

The Family Window: Connecting Families over Distance with a Domestic Media Space

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ABSTRACT

Families have a strong need to connect and maintain awareness of their loved ones over distance. However, most technologies do not provide the same degree of awareness or feelings of connectedness that one feels from actually seeing remote family members in real time. To overcome this, we designed a domestic media space called the Family Window (FW) that we describe in the accompanying video. The FW provides an always-on video connection between two households. It runs on a dedicated and mobile device, which makes awareness information always available and permits families to easily move the media space throughout their home. Families can also leave handwritten messages or drawings for one another by writing on the display. If families are not home at the same time, a time shift feature permits families to record video and play it back when they return home.

Author Keywords

Media spaces, domestic, families, awareness, video, time shifting, Family Window.

ACM Classification Keywords

H5.3. Information interfaces and presentation: Group and Organization Interfaces—*Computer-supported cooperative work*

General Terms: Design, Human Factors

INTRODUCTION

Families have a strong need and desire to stay connected and aware of one another when they are separated by distance [7]. Here families are interested in knowing about remote family members' presence at home, their activities, and their health and wellness [6,7]. Research prototypes have been designed to help distance-separated families achieve this need by presenting awareness information through abstracted representations, such as icons or lights embedded in digital frames [6] or lamps [9]. The challenge is that these types of representations do not provide the same feeling of connectedness that one gets from actually seeing a remote family member in real time [7].

Popular video conferencing systems (e.g., Skype, iChat) provide families with a means to actually see and hear their



Figure 1. The Family Window.

remote family members. Yet it is often difficult to initiate connections, and families using desktops PCs are confined to a certain location in the home that might not be conducive to family communication [4]. Video conferencing tools are also designed to operate in a manner similar to a phone where people call one another for short durations [4]. This usage limits a family's ability to gather awareness information over extended time periods.

Media spaces can provide live awareness information throughout the day; however, most media spaces were designed to support workplace needs rather than family ones [3]. Media spaces that have been designed specifically for the home are either limited in that they do not actually connect multiple households [2,8] or they do not provide always-on video [1], which has been shown to be valuable [5]. Given this, we have designed a domestic media space called the Family Window (FW) (Figure 1) specifically aimed to address families' needs for awareness and interaction over distance through the use of an always-on video connection.

THE FAMILY WINDOW

The FW is an always-on video media space that connects two households. This paper and the accompanying video describe its features, which focus on enabling families to feel more connected and aware of each other's lives.

Dedicated and Mobile Device. The FW is designed to run in a dedicated and mobile device such as a digital picture frame (Figure 1). We prototyped this experience with a Tablet PC supporting both touch and stylus interaction along with a standard web camera. This provides an always-visible video connection and allows the media space to be moved as needed. This mobility sets our design apart from past media spaces [2].

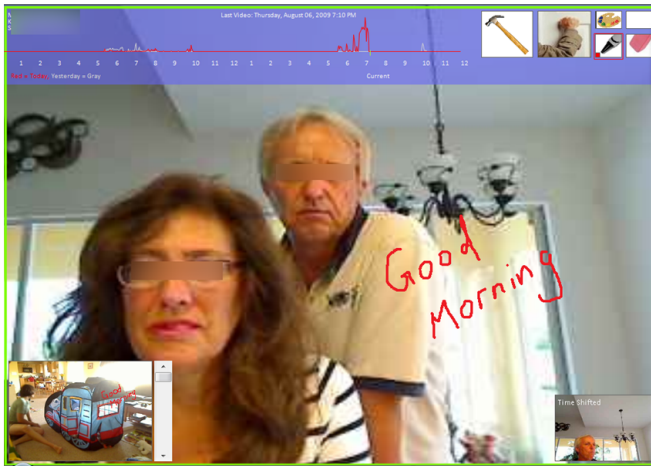


Figure 2. The Family Window's user interface.

Always-On Video. Video from a remote home fills the majority of the display (Figure 2) and the local camera's view is shown in the corner (Figure 2, bottom left). Clicking this view turns the local camera on/off. Reciprocity is purposely not enforced so each household can choose when their camera is on, and this is not linked to the remote household's status.

Notification. Family members need a way to notify remote family members that they want their attention at the FW, either to show them something or see if they are around [5]. We provided a "knock" button (Figure 2, top right) that family members touch to play a knocking sound at the remote home.

Activity Timeline. Since distance-separated families do not necessarily know each other's schedules, we provided a timeline (Figure 2, top left) that shows the level of activity in front of the FW. The timeline shows today's activity levels in red and yesterday's in grey. The timeline can also be used to understand when families are typically in front of their FW or provide awareness of family members' presence without actually seeing them.

Handwritten Messages. Family members enjoy leaving short messages for one another, for example, to say "Good morning" or tell remote family members when they expect to return home [5]. As always-on audio can easily be intrusive, we designed a writing feature. Families can leave handwritten messages for each other by writing on the background of the video. The local view in the bottom left corner shows messages as they are written so users can understand how their writing appears to the remote family.

Time Shift Recording. Families are not always in front of the FW at the same time (e.g., different time zones or work schedules) and can easily miss seeing each other [5]. To help alleviate this, we added a time shift feature where families can record activities at their own home for sharing, or at the remote home, if they know they will be away. Only video containing activity is recorded. Users can watch

recorded video by clicking on the Time Shift Preview image (Figure 2, bottom right).

Privacy. If family members want to adjust what is visible, they can open and close blinds, which are modeled on real-world window blinds. Users adjust the slider next to the local camera view (Figure 2, bottom left).

FAMILY USAGE

We have evaluated the FW by having 6 families use it within their homes, and by interviewing an additional 16 people about the concept [5]. Here we found that families with close-knit relationships (e.g., grandparents and grandchildren, siblings) highly valued being able to see their remote family members and interact with them through the FW [5]. Families made use of the FW for acquiring availability awareness prior to phoning them and also enjoyed sharing everyday life with one another. For example, grandparents liked seeing their grandchildren's evening rituals like bath time and story reading. The always-on nature of the FW along with its mobility were critical design factors to support these needs.

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