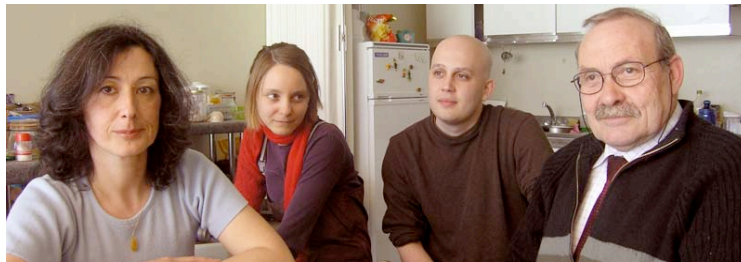


. Interaction Design Institute Ivrea, Thesis report, June 2005

Keep in Touch

Reconnecting remote families



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Abstract

The new mobile world at the turn of the century has taken its toll on family relations.

Increasingly, people are moving away from their families, with whom they lose touch over the years. Not only do people communicate less, but also the quality of their communication suffers.

Keep in Touch introduces three explorations that re-connect the family on a daily basis, creating a basis for meaningful communication.

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The first year students did not let me forget I was 23.

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1 Introduction

1.1 Thesis topic

The new mobile world at the turn of the century has taken its toll on family relations.

Young people go abroad to study. Young professionals move from one location to another for work reasons. The old family structure, grouping three generations in the same location, is practically extinct. Distance adversely affects family closeness. Dispersed families lose touch, and with every year, they grow further and further apart.

My thesis responds to this fundamental shift in family dynamics. With the aid of new technologies, my thesis project aims to bridge distance gaps and help *remote families* reconnect.

I am specifically looking at families who are digitally-savvy. I am designing for a new mobile world, where people are familiar with technology and can use at ease the computer, the mobile phone or the digital camera.

My thesis project will have to:

- demonstrate a good understanding of family dynamics
- demonstrate creative design decisions, responding to social needs
- develop a design that mirrors specific family values
- concentrate on a flexible design that can be adapted to the various conditions of different families, also allowing the emergence of new social practices

1.2 Terminology

I define as the *close family* the old family structure where parents and children and grandparents live in close proximity to each other, communicating regularly and sharing a strong interpersonal bond.

I define as the *remote family* the new family structure brought about by the predominance of mobile lifestyles. The remote family is scattered in different towns or different countries, having built a life for themselves in that particular location. They harbor few desires to re-locate with other family members, with whom they usually maintain contact, although their relationship weakens with time.

Both the *close family* and the *remote family* are comprised of very close family members: parents, grandparents, and siblings.

1.3 Goals of the thesis report

This paper will take the reader through my thesis journey, from the birth of the idea, through its tumultuous childhood, stopping to describe in detail the way it deepened and matured. At the end, I will attempt to retrospect on my designs, by producing careful analysis and evaluation.

2 Background

My thesis year began with a thorough investigation of other projects that looked at reconnecting geographically separated people. I am presenting below a selected few that I found most inspiring.

2.1 Breakout for Two¹

/MIT Media Lab Europe, Human Connectedness /*Florian 'Floyd' Mueller, Stefan Agamanolis* /

Breakout for Two aims to build a sense of community over distance.

The Breakout for Two game is a cross between soccer, tennis, and the popular video game Breakout. Participants in remote locations must throw or kick a real soccer ball at a physical wall to break through a projection of virtual "blocks" that partially obscure a live video image of the other player. The blocks on each player's screen are synchronized - when one player breaks through a block, the same block disappears from the other players' screen. The player who breaks through the most blocks wins. Games typically last several minutes and can incorporate varying levels of difficulty.

The project augments and assumes that a gaming environment with exertion will greatly enhance the potential for social bonding.



Playing Breakout for Two

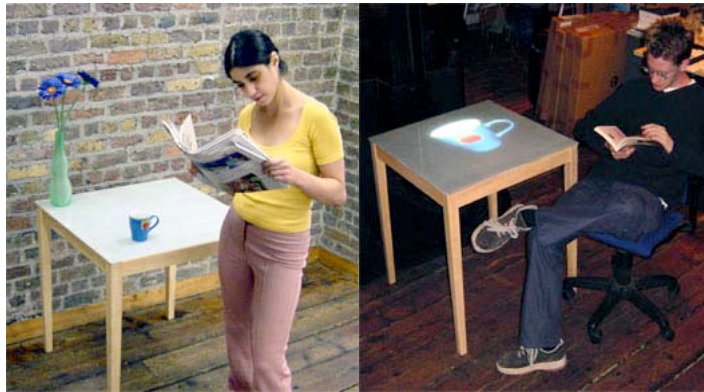
¹ < <http://www.medialabeurope.org/hc/projects/breakoutfortwo> >

2.2 Habitat²

/MIT Media Lab Europe, Human Connectedness /Dipak Patel, Aoife Ní Mhóráin, Stefan Agamanolis /

Habitat links several furniture items for the purpose of conveying daily routines and rhythms between distant family members.

The current Habitat system comprises two geographically separate café or kitchen tables that are networked together. Unique RFID tags are embedded in objects which are typically placed on kitchen tables at each site. Placing these items on the table causes messages to be sent to the remote table, where a projector displays a graphical representation of the objects. The system operates in both directions, conveying impressions of presence and activity around the tables at each site.



A cup placed on the table in one location will appear as a graphical representation in the other location.

2.2.1 Reflexion³

/MIT Media Lab Europe, Human Connectedness / *Cian Cullinan, Stefan Agamanolis /*

Reflexion is a responsive virtual mirror for interpersonal communication. More specifically, this project operates like a "magic mirror" in which you see a reflection of yourself together with the reflections of other participants in remote locations.

A Reflexion station consists of a camera and a video display connected to a computer. Each participant, of whom there can be several, uses a separate Reflexion station.

The computer extracts an image of the participant from his background and transmits a mirror image of it over the network

² < <http://www.medialabeurope.org/hc/projects/habitat> >

³ < <http://www.medialabeurope.org/hc/projects/reflexion> >

to the other stations. The computer also receives extracted participant images from the other stations and combines them all together into a single video scene. The effect is one of a "digital mirror" in which the participant sees a reflection of himself as well as the reflections of the other remotely located participants.

The system automatically monitors auditory cues and uses them to compose the scene in a way that enhances the interaction. For example, the current prototype tracks which participant is speaking in order to judge who is the "center of attention." Active participants are rendered opaque in the foreground to emphasize their visual presence, while other less-active participants appear slightly faded in the background, in a manner that maintains awareness of their state without drawing undue attention.



Active participants are rendered opaque in the foreground to emphasize their visual presence, while other less-active participants appear slightly faded in the background.

2.2.2 Sociallight⁴

/ITP Spring Show 2004 /Dan Melinger, Karen Bonna, Mohit SantRam, Michael Sharon /

Sociallight is a location-aware mobile social networking platform that allows people to connect with their friends and friends of friends in new, expressive ways.

Sociallight looks at giving more meaning to mobile communications. It is an attempt to recreate the unspoken part of conversation, to provide a substitute for body language, and to

⁴ <<http://sociallight.net/>>

make room for messages, which are more lightweight in intention, but rich in meaning.

One of the vehicles used by Socialight is Digital Gestures: Tap & Tickle

The Tap & Tickle is a way to communicate with other people through a mobile phone that is similar to the little ways people communicate with others when they're off the phone.

A Tap is a short vibration on a Socialight friend's mobile phone, which says "hello", "I'm here", "I'm there for you", or acknowledges a point made. By sending a quick vibration to a friend's mobile phone, you can communicate volumes.

The Tickle is like a Tap, but with more control. Instead of just a quick vibration, the Tickle's duration and the way the Tickle comes through to the recipient is determined by the sender. By simply pressing a button on the mobile phone, a vibration is sent. The user controls the vibration just like they control the motor of a blender using its pulse function. The pattern of vibration is whatever the sender chooses. When in Tickle mode, holding down a button causes a vibration at the other end and letting go stops it.

Tap & Tickle can be used to:

- say hi to a friend
- give a virtual kick under the table
- be flirtatious
- let someone know you're there for them during a tough time
- develop a Tickle-language with friends (a simple Morse-like code)



Tap & Tickle

2.3 Nokia Lifeblog⁵

Nokia Lifeblog is a PC and mobile phone software combination that keeps a multimedia diary of the items the user collects with his mobile phone. Lifeblog automatically organizes photos, videos, text messages, and multimedia messages into a clear chronology the user can easily browse, search, edit, and save. Nokia Lifeblog does the work of organizing the items the user creates and receives. The user can also add notes throughout the day, or tag and update his favorites so they're always on his phone.



