Designing for Homeless Young People: Precaution in Ubiquitous Computing

Jill Palzkill Woelfer
The Information School
University of Washington
Box 352840
Seattle, WA 98195 USA
woelfj@u.washington.edu

David G. Hendry
The Information School
University of Washington
Box 352840
Seattle, WA 98195 USA
dhendry@u.washington.edu

UbiComp 2009, Sep 30 – Oct 3, 2009, Orlando, FL, USA

Abstract
How should ubiquitous access to information through computing be shaped to improve the lives of homeless young people? Drawing on social and material considerations of homeless young people and service agencies, uncovered in three projects over the last 24 months, this workshop paper engages this question from a precautionary stance.

Keywords
Homeless young people, precautionary design

ACM Classification Keywords
H5.m. Information interfaces and presentation: Miscellaneous.

Introduction
Envision an eight-block neighborhood, adjacent to a large public university, vibrant with places for students, home and business owners, academics, and many others. Less obviously, homeless young people, unlike these other people, actually *live* on the streets in this neighborhood, appropriating sleeping places, finding food, and kibitzing with passersby. These young people, age 13 to 25, also seek respite from the street at nine grassroots service agencies which provide a continuum of care, from basic needs to life skills development. These confidential services, operating at varying times at multi-purpose locations, are largely hidden from

1. Investigated the form and presentation of information resources at nine service agencies [1]
2. Created video scenarios and proto-types to envision how these information resources might be better deployed to help construct "places" that assist young people [3]
3. Implemented a community technology center and educational program to develop life skills and knowledge for using technology [2]

figure 1: Three participatory research and design projects.

most visitors to the neighborhood. Over the last 24 months, we have conducted three projects in this neighborhood, seeking to develop knowledge for the design of information systems for homeless young people and service agencies (see figure 1).

Ubiquitous computing in public

In this workshop paper, we wish to engage the question: *How should ubiquitous access to information through computing be shaped to improve the lives of homeless young people?* We adopt a precautionary stance, recognizing that the *know how* to radically reshape this and similar neighborhoods with ubiquitous computing exists. To be in a position to shape this inevitable technological diffusion, we seek to foresee its reverberations for homeless young people. Two key concerns are i) that the service agencies already have ad hoc structures functioning effectively in the face of low, uncertain levels of funding; and ii) that staff with the appropriate knowledge for helping young people are unlikely to have the technical skills needed to keep new technological infrastructure running.

At the same time, despite any stance we might take – cautious or otherwise – ubiquitous computing has already arrived in this neighborhood. Those with financial means procure their choice of digital devices and many take advantage of wireless Internet access provided by the city and university. People are actively engaged: furiously typing and texting in cafes, wearing fashionable music players, and so on. Viewing this personal digital technology use from their place on the sidewalk, homeless young people understandably aspire to similar experiences! Indeed, gaining access to and knowledge for technology that is used publicly is certainly a priority for the young people we have met.

The community of homeless young people

From the work outlined in figure 1, we have identified a number of social and material considerations. Figure 2 offers a provisional scheme for organizing social considerations, distinguishing broad societal forces (A) from day to day *life* on the street (B) from *work* for leaving the street (C). Within this ternary structure, many tensions, constraints and opportunities arise for design. Three relevant to the deployment of ubiquitous technologies follow. First, the scarcity of personal digital technology is a profound barrier for young people, who often cannot afford reliable digital devices or service plans. Second, young people's desire for freedom, in consort with the harshness of the street, makes it difficult for youth to hold on to their belongings, even small devices such as thumb drives. Third, the youth-adult relationships, which are a critical step in the path out of homelessness, require an acceptance of conformity that young people are likely to resist, often choosing freedom on the street (life) over goal-setting activities in service programs (work).

Figure 3 complements the social considerations by mapping a space of artifacts – both non-digital and digital – that give homeless young people access to information and communication tools. Four of the systems are commonly used by the service agencies: Folding Card Tables (3), Filing Cabinets (8), Bulletin Boards (7), and Slat Walls (9). Other systems are envisioned: the In-fold (2), a passport sized organizer for service agency materials; the Rolling Case (4), a case for organizing brochures, with folders and other materials for displaying the brochures; the InfoBike (5), an industrial-sized tricycle equipped with information and an Internet access point; and the Computer Kiosk (6), a small-sized display with attached printer.

A. Societal Forces

A1. Scarcity of personal digital technology

B. Life on the Street

B1. Desire for freedom

B2. Vulnerability

B3. Public perception

C. Work in Service Programs

C1. Youth-adult relationships

C2. Desire for conformity

C3. Goal-setting orientation

figure 2: Organizing scheme for social considerations.

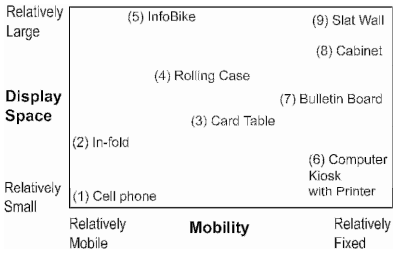

figure 3: Design space of information systems.

