UrbanFoodSpots - Development of Cooling Stations for Food Sharing Communities

Margit Pohl
Vienna University of Technology
Argentinierstraße 8
1040, Vienna
margit@igw.tuwien.ac.at

Gabriele Mraz
Austrian Institute of Ecology
Seidengasse 13
1070, Vienna
mraz@ecology.at

Elisabeth Weißenböck
Vienna University of Technology
Argentinierstraße 8
1040, Vienna
elisabeth.weissenboeck@tuwien.ac.at

Gabi Bernhofer
Austrian Institute of Ecology
Seidengasse 13
1070, Vienna
bernhofer@ecology.at

Maria Kalleitner-Huber
Austrian Institute of Ecology
Seidengasse 13
1070, Vienna
kalleitner-huber@ecology.at

Abstract
Approximately one third of the world food production is wasted, although the food would still be good for consumption. The project UrbanFoodSpots is targeting this problem by developing cooling stations with an information system for local food sharing communities.

Author Keywords
food sharing; sharing economy; kiosk-systems design; sustainability; community building

Introduction
FAO data indicates that about one third of the world food production is either thrown away or lost [9]. On the other hand, there are many people in need of an adequate supply of varied types of food. Modern information technology can link donors of food with recipients, provided that these systems are designed appropriately. This could support a more sustainable way of food consumption. There are already several online platforms in place that support the exchange of food products [9]. The German platform foodsharing.de, for example, helps citizens to share excess food locally. Nevertheless, there are some limits to such approaches because they only address persons possessing digital skills and an Internet connection. On the other hand, there are many humanitarian aid organizations that share surplus food with people in need without the help of IT systems. These organizations provide very valuable help to persons in need. One disadvantage of this approach is that access is usually restricted to certain periods of time.

The goal of the project UrbanFoodSpots is to combine the advantages of both these worlds – easy access to surplus food and accessibility also after closing of shops. The cooling stations consist of a cooling element and an information system. In addition, a community of donors and recipients has to be established. We know that food sharing depends on trust between the participants of such a community. These relationships of trust have to be supported by the UrbanFoodSpots cooling stations in an appropriate way.

Cooperation partners in the UrbanFoodSpots project are Austrian Institute of Ecology, Ernst Winninger GmbH and Vienna University of Technology.

Related Work

The sharing economy has received increased attention of researchers in recent years. Nevertheless, it is still an open questions how to design IT systems appropriate for the support of sharing products, time and skills [5]. An important issue in this context is not only sharing but also community building [3]. Sharing products or services over the Internet is sometimes done anonymously, but participants nevertheless enjoy personal meetings. They often also share a common attitude concerning sustainability and social welfare [7]. They appreciate the possibility to develop a community where they can exchange ideas and opinions [3]. This community building is essential especially for food sharing. Food sharing depends to a certain degree on mutual trust [2] because recipients have to be confident about the quality of the food they accept. Food sharing systems have to generate trust among a community to be successful. This is more easy in local communities with existing ties among the community members.

Researchers have dealt with different kind of kiosk-systems for establishing the requirements of the user's needs [8]. Design guidelines for public information kiosk systems addressing stakeholders were developed [4]. The issue of older people thinking of themselves of not being good with technology has also been addressed [6]. This research can help to design an appropriate interface for the UrbanFoodSpots cooling stations.

Description of the Project UrbanFoodSpots

The goal of the UrbanFoodSpots project is the development of a system to share food on a local level, mainly between private persons. The cooling stations consist of a cooling element in conjunction with an information systems that enables donors and recipients to interact with the system. It is a kind of a kiosk system which allows recipients to withdraw food. The information system provides the user with information about the contents of the cooling station and helps them to retrieve individual products.

It is well known that food preparation is predominantly a responsibility of women, therefore, gender issues have to be taken into account in this project. Other problems in the context of the project which have to be solved concern legal issues and hygiene. In addition, the organization of this process has to be adapted to the needs of the concerned community. In this context, target groups for donors and recipients have to be identified. Stakeholder interviews and focus groups with possible participants of a food sharing community will be conducted to identify the needs of these persons. The company which will design the cooling station is also involved in the project and will participate in the development of the concept for the cooling station.

Target Group

At the beginning of this project, information regarding the target group was gathered through stakeholder-interviews with people who already share food to some extent. Many different models of food sharing were found: From a private person, who stores and shares food in refrigerators on his property, to some small shops or restaurants which provide some kind of cooling unit – all of them offered important experience to the project. According to these interviews, the target groups are heterogeneous: On the one hand, there seems to be a tendency that regular customers of restaurants/shops that provide a cooling unit, people who are living close to some kind of sharing platform or that know the operator of such a platform are more likely to use them. On the other hand, there are organizations which share surplus food with needy persons. These organizations also attract predominantly people from the local environment.