LifeBlog interface on the PC and the phone

⁵ <<http://www.nokia.com/nokia/0,1522,,00.html?orig=/lifeblog>>

3 Framing the Topic

3.1 The beginning

My thesis topic is very personal. I can identify with my user group, my family having been scattered across three countries for more than ten years. Ever since we have been apart, I have observed a substantial shift in the relationship with my family. Important events happened in the family, but I would find out about them at a much later date. There were few events gathering the whole family together, since all of us were never in the same place at the same time. I felt we were growing apart every year.

However, I needed a better reason than my own experience to pursue a project that connects remote families. The deciding factor was the predominance of this new family order in the social landscape of the 21st century. Taking a close look at my own social circle, as well as reading about this phenomenon, it became apparent that dispersed families are a preponderant social situation.

As people moved towards a more mobile lifestyle, they had to reorganize their social ties and to re-invent new practices for maintaining contact with their loved ones. The new technologies offer more ways than ever before to maintain links over distances, but the solutions they provide are general, meant to work for everyone, in any place, at any time. There is not a lot of activity in the realm of using technologies as mediators for specific social contexts. I saw a lot of potential in exploring new ways technology could help re-unite the remote family, with a focus on the human aspect.

3.2 Understanding the phenomenon

As I was aiming to create a design that responds to a social phenomenon, it was crucial that I understand thoroughly the emotional and the psychological complexities of family interactions. To this end, I had formal and informal interviews with nine people from Canada, USA, Israel, Japan, Bulgaria, Serbia and Montenegro and Latvia. The average age of the interviewees was 26, and they had been living away from their families for at least five years. I was also conducting desk research in parallel, but this endeavor turned out to be less insightful than the interviews.

My user research, my desk research and my individual observations aimed to:

- understand how people relate to their families, and pinpoint the core differences between family members and friends
- identify specific family interactions and communication patterns
- find out the implications of living away from the family
- find out the specific family interactions and communication patterns when the family members are remote

3.2.1 What is the family?

It is very hard to fully describe what the family means for every individual. It is also infinitely hard to untangle and explain the strong ties that connect family members together.

On the surface, the family displays the same features as any social group. Family members are bound by a common thread – heredity, common activities, interests etc. They connect over specific issues, and they have differences of opinion. They cluster in antagonizing sub-groups, which shuffle their membership over time.

Unlike a regular social group, families almost never break apart. Family bonds transcend personal animosities, disturbing events or changes in the group structure.

“Why are family bonds so strong?” was a recurring question during my investigation. My interviewees helped me find out a multi-faceted answer.

A strong coagulating element is the long family history. Having gone through innumerable experiences together, families became close, building up comradeship and trust. “My family has known me as long as nobody else, when they look at me, they see me as a small girl and when I look at them, I have all these stories piled up in my memory.” says Dace Akule, 24, of Latvia. A shared history also brings about deep knowledge of each other, coupled with acceptance of each other’s flaws, states another interviewee, Dorothea Giorgieva, 25, of Bulgaria.

By accepting and being accepted, family members construct a network for support. The family becomes a shelter for cold weather, when the outside life becomes rough. The family are the people that will not reject each other in times of need. More importantly, the family is perceived as an “always available” refuge, a last resort that would never be exhausted. “It is only the family that you can go back to at any time,” say Miladin Bogetic, 24, of Montenegro.

Family traditions also bring stability in the life of family members. In their paper “Strengthening Family Ties,”⁶ Lee and Pyfer identify family traditions as powerful aids that help family members adapt to change.

Family ties are constructed on the same foundation as friendships, which stem from shared experiences, acceptance of each other’s flaws and deep trust. But family ties are richer and more durable because of the inner belief of each family member that its membership in the family is inevitable and permanent. Akule, for instance, says that she is tied to her family by “natural, unchangeable ties.” People usually acknowledge that family bonds will always exist and they are willing to compromise at greater lengths before severing these ties. There is also a shared belief that one can belong to only one family. The family is singular, inevitable and irreplaceable. Akule says, “Friends come and go, [...] but parents and family stay. We have such a long history together that it is impossible not to continue it.”

3.2.2 Communication in the close family

The way individuals feel about their family will influence how they communicate with its members and how they behave in the family structure.

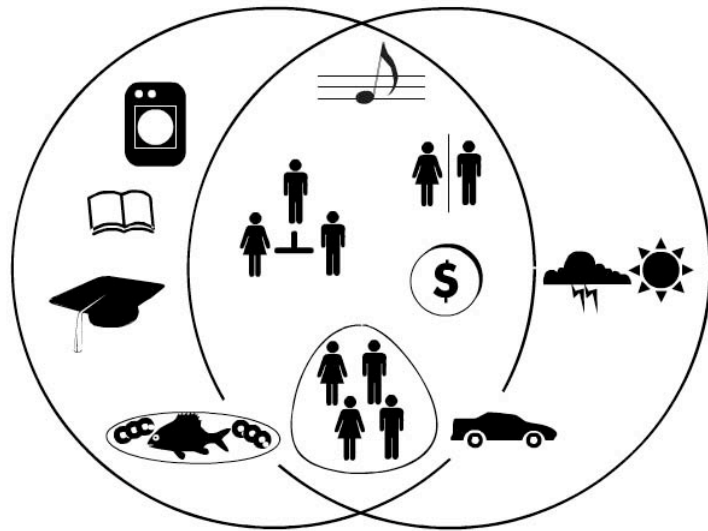
For several of my interviewees, the quality of family communication is directly related to their long history. In their account, all the shared family experiences deepened their connection and also made family members similar to each other, in thought and in feeling. For these reasons, they feel that communication with a family member is deeper and more fulfilling. “...we have been in daily contact for ages, we somehow “click” more than others,” says Akule.

But family conversations are not necessarily deep and meaningful. Most of the recurring conversation topics, according to my interviews, revolve around daily issues, common interests and shared activities. Families talk about residential and family business, events at school or at work, or family plans together. Conversations about other family members are also frequent.

⁶ Lee and Pyfer, “Strengthening Family Ties.”

Close Family

Remote Family



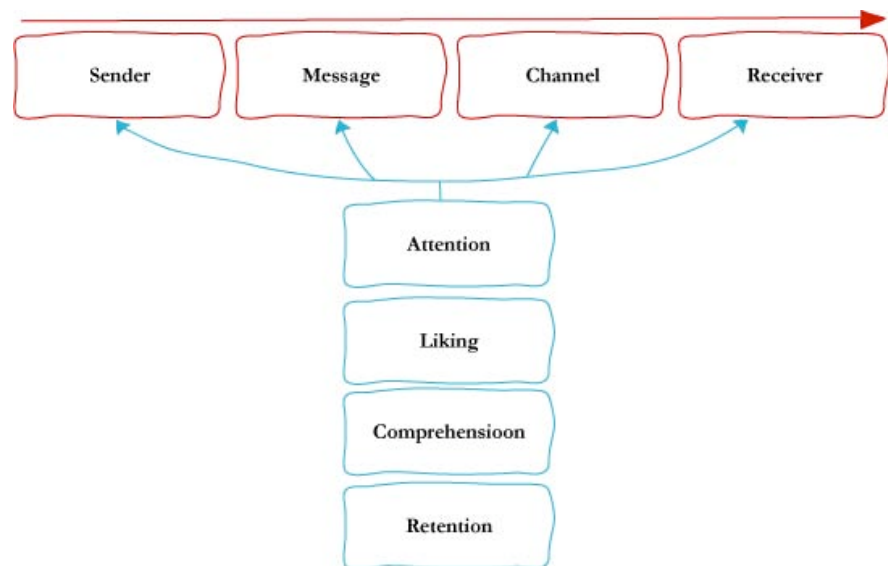
Families might not talk about important issues all the time, but they talk often and are present in each other's daily lives. Over time, their daily conversations build a level of trust that makes it easier for a family member to ask his family for help when in trouble. Although the main communication format for the close family is the superficial daily account, this format creates a foundation that binds the family together and makes room for meaningful conversations.

If the daily accounts create a framework for intimate conversations, the singularity of the family gives them a push. As people feel that they only belong to one family, they are more likely to discuss with them some intimate issues and rely on them in times of need. "[communication with the family] is so natural and strong that I can't find a way to explain it," says Petya Kamenova, 25, of Bulgaria. When family members communicate about serious matters, the person in need trusts fully his interlocutors while they display a greater degree of interest in the issue. Families will usually do everything to help a member in need. They display what I have defined as "Involvement + 1 Extra Mile," which means that families would get most involved and risk the most to support their families. Only for the family, would an individual go the extra mile to help, maybe at the expense of his own personal interest.

