

Observation of Users Interacting with Smart Technology

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Smart technology as one form of ubiquitous computing is gaining importance because of its increasing availability to the wide public. The benefits propagated by advertising, e.g. making life easier and more comfortable is questionable when taking a closer look on an aspect, which is in our focus of research - usability. Considering the problems shown in many studies which occurred with singular devices like VCRs, mobile phones and computers it seems not to be realistic, that smart technology can be smoothly integrated in our lives.

Several aspects are of importance in relation to the evaluation and observation of smart systems, one of them is the expected advancement of smart technology. Our assumptions are based on a model following the hierarchy of needs of A. Maslow including the aspects that are relevant in relation to our research focus.

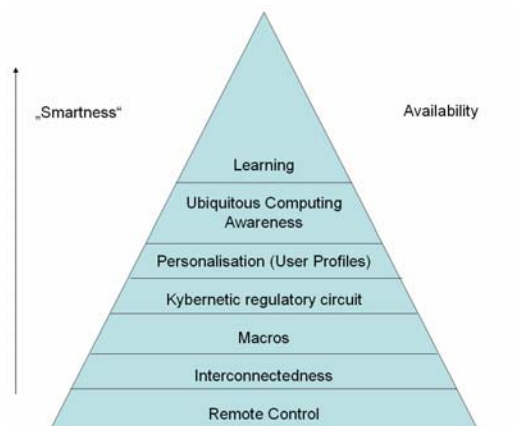


Figure 1. Smart Technology Model

The major question in relation to the workshop is choosing the right set of methods to do the evaluation of the systems in use. Based on the assumptions sketched in the model above and the findings discussed in the related literature we assume, that punctual methods like usability tests could be used, however, not as the only source of information. Other approaches like the observation of users in artificial environments for a certain period of time, e.g. the Philips HomeLab, seem also not to be the optimal solution. If we consider the higher levels of the model (e.g. awareness functions or learning systems) short term observation of interaction does not provide a satisfactory quality of information.

Our approach is based on a long term observation of interaction with smart systems in a person's familiar environment. This approach has its roots in sociology and social psychology (used e.g. in the Marienthal studies).

So far we have equipped three different locations with off the shelf smart home technology which provides soft- and hardware interfaces for customization. The locations are a farm with

different buildings, a one family house and a usability lab. All these locations should serve as environments for the evaluation and observation of smart technology related tasks.

For example, different methods are combined to evaluate systems and observe their usage. In the lab environment, usability aspects of different interaction methods can be investigated, e.g. whether a system should be operated with fingers, stylus, keyboard or mouse input. The other locations serve as infrastructure for the investigation of long term questions, such as the relevance of emotional aspects, patterns that occur in the usage (which we call “rituals”), seasonal differences in interaction etc.

The figures below show the configuration level of the one family house. The floorplan shows the kind and position of installed devices. The Image shows the viewing position of a surveillance camera attached to the system as additional source of feedback. The table in Figure 3 shows a graphical representation of device history.

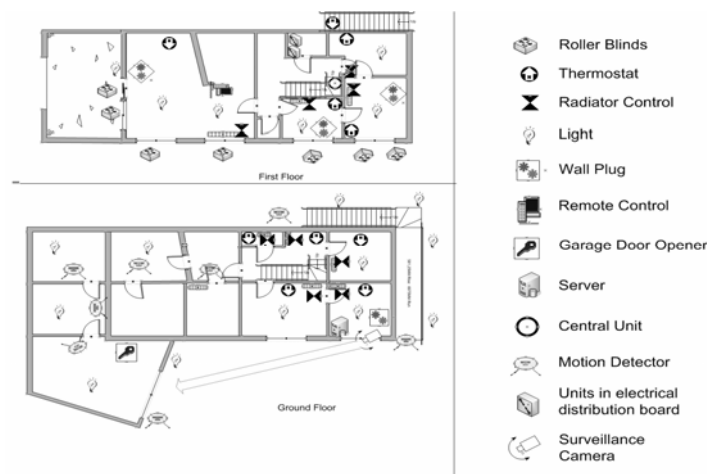


Figure 2. Devices installed in the one family house

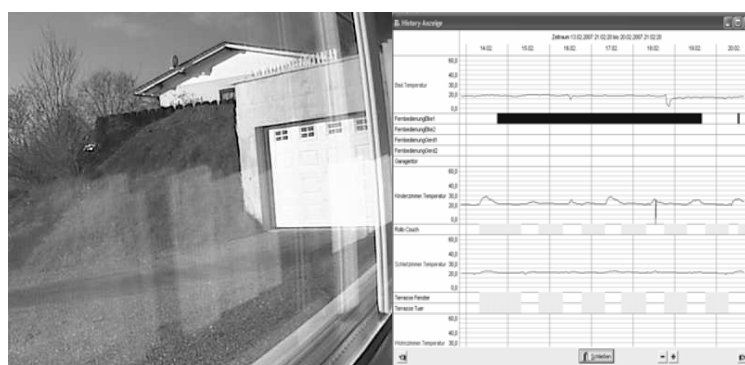


Figure 3. Wlan camera view and history of device status