The stakeholder interviews also strongly confirm that donors of food are more likely to be female, this is in line to the fact that in many households food practices are still the woman's responsibility [1]. Similarly, this is consistent with the gender results obtained in [3]. Age groups may vary due to different organizations. Apparently, mutual trust seems to be very important.

Open Issues

Designing an information system for such a heterogeneous group is a challenging area. As discussed previously, all age groups and social classes should be able to access the UrbanFoodSpots cooling stations. People with limited computer literacy should be addressed as well as technically experienced people. Therefore the information system should be as simple to use as possible.

Icons can offer first information about the food but may not be recognized by all users. A powerful method could be the cooperation of designer and user to design those icons.

When text is used instead of icons, the size of the font has to be adjustable for older or partially sighted people. Another challenge is language: Which languages should the interface provide? If you just offer German and English you might exclude immigrants which don't know one of these languages. Providing more languages can lead to high costs and to a lack of comprehension of smaller groups of immigrants whose language is not available.

Regarding to the stakeholder interviews some of the recipients called the restaurants/shops to ask them, what was stored in the cooling unit of their sharing platform. Offering an app or a website which shows the current stored food, may be important to save an amount of time which is needed to get to the cooling unit. Nevertheless people with no internet access or limited computer/smartphone literacy will need another option to obtain information.

However, this can lead to another problem: Frustration may occur if the food is no longer stored after a short trip to the cooling unit. Reservation of one or more items could be the solution. Whether registration is necessary and how long you can reserve items is still not entirely clear.

Conclusion

To develop IT systems to support food sharing is a challenging task because of the heterogeneity of the target group. Community building has to be an integral part of any food sharing project.

Acknowledgements

This work is conducted in the context of the UrbanFoodSpots project. It is funded by bmvit and the Austrian FFG (Österreichische Forschungsförderungsgesellschaft) under the FemTech program.

References

1. Patricia Allen and Carolyn Sachs. 2007. Women and food chains: The gendered politics of food. *International Journal of Sociology of Food and Agriculture*, 15, 1: 1-23.

2. Geremy Farr-Wharton, Jaz Hee-Jeong Choi, and Marcus Foth. 2014. Food talks back: exploring the role of mobile applications in reducing domestic food wastage. In *Proceedings of the 26th Australian Computer-Human Interaction Conference on Designing Futures: the Future of Design* (OzCHI '14). ACM, New York, NY, USA, 352-361. http://dx.doi.org/10.1145/2686612.2686665

3. Eva Ganglbauer, Geraldine Fitzpatrick, Özge Subasi, and Florian Güldenpfennig. 2014. Think globally, act locally: a case study of a free food sharing community and social networking. In *Proceedings of the 17th ACM conference on Computer supported cooperative work & social computing* (CSCW '14). ACM, New York, NY, USA, 911-921. http://dx.doi.org/10.1145/2531602.2531664

4. M.C. MAGUIRE. 1999. A review of user-interface design guidelines for public information kiosk systems. *Int. J. Hum.-Comput. Stud*. 50, 3 (March 1999), 263-286. http://dx.doi.org/10.1006/ijhc.1998.0243

5. Lone Malmborg, Ann Light, Geraldine Fitzpatrick, Victoria Bellotti, and Margot Brereton. 2015. Designing for Sharing in Local Communities. In *Proceedings of the 33rd Annual ACM Conference Extended Abstracts on Human Factors in Computing Systems* (CHI EA '15). ACM, New York, NY, USA, 2357-2360. http://dx.doi.org/10.1145/2702613.2702645

6. David Nicholas, Paul Huntington and Peter Williams. 2004. The characteristics of users and non-users of a kiosk information system. *Aslib Proceedings*, 56, 1: 48-61. http://dx.doi.org/10.1108/00012530410516868

7. Meike Rombach and Vera Bitsch. 2015. Food Movements in Germany: Slow Food, Food Sharing, and Dumpster Diving. *International Food and Agribusiness Management Review* 18, 3: 1-24.

8. Frances Slack and Jennifer Rowley. 2002. Kiosks 21: a new role for information kiosks?. *Int. J. Inf. Manag.* 22, 1 (February 2002), 67-83. http://dx.doi.org/10.1016/S0268-40120100041-X

9. Vita. 3 foodsharing websites to save money and avoid waste. Retrieved December 4, 2015 from http://www.vita.it/it/article/2013/01/30/3-foodsharing-websites-to-save-money-and-avoid-waste/122516/