For instance, if I were to map family communication on William McGuire's⁷ communication model, I would assess that the layer

⁷ Communication Models, < <http://web.utk.edu/~gwynne/commtheory.html> >

of attention, liking, comprehension and retention that sits on top of the normal communication structure is more prominent than in conversations with friends, where partners are linked by perishable ties.



Family communication displays specific features. Only in the family, are people able to state their opinion bluntly, about a topic, their interlocutor or other people, without fear of consequences. The family is also one of the few places where people do not have to worry about the impression they make on their audience, and they can finally be “mask off,” says Ruth Kikin-Gil, 35, of Israel. In all earnest, it is pretty hard to keep any mask on because family members can decipher each other’s moods and feelings. According to Akule, “When I receive their message, the tone of their message says it all. If one is happy, one can’t hide it. If one is sad, it comes out very soon too.”

Family inner behavior is also more intense than allowed by normal social prescriptions. “Only in the family, can people fight ferociously for hours and then go to dinner and laugh as if nothing has happened,” says Kikin-Gil. Family members also find it hard to respect personal privacy. It is entirely justified in a family to cross personal boundaries and poke your nose in someone else’s wardrobe or intimate feelings, for that matter. In the family, personal boundaries are blurred.

Family communication reaches this level of intensity because it is a shared belief that personal problems become family problems. The family is more of an unbreakable social block rather than a constellation connecting individual units. In the family, people sometimes lose their sense of self and adopt the group interest at heart.

3.2.3 Communication in the remote family

When family members go away to live in different towns or countries, the family does not break up. Family memories, mutual trust and family inescapability hold its structure in place. However, distance causes different communication patterns, diminishes family interactions and overall, it lessens the importance of the family in the lives of its members.

In a remote family, there are fewer and fewer conversation topics. Not sharing the same location means that there are no more common activities or residential issues. There are fewer shared interests and fewer common friends. The daily link that was gradually forging the family history is now broken. Families continue to exist but their bond weakens.

Not seeing each other every day also means that the succession of daily accounts dissolves. Family members no longer talk to each other frequently, and therefore, they are no longer up to date with the happenings in each other's lives. The daily accounts – superficial conversations at the end of the day – change into weekly or monthly reports, where one family member talks about the highlights of his life in the time that has passed since the last contact with his family.

When the family is remote, their knowledge about each other has a lot of gaps, which means that the foundation for meaningful conversations thins out. During the conversations that randomly happen between family members, there is a premeditated effort to try to catch up, because the interlocutors feel one step behind. This way, the conversation is driven by a pragmatic purpose, there are a lot of misunderstandings, and overall, the chances for meaningful conversations are annulled. Even the act of starting a conversation becomes premeditated, steered by a feeling of guilt. "I don't want to [...] become too detached because I would never forgive myself for that," says Bogetic.

Usually, remote families find a communication and interaction rhythm. They adapt to the limitations imposed by distance, and find ways to stay close. Families would plan regular reunions, and they would still resort to each other in times of need. However, their day-to-day link loosens. A lot of people will confide more in friends in the moments where they would have normally gone to their families, although they do not share the same connection with the former. Moreover, they almost forget that the family could be present in their daily achievements or downfalls. The family bond still exists, but when dispersed, the family takes a place in the shadow, only to be brought back to front by tragedy.

3.2.4 Observation findings

Analyzing the family phenomenon in detail helped me narrow down the design problem and identify underlying design criteria for future solutions.

Problems

- Lack of presence. Remote families stop playing a part in each other's daily life. Not only do people communicate less with their families, but they also forget about them in the everyday succession of events. The moment one hangs up the phone, or closes the IM window, the family disappears from one's thoughts and normal rhythm of life. Remote family members stop thinking of their family, which is ultimately why people become "long-distance" orphans.
- Staying one step behind. Families are no longer aware of the daily activities of the remote members. During their random conversations, they concentrate on catching up and they can hardly snap back into a relaxed conversation.

Family-specific design

Given the specific nature of my user group, it is important that my design reflect their values. Below, I am identifying the main traits of family dynamics, along with their design potential

- The family is singular, inevitable and irreplaceable. People feel an unbreakable bond with their family. They might allow themselves to grow apart from a good friend but not from their own family. Consequently, I can rely on increased user input in my design just because users have an underlying incentive to maintain contact.
- Personal business is family business; there is a lot of interest in each other's daily life. Families are interested in what the others are doing, even though they seldom manage to keep up to date when they are remote. I can assume that the broadcast of personal information -- which friends would find boring -- could actually be a topic of interest for the family (a friend would never be interested someone else's daily meal schedule while a mother would welcome this information about her son).
- Families are "mask-off" spaces, where personal boundaries are blurred. Although my project should consider personal privacy, it should also try to recreate some intrusive family interactions. The charm of being with your family sometimes lies in the ability of being inappropriate or nosy.

4 Concept Development

The high-level goal of my thesis is to reinforce the links between remote family members. It's been a challenging experience to accomplish such a mighty goal, given that I was trying to do more than explore the design potential of a social phenomenon – I was struggling to find a solution that actually worked. Throughout the year, I came up with a significant number of concepts-solutions. These explorations helped me identify the main problem area, and gather findings that came together naturally in my final project.

4.1 Problem space

In the first part of the year, my designs strove to quantitatively improve communication between family members. My user research showed that on the average people phone their remote families four times a month. Email exchanges happen every week. IM-ing is more frequent, but it works mostly for communication between siblings. My first conclusion was simple. Families need to talk more if they want to keep the connection alive. Consequently, my design solutions worked towards building tools that would actively draw remote family members into conversations, sometimes disregarding the imperatives of their immediate environment and creating embarrassing situations. They just need a little nudge, and the words would flow, I thought. It turned out that a nudge in the back is not necessarily a step forward.

Along the way, I found out that communication frequency is directly related to the current dynamics of the remote family. There are very good reasons why a son phones his mother only once a week: they both have busy schedules, they live in different time zones or there is only so much they want to tell each other. No tool can attempt to artificially integrate distant family in a human space they don't belong to. Having said this, it is also true that both parents and children want to keep their connection alive. But each family finds their own communication rhythm, attempting to be in contact regularly but also to avoid too much of it. After this point of realization, I moved away from pushing synchronous communication into the family and started to look at other opportunities.

There is “just enough” communication between families who have been apart for a while. But could communication, when it happens, be richer? Could family members understand each other better without having to make a premeditated effort to talk more? Could they relate more to what the other person is talking about?

When there is enough information and previous knowledge, people understand each other better and their conversation flows smoothly. For example, one of my interviewees, Thomas Stovicek, 30, of Canada, had never seen his sister's graphic design schoolwork. They would talk about school now and then, but they would not dwell too much on the topic. Just before her graduation show, his sister emails him with some samples of her graphics work. He thought her work was amazing, and he confessed to me, with a shameful smile, that he did not even suspect she was "that good." The next time they talked, the brother and sister discussed the projects at length. He was interested to know more, while she was describing at ease a part of her current life, which her brother never fully grasped before. That conversation fit into the two siblings' communication pattern – the weekly phone call. But unlike many other conversations before, they were able to connect on a higher level. The two brothers achieved what I identified as "good-quality" communication within the spectrum of "just-enough" communication.

My ultimate design goal became to enable this level of communication in the family. I wanted to create a solution that would provide family members with more information about what's important in the others' lives and that would help them understand the full dimension of those events for the other person. My design had to build an outlet for supplying, in an effortless way, relevant information to the family, to create a basis for good-quality communication.

