical and non-technical requirements that would allow forward progress?

How do we generalize from point solutions
to drive technological innovation?

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Can we instrument the quasi-smart-networked home and gather data to help us figure out how to create the smart networked home?

What metrics can guide development
of smart networked homes?

Is there a complexity theory
of the smart networked homes?

What happens if we target the smart networked home
...for developing countries?
...for economically disadvantaged communities
...for persons with disabilities?

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(How) can we design smart networked homes that
can respond to our specific goals – to be suited for
parenthood, to be green, to keep me healthy, to allow
for independent living?

What elements of the home can be smart and networked (thermostats, physical infrastructure, etc.)?
How?

Can we better understand how economics, values, incentive structures, regulatory and legal structures, and other forces and constraints facilitate or hinder the development of smart networked home innovations?

How can we shape our efforts in light of the forces at play in this ecosystem?

Collaboration is necessary

What disciplines are necessary is contentious and probably unnecessary

Ground in end-to-end questions and ideas

Bridge people are invaluable