

Mixers

an audio noticeboard for an older community

Mixers is a design product for enhancing communications within a community of older people in London. Through a user-centered process, our design for an audio noticeboard evolved to suit the opportunities and constraints of a particular user group and context.

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A postgraduate design project, Mixers was completed in June, 2000, during our studies in Computer Related Design at the Royal College of Art, London.

Video clips of the process and prototype can be viewed by clicking below or by going to: www.viktoria.se/~ramia/mixers.html

Community context

The University of the Third Age (U3A) is a volunteer-run learning organization for people between the ages of 60-90. We worked with them to reconsider their physical and information environment as they moved to a new headquarters within London.

Finding out about events and news at the University of the Third Age involved reading notes printed on bits of paper. For the users, these were difficult to read, filter through, and remember. Their explicit wish for a better notice system was the starting point for our design project.

Design process

We involved end-users throughout the design process using collaborative scenario and prototyping methods. These were means both for us to engage fully with the needs and values of a community as well as to develop an appropriate and desirable interaction design solution.

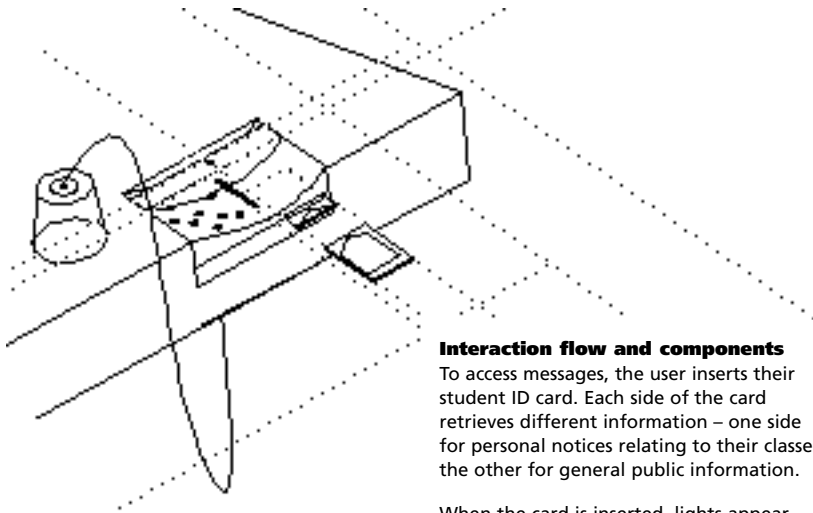
Outcome

To facilitate access to community announcements, we designed a tangible interface for accessing audio notices. The interface was developed and tested as a working electronic prototype. Proposing a simple, effective functionality, the product was situated within an economically and technologically feasible system proposal.

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user experience

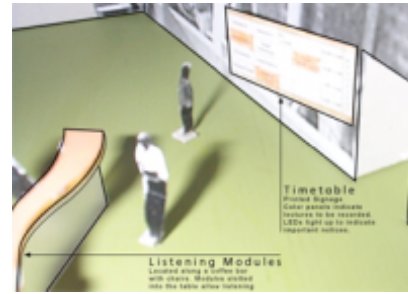
In addition to the problem of accessing information, we considered our design within the context of existing social patterns. The interface we designed was embedded within coffee tables. We developed a working prototype to determine how our design would enhance everyday interactions with people as well as with information.



Interaction flow and components

To access messages, the user inserts their student ID card. Each side of the card retrieves different information – one side for personal notices relating to their classes, the other for general public information.

When the card is inserted, lights appear alongside representing messages. The user tunes among them with a tactile bar and listens through the hand-held earphone.



Noticeboard system

We developed a system for displaying and retrieving messages, which had two components:

- 1) lights added to the existing class **timetable** to indicate important notices;
- 2) **listening modules** embedded in coffee tables for listening to relevant notices and community announcements.

These components were designed to encourage possibilities for face-to-face encounters, to provide standing-up access to timely notices and comfortable places to spend time listening to longer messages. By augmenting existing information displays and proposing modular listening interfaces, the system supports the current needs of the University as well as future growth.

Listening module interface

We developed a working prototype of the listening module in order to explore and evaluate the user experience. From ongoing user workshops, we discovered the value of simple, direct, tangible interaction for our user group and the public context that we were designing for. This is reflected in our design as an easily-learned flow of interaction and a reduced number of interface components for accessing the system, tuning among messages, and listening. We developed, prototyped, and tested these with end users. Not only was the interaction intuitive and satisfying for them, but also for a wide range of the general public visiting our graduation exhibition.