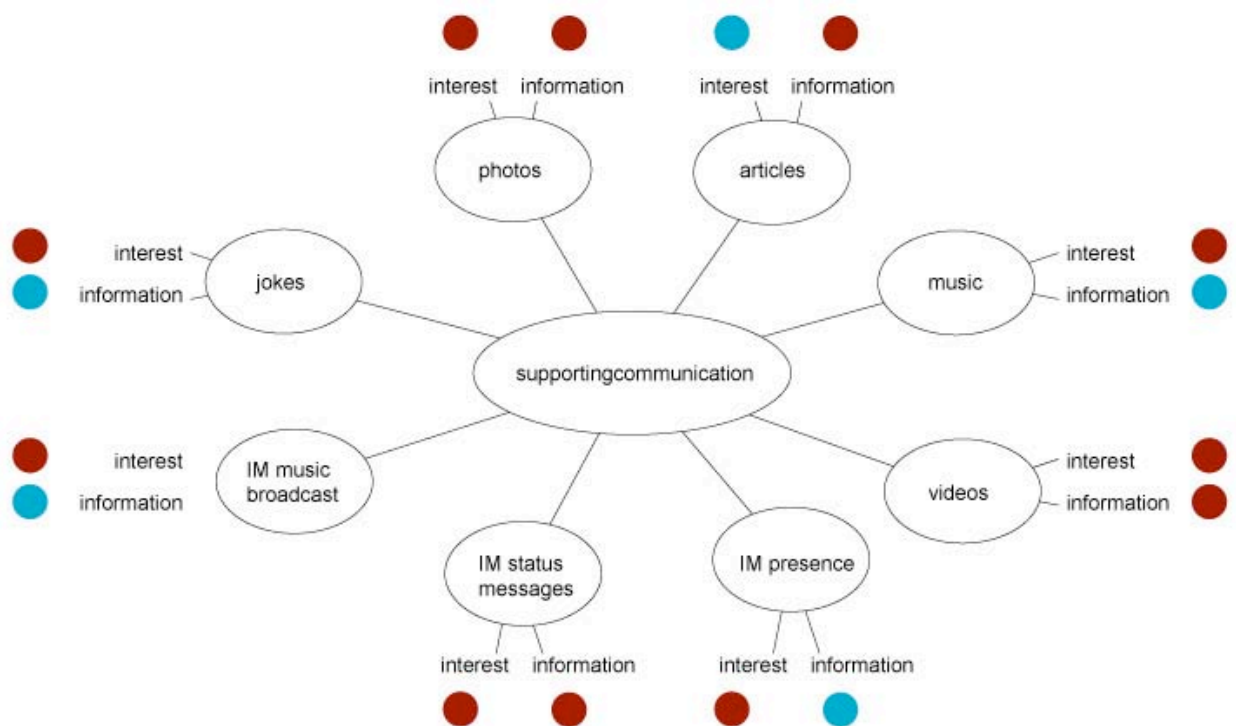
4.2 Supporting Communication

Technology provides multiple outlets for people to broadcast personal information. I was interested specifically in media that is information-rich but does not necessarily expect instant feedback. I wanted to find ways that expose people to more information from their distant families in their immediate environment, without having to make a social effort to respond or to have to deal with the consequences of not having responded. I started by looking at the asynchronous, non-verbal communication traffic that already exists among remote families.

I found a steady flow of supporting media among my users. People would send each other links to articles and funny slideshows or songs. They would almost regularly send recent photographs of themselves, through email or MMS. IM users would broadcast their moods through status messages or would share the current music track they are listening to. All these media talk about the daily realities of a person (an article they liked, a mood they're in, a story told through visuals) but they do not invite conversation, although this might be a very likely outcome.

The impact of these media is far greater if they reach the others as fast as possible. The sender will have more incentive to send a photo of an event that just happened, rather than waiting for a couple of days when the novelty of the event died, taking with it the excitement of sharing the moment. On the receiver's end, someone can better understand a situation if he sees its progression over time as opposed to being fed a spoonful of basic relevant information. For example, a couple builds their house and they send photos of the house at different stages to their whole family. In this scenario, the rest of the family can better understand the great effort and satisfaction involved in the process than if they were shown on one occasion a picture of the finished house and were told in three sentences what it took to build it.

I mapped the opportunities of the supporting communication based on their information richness and the level of interest they arise. The results were reached after two rounds of guerilla research with colleagues. The red dots represent a high level of information or interest, while the blue dots signal a low level. Photos and status messages ranked highest both in terms of interest and information.



4.2.1 Photos

Photos or videos tell stories better than words can. By looking at a photo, one can instantly become immersed in a different environment, whose special qualities would take minutes to explain with words. Both words and photos work for the purpose

of making an outsider understand better a context or a situation, but photos can achieve these goals easier and faster.

Imagine you read the following message:

“Ruth went to the carnival in Viareggio. She costumed in a bright red wig, with a spiky red-and-yellow hat, with little bells hanging off the tips of the spikes.”

Alternatively, someone could show you the photo below.



Both the message and the photo aim to convey some information about Ruth, in the context of the carnival. The message takes ten seconds to read, it gives specific data about the circumstances (Ruth is at a carnival that happened in Viareggio) but it only scratches the surface of really explaining how Ruth looked and what she felt in the carnival environment.

The photo has much more expressive value, and the viewer can fully comprehend in a glance the hilarity of Ruth in her costume and also how happy she was at that moment. The viewer is transported into another dimension of understanding. After seeing the photos, he can relate to Ruth's experience much better than after having heard a description of the same event.

One of my interviews confirmed my initial assumptions. Nathan Waterhouse, 28, of England found out that his brother and his girlfriend spontaneously decided to get married during their travels through Africa. They unexpectedly called up their families to announce they would be having a Hindu wedding in Mauritius. The news went round the two families, made waves but died away with time. A new round of excited family conversations was sparked a bit later when Steve Waterhouse made a web photo gallery for his wedding. The photos showed the groom clad in the local wedding attire, a big turban on his head. The bride wore

complicated henna tattoos. The ceremony was performed and witnessed by locals from Mauritius.

When the rest of the family, spread across England and Italy, saw the photos, extensive phone conversations followed. The photos triggered new opinions about the wedding, which never before came up in their conversations. Some people thought the groom looked funny in the local costume, some marveled at the romantic atmosphere while others questioned the morality of getting married in an African setting and invading a foreign culture. The photos fully engaged the whole family in an event that they unfortunately could not attend. They became part of the local African setting, and understood better the feel of the wedding. Subsequently, the photos sparked intense conversations, bringing the family together over a specific topic.

At this point, it became apparent that photos, through their expressive quality, are a great solution to increase understanding of context between remote family members so that they can connect better. I decided to use photos as a vehicle to bring the family together with my design.

4.2.2 IM status messages

In parallel, I was studying IM status messages as potential tools to empower my design. IM status messages were originally designed to allow users who were still online but not physically at their computers to tell their buddies that they will not reply to chat invitations. With time, people used the tool in more creative ways, from broadcasting personal information to using it as a public call to invite people to parties or other social gatherings.

In their paper “Tethered or Mobile? Use of away messages in instant messaging by American college students,”⁸ the authors identify two major categories of status messages: Informational/Discursive and Entertainment. The first category would contain messages that describe the physical location of their user, would convey personal information or would aim to initiate discussion or a social encounter. Messages that fall into the latter category can be humorous comments, quotations or links to websites.

IM status messages have now become a powerful tool to intentionally share personal information. Writing such a message responds to the individual need of self-expression and reinforces one’s membership in a social group. Within the IM environment, even if a person does not chat with a lot of people from his buddy list, he still endorses his presence in the group by reaching out and communicating something about himself. By the same token, people scan their buddy lists, searching for daily news from their

⁸ Grimstad and Squires and Tench and Thompson. “Tethered or Mobile?”

social circle. An interviewee cited in the above paper mentions, “Even if they are not chatting [on IM], you can still know all about someone’s life by reading their away messages”.⁹

The same way IM status messages strengthen the bonds of large online communities, they could also sustain the connection between family members, provided they all belong to the same virtual space. IM-like status messages could become the building blocks for a new form of family communication in the digital world. Holding either real information or just abstract gibberish, such messages would allow family members to peek into each other’s daily highlights and also to reinforce their presence in an online family space.

4.3 User research

As I was investigating the problem space, thoroughly talking to users and developing assumptions of my own, I was also compiling a toolkit for future use in my design. I made assumptions about the informational value of photos and the presence reinforcement of IM-like status messages. My assumptions were confirmed by stories from interviews. The only problem was that those tools were already available to people. Most families are sending pictures to each other, they’re chatting on IM and posting status messages. My next step was to figure out the current family dynamics with respect to these media. With a back-up of real data, I could make decisions about how family supporting communication can become more effective.

I found that there is consistent media traffic between my interviewees and their remote families. The most recurring pattern is sending four or five carefully-selected photos to the entire family whenever a special event occurs. My interviewees told me that they would carefully select the photos for the family. If they took 200 photos of an event, they would sort through and send the ones that portrayed best the event. Other people told me they take their camera out on a regular basis and take pictures with a certain family member in mind.

Most accounts revealed that people would send photos to all their family members, mostly in one email. They would write emails to a specific member, but the photos were always strung together in one email that went out to everyone. Often, sending the email would be delayed because, in addition to attaching the photos, people had to put in some effort to write to their family what they have been up to since the last time they talked.

⁹ Grimstad and Squires and Tench and Thompson, “Tethered or Mobile?”

Parents prefer to email photos to their children. Typically, their digital cameras come with a photo editor that resizes pictures in one click and then emails them out directly.

