FamilyStories: Asynchronous Audio Storytelling over Distance

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ABSTRACT

Family members who are separated across time zones can easily miss out on feeling connected. We designed and studied the usage of an asynchronous storytelling system, called FamilyStories, to explore the audio-based sharing of stories. FamilyStories allows family members to share activities and experiences over distance using three different devices with varying record and playback features.
KEYWORDS
Family Communication; Domestic; Audio; Asynchronous Communication; Slow Technology

CSS CONCEPTS
- H.5.3. Group and organization interfaces: Computer supported cooperative work

INTRODUCTION
Family members often use technology for connecting over distance, especially when time zone differences are present [2][9][12]. Typically, this consists of using a range of synchronous communication tools, such as video chat and phone calls, as well as asynchronous systems like instant messaging [1][2][9]. Despite these technologies, communication can still be challenging. When using synchronous systems, it can be hard to find times when both people are free and available. For example, schedules may be misaligned across time zones (e.g., daytime vs. nighttime) [1][2][4]. Asynchronous communication systems are typically flexible to use and overcome some of these challenges, yet the shared content and exchanges may not be as rich as synchronous exchanges where people can have conversations, share stories, and react to them [1][4][6][9]. For these reasons, we explored ways to enliven asynchronous communication through audio storytelling. Audio narratives have been shown to allow people to capture the sentimental value of a moment and stimulate people’s imaginations to mentally rebuild past moments [8]. This is because audio contains characteristics of people’s voices such as pitch, intonation, range and loudness, which connects people to a moment socially and personally [10]. Audio also helps people characterize others based on their voice [10]. The challenge is that audio storytelling for families is an underexplored topic and it is not clear how to design such systems to best meet the needs of families.

To explore this topic, we iteratively designed three technology probes called Spark, Kinetic, and TimeKnot that were inspired by slow technology design [3][7]. Together we call them FamilyStories. Each probe allows a person to record an audio story and send it to another family member that has the same device. When received, the family member can listen to the story and send one back. FamilyStories allows groups of family members to stay connected by hearing each other’s voices and sharing stories about their lives. Spark, one of the probes, makes stories have a temporary lifetime so they have to be played back in a short amount of time. Kinetic tries to enforce an idea of ‘shared activities’ where stories can only be listened to if the recipient is doing a physical activity that is similar to the sender’s activity. For example, if the sender is going for a walk while recording a story, the recipient must also be walking while listening. TimeKnot restricts the playback of stories to the same general time of the day for both family members.

Figure 1. Top: The three devices of FamilyStories. Middle: All inputs and switches shown including On/Off and buttons for record, play, and share. Bottom: The interior Printed Circuit Board (PCB) designed to easily fit in one hand. The style is minimalistic and purposely does not suggest a type of communication. The exterior design of all three probes is the same, but they differ in the color of the wooden lid on top such that they can be identified easily.
Figure 2. Record and Play mode buttons.

Figure 3. Spark Artefact. Usage Scenario: Consider Luna, mom and her 22-year old son Daniel. Daniel moved to Italy for work and his mom lives in the USA. They have a nine-hour time difference. Luna wants to send her son an update of her week while she is relaxing at night. She records an audio clip on Spark and sends it to Daniel’s device. Daniel comes home and notices that Spark is indicating a new message. He decides to listen to his mom’s message tomorrow morning since it’s his day off and he knows he has a week to listen before its deleted. This will allow him to both listen and reflect on their connection and the subject which his mom talked about. In the morning, he picks up Spark and presses the play button. He uses headphones to listen to the message.

FAMILYSTORIES
We created FamilyStories through an iterative design process that involved sketching, brainstorming, and creation of several low fidelity prototypes. We were inspired by the appearance of vintage personal radios. We created several mockups of physical artifacts that could be used as a communication device, ranging from prism shapes to cylinders. We ended on a simple, yet minimal look of a cuboid shown in Figure 1. All three technology probes have the same basic design that consists of a small object that can be carried with a user or set down, e.g., placed in the home.

Participants can choose to record or play by using a switch on each device’s side (Figure 1, middle). In the first mode they can record, send or cancel the recording (Figure 2). To record a message, the user pushes the ‘record’ button on each device (Figure 2) and then tells their story. When the story is done, they push the ‘record’ button again to stop. Next, they push a ‘send’ button to send the message. Sound is recorded through a built-in microphone inside each of the probes. The recorded sound could not be played back for the sender. This was to keep the communication similar to a conversation in-person or on the phone. To listen to the stories, users put the device into play mode with the switch on the side. The buttons now allow users to move to the next Story, play/pause, adjust the volume up, move to the previous story and adjust the volume down (Figure 2). In Record mode, when ‘record’ is pushed, a notification LED turns red to signal to the user that audio is being recorded (Figure 2, left). In Play mode, when the ‘play’ button is pushed, the LED will turn green to signal playback of the story (Figure 2, right). Each device connects to the server to download new messages every 15 minutes or by user request.

To listen to an audio story, family members use their matching probe. For example, if a family member sent a message on TimeKnot, the receiving person must play it on TimeKnot. There is no limit on the length of a story. We wanted to let users choose what made sense given their situation. Stories can be from several minutes to as long as the family members would like to talk about a subject. Our goal was for family members to listen to the audio stories individually with headphones so as to create a more intimate experience with the remote family member. Next we describe each of the FamilyStories probes.

1. Spark: Ephemerality and Ambient Notification
The first probe is called Spark. Given a prominent focus on ephemerality in social media [13], we were inspired to explore the influence of ephemerality on family communication. This device is just like a ‘spark’, a conversation starter with a short lifetime: stories are automatically deleted after one week, regardless of whether they are listened to. We decided to use a metallic blue color for Spark.
When the message is near to being deleted, the intensity of the light is lower, and the pulsating has a lower frequency until it stops beating and the message is deleted.

With Spark, users have minimal control while stories are being played. This contrasts with many existing technologies where the content is almost always accessible. Family members are only able to stop, pause, and play stories, and messages are played from oldest to newest without being able to change this order. This limited control was meant to engage people ‘in the moment.’ We also wanted the conversation to feel similar to in-person conversations.

2. Kinetic: Activity-based Sharing

The second probe is called Kinetic. It was created to promote a sense of shared moments while engaging in a physical activity. For example, to simulate a shared walk, if a person records a message while walking, this probe will only play the audio if the other family member is engaging in a physical activity like walking. The device detects movement with an accelerometer inside the probe and does not categorize based on type of activity. Kinetic was designed so that it could be used for sharing walks, and activities which the user can do while listening to the audio stories.

3. TimeKnot: Context of the Day

To explore the effect of the context of the day on communication, we created TimeKnot which only plays messages during the same time period of the day for family members. That is, messages sent during the morning can only be played back in the morning, etc. We created four time slots, morning (6 to 11:59am), noon (12 to 5:59pm), night (6 to 11:59pm) and late night (12 to 5:59am).

**USER STUDY**

Our work contributes three design probes and, within them, design factors for creating asynchronous audio storytelling systems including ephemerality, sharing tied to physical activity, and the context of the day. We have explored the use of the design probes as part of a field study that explored the benefits and challenges of the designs (full details in [5]). Family members used the device for sharing non-urgent yet important, and sometimes reflective audio stories. They also used the system for synchronizing their time across different time zones, and for expressing a variety of emotions using the system. Overall, the designs were valued by participants for connecting them to their remote loved ones.
REFERENCES


