

Iwork topic descriptions – Ursula Holmström

These topics are all exploratory in nature. You should do a literature search on what has been done before and based on this background suggest new possibilities and alternatives. Using your imagination is ok and even recommended, but do so in some organized way (brainstorming methods etc.). The geek home of today is the average home of tomorrow, so techie solutions are allowed. However, the point is making life at home easier and more fun, so find a reason and use for any 'just because it's possible' solutions.

For inspiration and ideas for all topics, you can look at e.g. the Lifestyle Home material by Philips.
<http://www.design.philips.com/lifestylehome/Section-13883/Index.html>

1. NFC in home environment

Many services in a home network should preferably be automatic and personalized. One way to approach personalization of services and automatic events, is to use NFC identifiers. Where could NFC tags be used at home and what kind of services can they be used for? Are there technical issues in deploying this technology at home? Are there privacy and security issues? How could these be solved?

Jukka Riekk, Timo Salminen, Ismo Alakarppa, "Requesting Pervasive Services by Touching RFID Tags," IEEE Pervasive Computing, vol. 05, no. 1, pp. 40-46, Jan-Mar, 2006.

2. Electronic notice board for the home

One need and wish that usually comes up in smart home research is that people want to be aware of what is happening in the smart home even if it happens automatically. To present this information different means can be used, e.g. electronic notice board, home portal or smart walls / screens. Explore what kind of information / presented how / on what kind of displays could be applied in a home setting.

Alladi Venkatesh, Steven Chen, Victor M. Gonzalez, "Designing The Family Portal for Home Networking" in Robert Kraut, Malcolm Brynin & Sara Kiesler (Eds.) Domesticating Information Technologies, Oxford University Press, 2006
<http://www.crito.uci.edu/noah/paper/Venkatesh,%20Chen,%20Gonzalez%202005.pdf>

3. Visualization of the home network

Visualization is a powerful tool in presenting information in a way that gives an easy overview. As noted in the electronic notice board topic, knowing what is going on at home is a common need, and this goes for the home network too. People might want to know who can access what information, what devices they have on their network, how crowded the bandwidth is, are there attacks from outside or any other property of the home network.

Explore what to visualize, how, where to display this in the home. The topic is not strictly limited to visual display - if you have ideas of other means to provide awareness, by all means suggest!

Jennifer Rode, Carolina Johansson†, Paul DiGioia, Roberto Silva Filho, Kari Nies, David H. Nguyen, Jie Ren, Paul Dourish, and David Redmiles, "Seeing Further: Extending Visualization as a Basis for Usable Security" Proceedings of the second symposium on Usable privacy and security, Pittsburgh, Pennsylvania, 2006

4. Virtual presence & augmented reality

Carol (age 9) is alone at home after school. Her grandmother Eva lives in another town several hundred km away, but she can still keep Carol company through a virtual presence service. Today Carol is baking a cake for her mother's birthday. Eva is helping and instructing her through a simple head mounted augmented reality system that lets the Eva e.g. draw instructions in Ann's display (take flour from HERE, measure sugar up to THIS level, now look at the oven dials.. turn THAT one to HERE)

Is this realistic? What does it take to implement? What uses could there be for this kind of system?

For inspiration: Using AR in building a gingerbread house, handout from VTT