My users' families also used web albums and blogs, or would send MMS-es to each other. People found it hard to remember the URLs. Every time a person would make a new post, he would typically have to send out the link to everyone in an email. It was not uncommon that the rest of the family would misplace the email, so the same person would have to send the link out a couple of times in a row, to different people.

Half of the families I interviewed were active on chat clients. Mothers, the most energetic chat users among the older segment of the family, took the online concept literally and were very surprised when the other person would be online and not answer to their chat invitations. The children would complain that their parents treat IM chats as a phone conversation, requiring 100 per cent conversation involvement and not allowing them to do any work in the meantime. Within the chat family dynamics, status messages became conversation magnets for parents, who would immediately want to know what they meant. Parents' eagerness to chat about status messages prompted some of my users to remove them around the times their parents would come online. Siblings would not react as vigorously, but they would scan the different messages, as proven by later conversations.

4.4 Problems with the current tools

Although remote families use the tools enabling supporting communication, they did not manage to transform them into a successful connecting mechanism. With an irregular flow of supporting media leapfrogging in the family network, family members are still disconnected from the rest. I identified three main problems with the current supporting media practices of the remote family.

4.4.1 Lack of immediacy

Supporting media is all about the highlight of *today*. Immediacy gives these media the power to make the sender present in someone else's digital space. Immediacy gives flavor to the medium, both for the sender and the receiver. Lastly, repeated immediacy keeps the distant person up-to-date and in tune with the progression of events that the remote family is going through.

Most current web spaces for photos – web albums, blogs – fall short of communicating instantly. Going along with the Pull¹⁰

¹⁰ Tapia, "Do you push or pull?"

mental model behind most websites, they rely on drawing people through a network of links to get to the information they are looking for. People seldom remember the links, while changing to another web album with another link adds to the confusion.

MMS-es and emails have instant qualities, striving to be the Push media of the digital age – they bombard your inbox, where you are forced to view them, even if it's just to delete them. But MMS-es are restricted by limitations of mobile networks and phone models. Emails come with an additional load of interpersonal relations. It is easy to send out an email as a photo package, but the reality of the social conventions asks that you also communicate with the same email. The email becomes paradoxically immediate and late at the same time – it travels in an instant but it is regularly postponed from being sent by the sender, who cannot bring himself to perform the social task the email implies.

4.4.2 Social effort

The social effort is one of the major problems that hamper the success of supporting media. Since there is no clear pattern of usage, no implied rule that these media can be sent without social obligation, people always delay their dispatch. An email with photos from today will be sent in a week since the sender has to sit down and think about what to write to the recipients. A posting to a blog, which has to be elaborated under the pressure of the social expectations of the readers, will also be delayed.

4.4.3 Decentralization

As shown in my research, every family member uses different outlets for broadcasting supporting media. They outlet of choice is either the first tool they got accustomed to or simply the most comfortable way that fits their digital habits. The bottom line is that every family uses a variety of outlets. Within the same family, one person prefers sending photos via email, two other people would use two different web albums, while the teenage sibling would only send MMSes to a restricted few. All these outlets are hard to keep track of and overall, they delay exposure to information that is most effective when it's immediate.

At the same time, the supporting media received over time is lost in the individual digital mess. Some live on a remote web server, some on the local hard disks or in the individual inboxes. Some are deleted by mistake, while other are stored in "Stuff" folders that are impossible to scan. There is no safe place where all the family can store meaningful snippets of life, a place where all of them can go back to and browse through memories, reenacting the Sunday afternoon flipping through family albums.

4.5 The family space

Playing with the puzzle pieces, I gradually came to my final concept -- a virtual online space for the family, where all members could absorb, in a glance, news about their distant family. My solution could be an application where people would share snippets of their daily life -- they could post pictures or other media (videos, graphics) that enhance the others' understanding of their immediate realities. Most importantly, the family space would allow people to send and receive supporting media instantly, waiving all social obligations.

The same space could support ambient digital presence. Family members could come online and leave messages, accentuating their involvement with the family on a daily basis, even though the actual communication would follow the regular patterns.

The family virtual space, used over time, could become a safe location to store precious family moments. Living apart from each other, the remote family no longer owns shared photo albums for each stage of their lives. The family space could give people the opportunity to collect testimonies of their special moments in only one location, to which all members have access. With time, the archive becomes a visual narrative of the family history. The remote family might not be able to spend Christmas together, but within the family space, they can see Christmas pictures from all members and get a sense of how the family collectively celebrated the holiday.

4.6 Motivation

The Family Scrapbook responds the individual need (or obligation) to keep in touch with their families, without having to resort to verbal communication. As mentioned before, people want to be connected with their distant loved ones, but there is such a thing as too much connection or too little time to commit to frequent communication. People would welcome an ambient and effortless way of communicating with their families, without having to dedicate too much time to this process.

This application has great chances of success for families, but would not apply as well to groups of friends separated by distance. Distant friendships dilute over time, as does the individual interest in the daily happenings of friends they have not seen for years. On the other hand, the family would always maintain their connection and their interest, however rarely they see each other. This application involves dedication that makes sense for the family, since it's a part of a larger commitment that they make regardless.

4.7 A social software without expiration date

Such an application would fall into the realm of social software, defined as “software designed in and for a particular social situation or context [...] to support some form of group interaction.”¹¹

Social software is designed for use by a specific social group, rather than for a generic set of users. It poses scalability issues, but on the other hand, it gives priority to social values and succeeds where similar generic applications have failed. For example, a situated application “HotorNot” designed for ITP students to rate their professors managed to gather thousands of votes instantly. RateMyProfessors.com, the web version with the same purpose for the entire school (NYU) never managed to attract the same enthusiasm and participation, although it was running for years. The secret of the social software is that it’s taking advantage of social or context-sensitive information, which cannot be applied when designing for large-scale audiences.

I see my family application falling into the same category of situated software. It serves a small group of people, but it really looks at their needs and serves them well. Also, given the permanence of family links, I see the lifespan of this software stretching over time and over numerous software versions.

¹¹ Shirky, “Situated Software.”

5 Design and Implementation

My thesis comprises one major project, the Family Scrapbook, with two smaller explorations alongside. All projects, concerned with re-connecting families that live away from each other, take different routes to achieve the same goal.

The Family Scrapbook looks at the family in the digital space, encouraging all members to send each other pictures and re-establish a daily connection. SpeakOut is a set of physical objects that create an always-on audio link between remote spaces. Give_And_Take is an application and a service where family members can directly borrow money, applications and online memberships from other family members.

5.1 The Family Scrapbook

The Family Scrapbook is an application and a service. With the application, people can share snippets of their daily life with their entire family. Family members can post digital media (pictures, messages), which the whole family will receive instantly.

All family members install the application on their computers. The front application window shows the most recent postings of each family member, their online status and short messages that they can write when there are no photos to share. Every time a member makes a new post, the rest of the family is alerted and they can immediately see the new item in their application window. The application also has an archive function, where all the digital media are safely kept on an external server and to which everyone has access.

The Family Scrapbook relies on a third party to provide storage space, and also to sell the application. The application could be further developed for mobile phones or PDAs.

The Family Scrapbook allows people to give their remote families a regulated view port into their lives. As a separate application, it is easier to access than the web, and it allows more prominent alerts for new postings, creating a strong sense of family ambient presence. Also, the scrapbook saves all postings from the individual digital mess and stores them safely, so that they can testify about the shared life of the remote family.

