THE ‘KEEP IN TOUCH’ INTERGENERATIONAL COMMUNICATION SYSTEM
TECHNICAL REPORT 585

GEOFF LANGDALE, JUDY KAY,
BOB KUMMERFELD

APRIL, 2006
The ‘Keep In Touch’ Intergenerational Communication System

Geoff Langdale, Judy Kay, Bob Kummerfeld
School of IT, University of Sydney, Australia
{geoff, judy, bob}@it.usyd.edu.au

Abstract. In this paper, we briefly describe the design and implementation of
the “Keep in Touch” (KiT) intergenerational communications system. The KiT
system is a communications appliance aimed to support low-overhead, easy to
use inter-household messaging and conferencing between family members and
close friends. We discuss the original audio-messaging implementation of KiT
and extensions to photo messaging and live audio conferencing.

Introduction

Families are often widely geographically distributed and complicated in structure
(due, for example, to divorce and re-marriage). Internet technologies are capable of
improving communication among these distributed families. However, these tech-
nologies are often designed to be general and flexible enough to support the demands
of technically literate, mature users. They may often be unnecessarily difficult to use
for older and younger users, whose desired uses for the technologies may be much
more limited that that of technically literate adults.
The Keep in Touch (KiT) communications system [1] is designed to promote inter-
generational communication through appropriate, unobtrusive technology. It supports
communications tasks through a touch screen interface. We are building a device that
is a single-purpose appliance (in this case, a device with the purpose of supporting
communication) rather than a general-purpose personal computing device.
We are building a system that allows users of a wide range of ages and abilities to
communicate with a well-defined set of people, typically family members and friends.
Unlike typical messaging systems, the KiT system supports the maintenance of a
handful of close relationships, rather than dozens of casual interactions. Our original
system allowed exchange of asynchronous audio messages. Extensions to the system
have added the ability to send photo messages as well as to make synchronous audio
calls. We anticipate extensions to allow more choices of media richness and synchro-
nicity.
Constraints

Our user population includes very old and young users; both groups are atypical in terms of their relationship to technology. An intergenerational communications system imposes design constraints on the implementers.

**Ease of use.** Elderly or very youthful users are not usually heavy users of technology; their willingness to read manuals or work through tutorials is often low. Our interface must be almost completely intuitive. This requirement is important enough to override other goals, including the goal of adding new and useful functionality. Adding new functionality frequently introduces choice and complexity to what were previously simple tasks.

**Accessibility** Our interface is designed to be used by the very old and the very young. Because of the fact that young users cannot typically read well (or at all), we cannot rely on text labels for buttons or user interface help. Further, old and young users may not be dexterous – showing small user interface elements or requiring complicated movements will create problems.

**Unobtrusiveness.** The typical hardware components of even a small-form-factor PC look out of place in most user’s homes; we must avoid this. This goal also guides software design. For example, rapidly changing displays draw the attention of the user regardless of whether the user wanted to pay attention to the device or not.

**Low cost** Unlike a PC, an appliance only does one thing, so it is absurd to design a system that requires expensive components. Our system works on low-end systems and does not require hardware accelerated graphics or a disk drive.

**Robustness.** We require greater levels of physical and software robustness than office-oriented computers. For example, it should not be possible for a child to easily physically damage the system or erase all the messages for the entire household.

Media Richness and Media Synchronicity

‘Media Richness’ refers to the content of a media stream. A video stream is considered to have more information than an audio stream, which has more information than a text stream. ‘Media Synchronicity’ [2] refers to the level of co-ordination of an individual instance of communication. It ranges from slow, asynchronous systems (e.g. sending a letter by steamship from Europe to America) to synchronous systems (e.g. modern video conferencing). For our purposes, we distinguish synchronous systems, as well as two levels of asynchronous systems (slower, heavyweight systems such as e-mail or lightweight versus faster, less rehearsed systems such as instant messaging). Many combinations of media richness and synchronicity are in common use.

A long-term goal of this project is to investigate true user preferences in media richness and synchronicity. These preferences are usually obscured by external considerations (“how do I do this?”, ”how much will this cost?”,”does the person I want to talk to have IM or only email?”). Once these options are available with a single consistent interface, we will be able to gather information about true user preferences for media richness and synchronicity.
The ‘Keep In Touch’ Intergenerational Communication System

The KiT Prototype

The KiT prototype runs on a 'small form factor' PC. It uses an LCD touch screen and neither requires a keyboard or mouse for normal interaction. It supports asynchronous audio and photo messaging, as well as synchronous audio Voice-over-Internet-Protocol (VOIP) calls. We intend to support further combinations of richness and synchronicity, particularly involving video and text.

All KiT users have a photo, a ‘home node’ and a set of users to whom they are connected. This information is not loaded into the system using the KiT interface proper, but is configured through a simple Web-based interface.

The first view of the KiT interface is the 'Login Screen'. The portraits of the users that have a given KiT machine as a ‘home node’ (typically family members in a family home) are displayed. In order to 'log in' to the system, one touches the user portrait that corresponds to oneself (the nodes are assumed to be physically secure).

Once the user touches the screen to login, they are presented with the 'main screen', depicted in Figure 1. Each of the user's 'connected users' is displayed on the top part of this screen, while the bottom of this screen allows logout as well as showing the set of most recently messages from any user in chronological order. The most recent messages from any given connected user are also displayed at the bottom of the user's portrait. Touching any message causes that message to be played.

Touching any connected user's portrait allows the currently logged in user to send a message to that user, recording a message and allowing the message to be paused, reviewed, cancelled or sent.

![Figure 1](image)

Figure 1 The KiT main screen shows portraits of all people that the logged in user may send voice messages to, as well as messages waiting from each user (‘unread’ messages are color-coded). Touching a users’ portrait allows a message to be recorded to that user. A phone icon appears if a user is currently accepting live phone calls, and a call can be initiated with the user by touching it.
Extensions to the Original System

Synchronous audio calls  The Voice over IP (VoIP) extension allows users to initiate live phone calls with family and friends. A user may select in the interface whether they wish to receive calls, and this willingness will be published to all users they are connected with. A call may be initiated by touching a phone icon above the desired portrait (if the remote user is accepting calls) and the remote user is able to accept or reject the incoming call. The interface also provides a call holding facility where a user may switch between many calls and a conference call facility where a user can simply touch another person's portrait to invite them to join an existing conversation.

Photo Messaging  The KiT photo sharing extension allows users the ability to communicate and share photos in a slide show like fashion. Users can simply plug their digital camera into KiT, at which point their photos will be copied into the appliance. During message recording users can select their photos from thumbnails shown at the bottom of the screen and add them to the message. The photos will be displayed to the recipient in the sequence and in time with the senders selection. This will allow people to share both their photos and their memories with family and friends.

Conclusion

We have built a working prototype of our KiT system and have conducted two small, in-lab trials with different families (for a total of 6 users). We have successfully extended the system to work with different levels of media richness and synchronicity and plan further extensions of this kind. We are planning to deploy and assess these systems in conjunction with other ‘cultural probes’ in an ongoing, longer-term, in-home study conducted by colleagues at the University of Melbourne.

Acknowledgements

This work was funded by the Smart Internet Technology CRC Intelligent Environments Program. We thank Mark Assad, Anthony Collins and Glen Tregonning for substantial contributions to the design and implementation of the system.

References