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design development

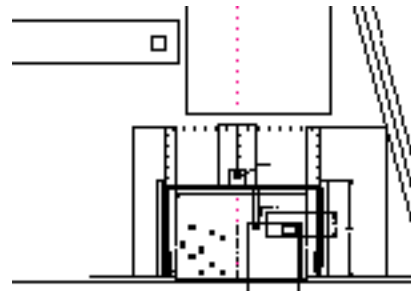
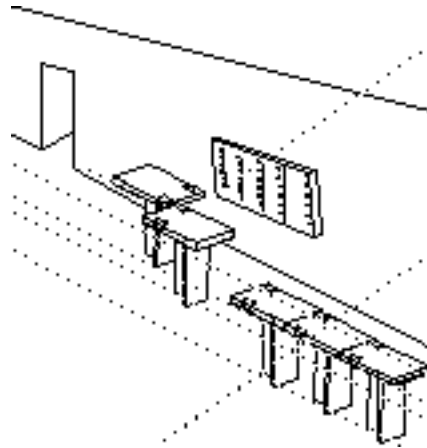
Together with users, we generated and evaluated a series of ideas about how information could be organized, retrieved, and used. The final interaction model took the idea of 'fishing', where a single input gesture (inserting the student ID card) retrieved relevant messages from a general pool of information.

Experiential qualities

Aesthetics were carefully considered to fit into the social atrium context. Glowing lights attract people to using the product and provide an ambiance peripheral to other interactions, such as coffee chats.

Prototype components

Our working prototype employs simple sensors, barcode technology, LEDs, and programming in Macromedia Director and Basic Stamp. The prototype is meant to simulate the user experience and we project other technologies for manufacturing multiple products.



Repurposed technology

The system design repurposes the existing telephone message system (provided by British Telecom) and audio loops already installed in the classrooms. With additional external lines, voicemail ports, and an upgraded central processor, the system could handle the audio content and access by multiple users simultaneously. Integrating noticeboard functionality with 'recycled' audio technologies offers a coherent solution for collection and distribution of information within the community.



Interaction model

The resulting experience for the user is a simple flow of interaction, direct correlation between action and output, and satisfying multi-modal feedback. For usage in a public context and considering the limited physical abilities of some of our user group, a tangible interface was determined to be particularly suitable for interacting with digital information. It supported multi-modal feedback through visual cues, tangible feedback in choosing among messages, and audio feedback from the earphone. The shape and visual appearance of each element was intended to support an intuitive understanding of the product and imply a logical sequence of interaction – one example is the graphical indication on the ID card of where message lights will appear once it is slotted into the product interface.

Technology proposal

The technical solution was developed with database consultants and advisors from the University of the Third Age. The modular product interfaces use readily available electronic components and the backend processing happens on an ordinary PC with minimally customized software. The system repurposes technology already in use at the University so as to be economically feasible for a charity, as well as to provide a more maintainable and familiar system for the volunteer-run organization.

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process and methods

As designers, we applied a variety of prototyping and user methods inspired by work within the participatory design field. These helped us to engage fully with the design context and informed an appropriate, innovative, and feasible solution for an elder user group, a unique organization, and a particular architectural context.



Video scenarios provided a quick means of communicating ideas, exploring interaction scenarios, and testing them by acting them out in real space using cardboard props and working prototypes. They created an accessible means for users to communicate their own ideas through role-playing (c.f. [2, 5]).

Methods References

1. Buchenau, M., and Suri, J. Experience Prototyping. In *Proceedings of DIS '00*, ACM Press, 424-433.
2. Burns, C., Dishman, E., Verplank, B., and Lassiter B. Actors, hair-dos and videotape: Informance design. In *Proceedings of CHI '94*, ACM Press, 119-120.
3. Design at Work: Cooperative design of computer systems (ed. Greenbaum, J., and Kyng, M.). Hillsdale, NJ: Lawrence Erlbaum 1991.
4. Gaver, B., Dunne, A., and Pacenti, E. Design: Cultural Probes. In *Interactions*, (January 1999) Volume 6 Issue 1, 21-29.
5. MacKay, W., Ratzler, A., and Janecek, P. Video Artifacts for Design: Bridging the Gap Between Abstraction and Detail. In *Proceedings of DIS '00*, ACM Press, 72-82.



Working mock-ups explored experiential factors such as interactive behaviors, alternate form factors, and sequences of interaction. Easily-altered elements involved users in trying and modifying these on the spot (c.f. [1, 3]).

Sketch ideas and 3rd-party research statistics acted as **conversation pieces**. Inspired by 'Cultural Probes', these helped us to open a discussion around attitudes and values concerning technology, and to engage users in imagining possible futures [4].

User workshops

As 'design partners', users were engaged at all levels of our design process – they are experts on their needs and values as older people, on what would work within their community, and as the volunteers who would be interacting with and maintaining the system on a daily basis. During the 4 month project, we held 6 user workshops, involving members of the community both on site and off in idea generation, systems consultation, scenarios and role playing, and prototype testing.

Participatory prototyping

We employed methods inspired by participatory and experience design to engage users. For instance, to involve users in prototyping various concepts, we used improvisatory video scenarios, role-playing with cardboard interaction props, and interactive mock-ups. From sketch to working mock-up, these methods enabled iteration and evaluation of concepts not only in our studio, but also in external workshops with end-users and on location at the University with the general public. Thus, we were able to evolve the design in the moment of experiencing actual situations and environments of use. Providing a reciprocal means for users to communicate and reflect on ideas, these methods facilitated a dialogue using design materials to evolve concepts and solutions.