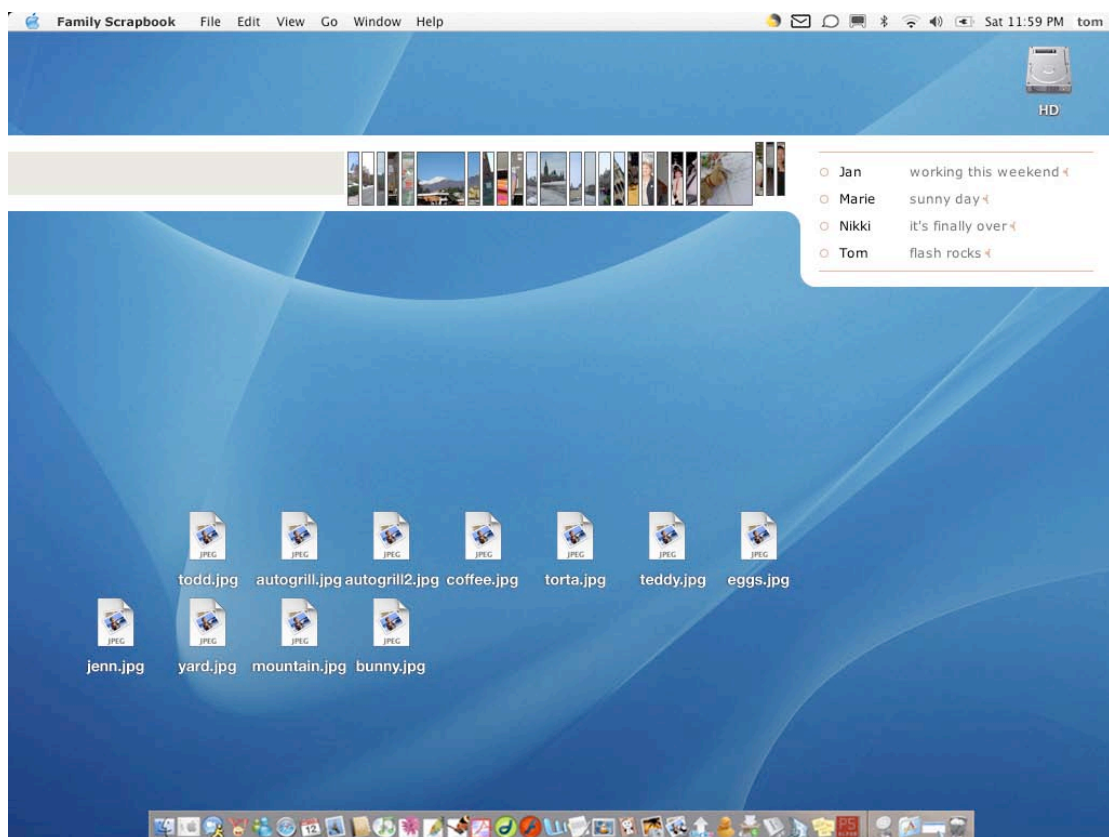
5.1.1 The application

The Family Scrapbook application is a program people can install on their computers. Once the application is running, people can send and receive photos, browse through the archive, and see if

other members of the family are online. Below, I'll explain the main functionalities of the application through a short scenario.

The sliver view and its clues

The Stovicek family has just started using the Family Scrapbook three weeks ago. Every morning, Tom Stovicek switches on his laptop and automatically signs in to iChat, MSN Messenger and the Family Scrapbook. When the Family Scrapbook launches, a narrow rectangular window opens, floating on Tom's desktop. This window brings to the front clues about the Stoviceks' activity within the application. The image below shows Tom's application window on a fairly clean desktop.

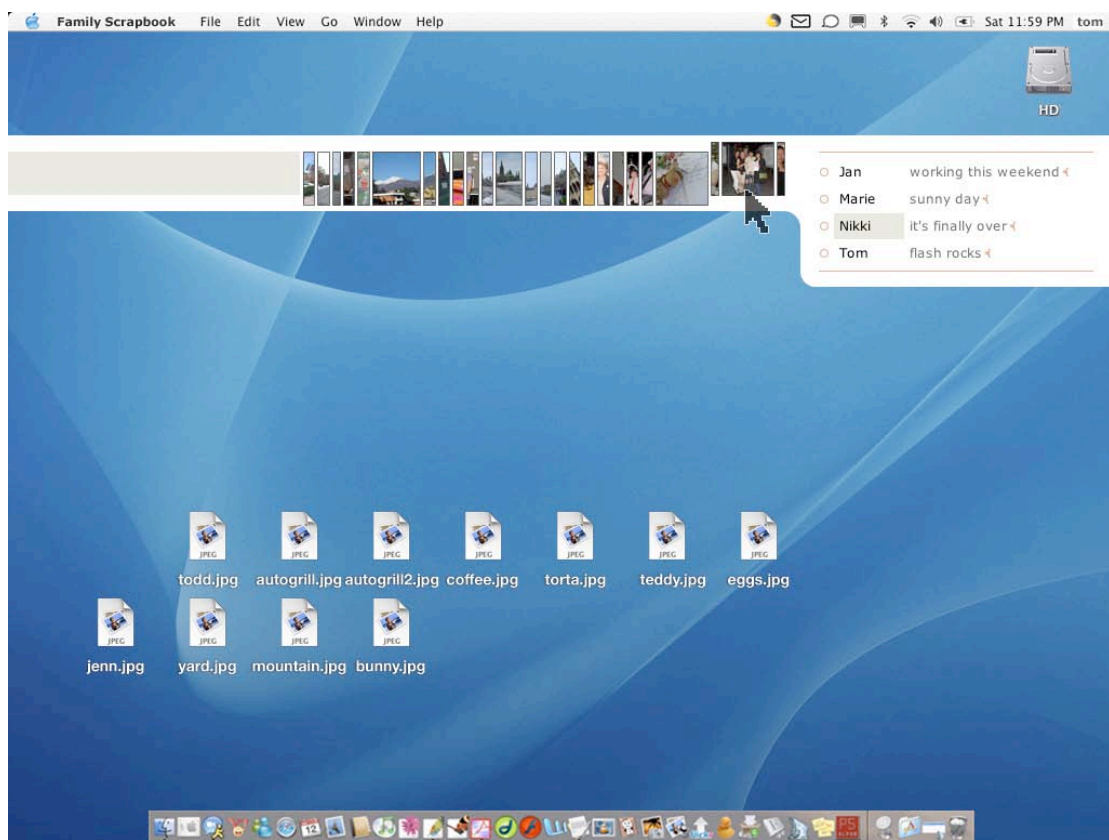


When Tom opens the application, he appears in the family space. He can see that the rest of his family – his parents, Marie and Jan, and his sister Nikki – are also at their computers and have the application open. If they were offline, their names would have appeared ghosted in the family list on the right-hand side of the window.

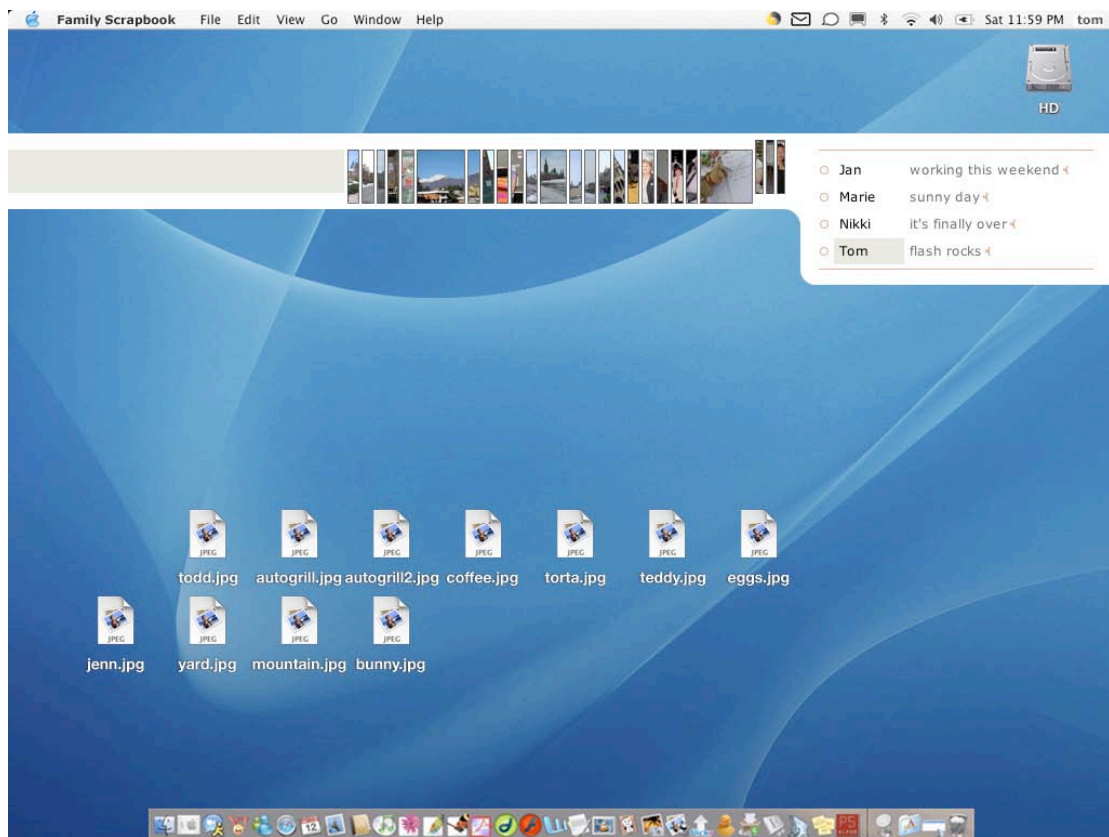
The Family Scrapbook parades with a thin photo strip stretching across the screen, which is a container for all the photos the Stoviceks have posted over time. Since the family has only been

using the application for three weeks, there are not enough pictures to fill the strip from right to left. As more pictures are sent through the application, they will all be collected in the photo strip, forming a string that will slowly grow to the left.