This space of artifacts has been used to explore how different kinds of information systems might be used by the service agencies in a coherent, integrated fashion, extending existing systems through standardization, leading to greater integration, opportunities for reuse of materials, and a more consistent "brand." Embracing the vision of ubiquitous computing, the trajectory of this approach leads to deploying the brochures through cell phones, replacing slat walls and folding tables with large-sized displays, making brochures more dynamic, with content tailored to individuals' needs, and so forth.

Yet, is this trajectory, and its future point, desirable? One issue is the financial costs associated with upkeep and the provision of reliable, sustained access to digital technology. A short term year-long pilot experiment, which was then stopped in the absence of funding, could harm the relationship between homeless young people and the service agencies by creating new experiences that are then taken away (a common pattern of disappointment for homeless young people which ought to be avoided). An even more substantial question is that without a stable place to live, how would young people keep track of personal digital devices? A resolution may lie in public kiosks rather than personal devices, but if these kiosks are only for young people, they invite stigmatization, and through the public congregation of homeless young people, may draw undesirable attention. The third, most crucial question, concerns how public access to information could change the mediating influence of the service agencies. Fulfillment of basic needs motivates young people to access service programs where staff guide young people to other services. A design that provides public access to information now provided by staff reduces the need for interactions between young people and staff and may inadvertently facilitate young people's continued existence on the street without providing the caring human assistance that allows young people to see other options.

Scenario: replacing the "Flier"

Given this brief discussion of the neighborhood, homeless young people and the service agencies, we now consider what might happen if we turned one particular paper flier, identified as the most frequently distributed of hundreds of brochures and fliers [1], into a pervasive digital resource. Measuring 3.8 inches by 8.5 inches, the "Flier" has no title, affiliation, date or version. Yet, this mundane slip of paper gives the only comprehensive overview of all the service agency programs available in the neighborhood. On one side of the "Flier" is a map of service agency locations. On the other side is a detailed weekly schedule with hours of the service agency programs, telephone numbers, and brief descriptions. The "Flier" is not disseminated to the general public. Rather, it is only available at the entrances of confidential service programs. Given its importance, when we first encountered the "Flier," we were struck by the quantity and complexity of information it contained. It reminded us of a bus schedule, in need of revision for usability and visual polish, ripe for intervention, and we discussed how the "Flier" could be deployed digitally.

Yet, if the "Flier" were turned into a pervasive digital resource what would likely happen? A public kiosk, would provide information for all, including newly arrived young people - without a place to stay and without friends. However, this kiosk would change the inherent nature of the "Flier" from a semi-private confidential resource to freely-available public

information. The existence of service agencies would be more visible to business and home owners, bringing unwanted attention, perhaps leading some to ask, "Are agencies enabling homelessness in young people?" Second, if the schedule and locations of services were pervasively available on cell phones and through web browsers, it could diminish the safety of young people. For example, abusive parents, pimps, and drug dealers, might more easily locate and come looking for young people. Third, the "Flier" might be presented on a cell phone, and be customizable by time, date, and location. For young people with a cell phone, this capability would create a degree of convenience. However, like the kiosk, it would likely increase the visibility of service agencies and perhaps reduce contact and communication between service agencies and young people.

This brief analysis shows potential benefits and negative consequences to making the "Flier" pervasive. On the other hand, the paper "Flier," passed from person to person throughout the neighborhood, may strike an optimal balance – providing needed information to homeless young people while veiling the service agency network and young people from the scrutiny of others (abusive parents, business owners, etc.). This balance may, in fact, be critical to the vitality of the network, allowing it to survive and operate so it can engage its raison d'être: care for homeless young people. Given this, a precautionary design stance leads us to conclude that making the "Flier" a ubiquitous resource, in digital or non-digital form, is unwarranted.

CONCLUSION

We have described an urban setting in which a marginalized group lives but without resources that are common for others. The scenario and its analysis, within the social and material considerations that were discussed, showed that key information about the service agencies should probably not be turned into a ubiquitous resource because of the possible harms that could result to homeless young people and the network of service agencies. This, of course, does not mean that ubiquitous computing has, in general, no role in this and similar neighborhoods. It does, however, provide a clear example of ubiquitous information access that is likely to cause harm in this kind of setting, against which other scenarios can be compared and analyzed. That said, one designer's precaution is another's missed opportunity for development. For ubiquitous computing and homeless young people, this is the essential predicament to be engaged.

References

[1] Woelfer, J. P., Yeung, M. W-M., Erdmann, C. G., and Hendry, D. G. Value considerations in an information ecology: Printed materials, service agencies, and homeless young people. *In Proc. AM08*, ASIS (2008), 248-256.

[2] Woelfer, J. P. and Hendry, D. G. Creating a Community Technology Center for Homeless Young People: Preliminary Experience Report. Presented at *The 8th International Conference on Interaction Design and Children, Workshop on Digital Technologies and Marginalized Youth: Reducing the Gap* (Como, Italy, June 3-5, 2009). http://www.cs.uiowa.edu/~hourcade/idc-workshop/woelfer.pdf.

[3] Woelfer, J. P., and Hendry, D. G. (in press). Stabilizing homeless young people with information and place. *Journal of the American Society for Information Science and Technology*.