Tom sees that new images are a bit raised above the strip. Only a narrow portion of each new photo is visible. Tom mouses over each new photo and he can see the image at full width. The images show his sister Nikki at her year-end graduation show. As Tom rolls over the pictures, a light grey rectangle appears around Nikki's name in the family list on the right, showing that she is the image sender.

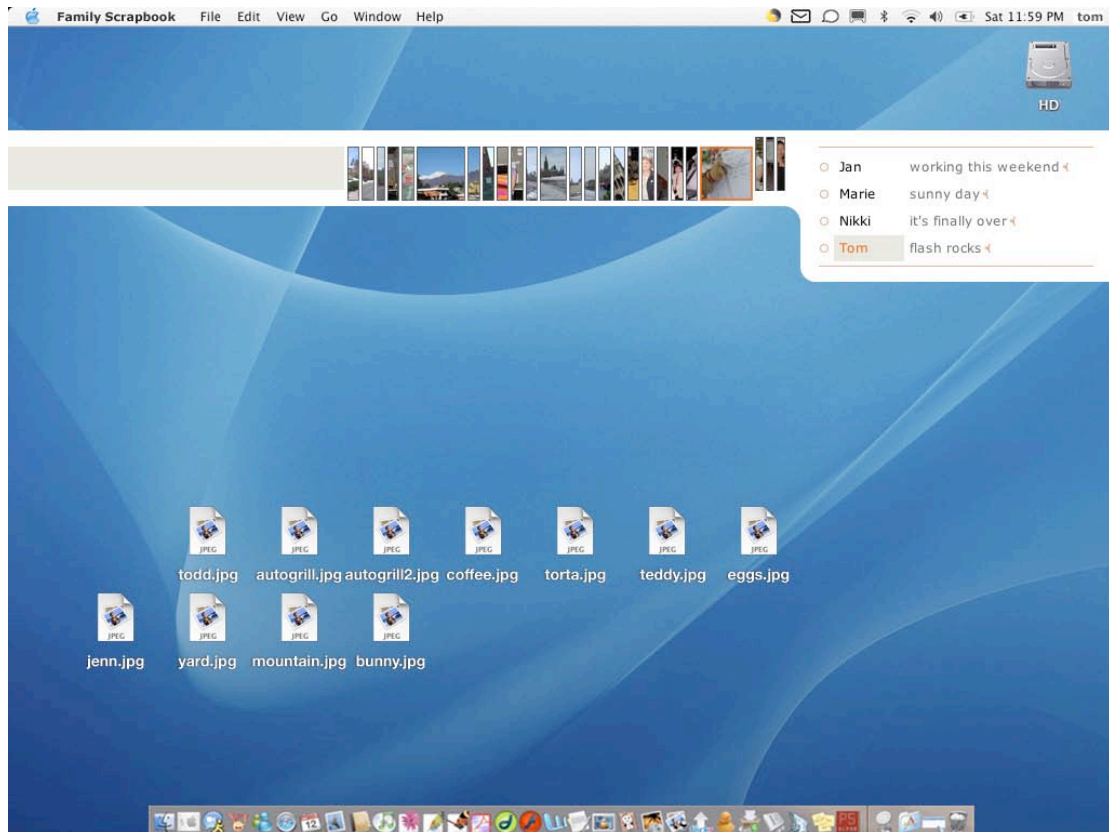


Tom can also tell that his family was avidly checking for new pictures from him. The photo strip provides clues about how many times the other family members have viewed someone's images. When a photo has just been posted, only a ten-pixel portion is visible. With every view from the family, the same image will grow with ten pixels. Tom can see that the family liked in particular a mountain picture Nikki took during her trip to the Italian Alps. He can also see that the only photo he has posted is also a family favorite. It is a picture of Tom's rabbit keychain, which looks exactly like the one he and Nikki used to fight over when they were in primary school.



Posting new photos

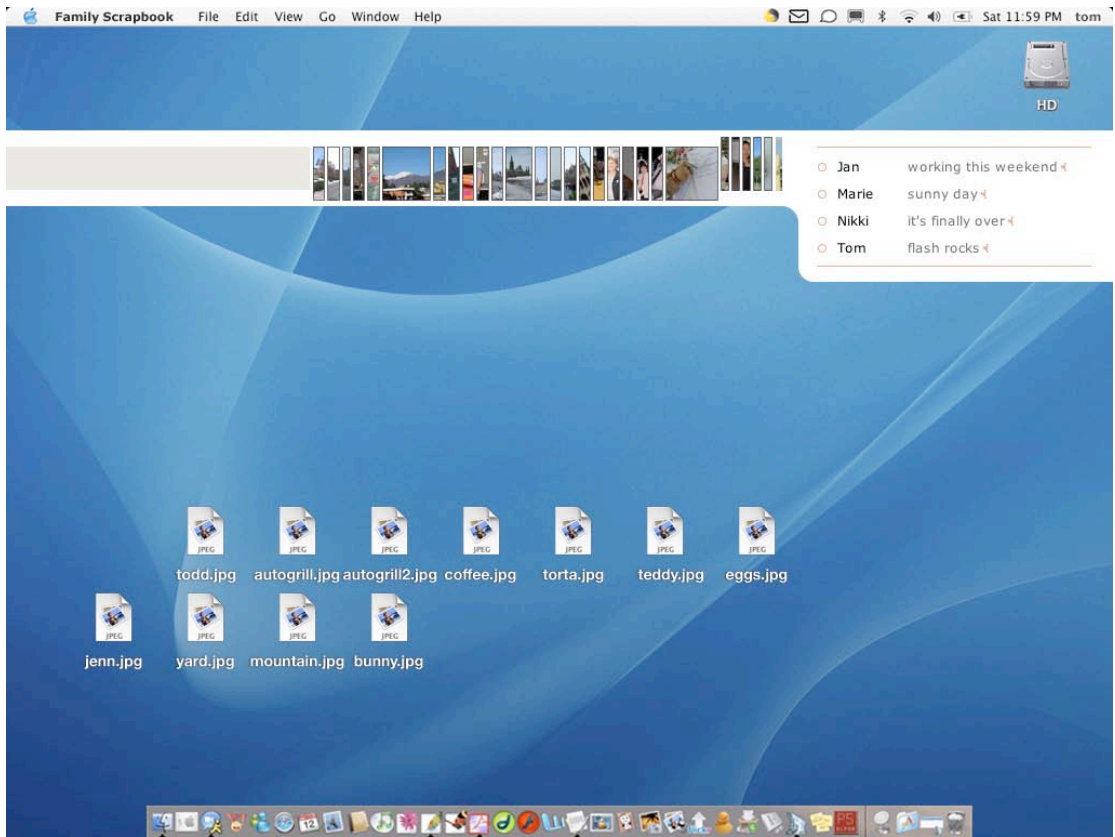
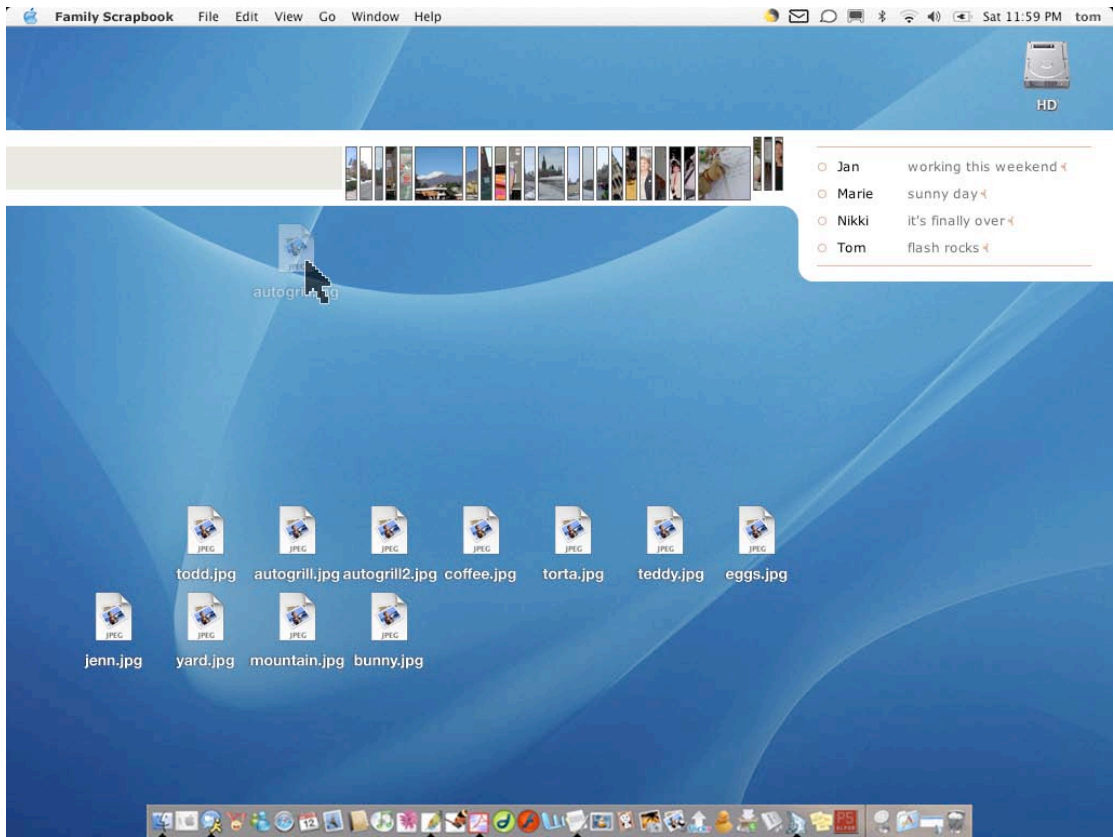
With a tinge of guilt, Tom realizes that he's the only person in the family who is not involved in the picture frenzy through the application. He must have sent some pictures at some point, but he cannot even remember what they were about. He then rolls over his name, and he can see that he only posted the one picture with the rabbit keychain. The photo strip displays Tom's photo at full width, with an orange border.



The feeling of guilt becomes even more distressing. “Maybe I should post something new,” he thinks. “Mom and dad must be checking for pictures at least twice a day.”

He quickly sends new images from his phone to his computer. They are just three pictures from his drive to Viareggio for work reasons, but he does not have anything else to show his family. Work is taking up all his time and he has not done anything interesting in a while.

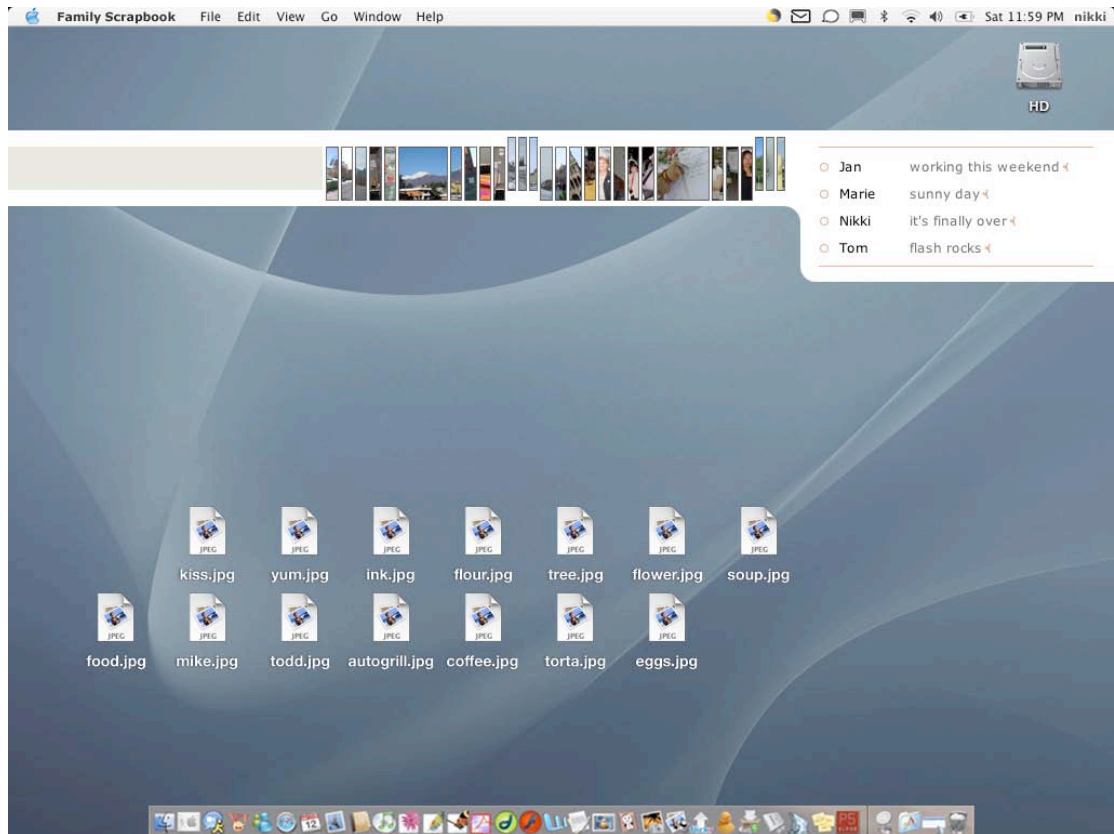
He drags the pictures into the application window. The pictures shrink to narrow rectangles and join the timeline. They are all new pictures so they will stay raised at the right end of the photo strip.



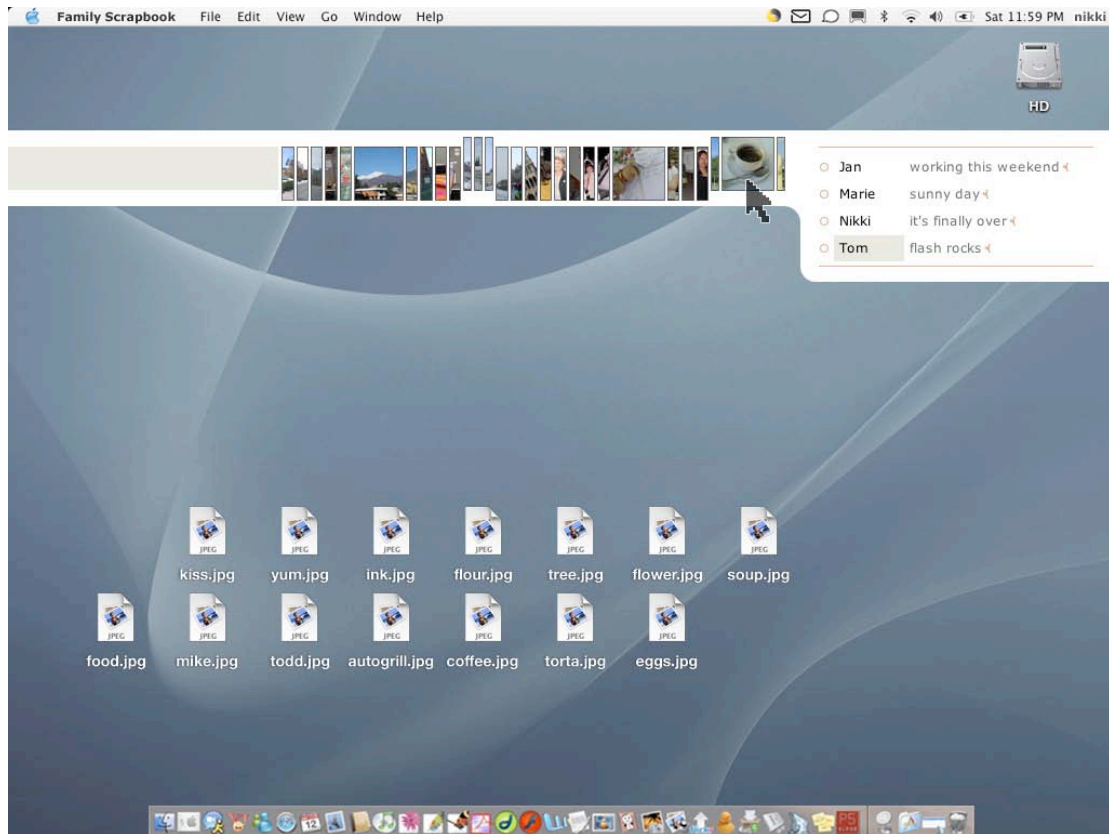
Andreea Chelaru, Keep in Touch, May 2005

Receiving new photos

Nikki is immediately alerted by the Family Scrapbook sound and she can see three new photos, slightly raised, at the right end of her photo strip. Nikki's strip actually looks pretty ragged, being punctuated by three other raised photos in the middle. A while ago, her father was photographing every corner of their hometown, and Nikki could not bring herself to watch everything he sent.

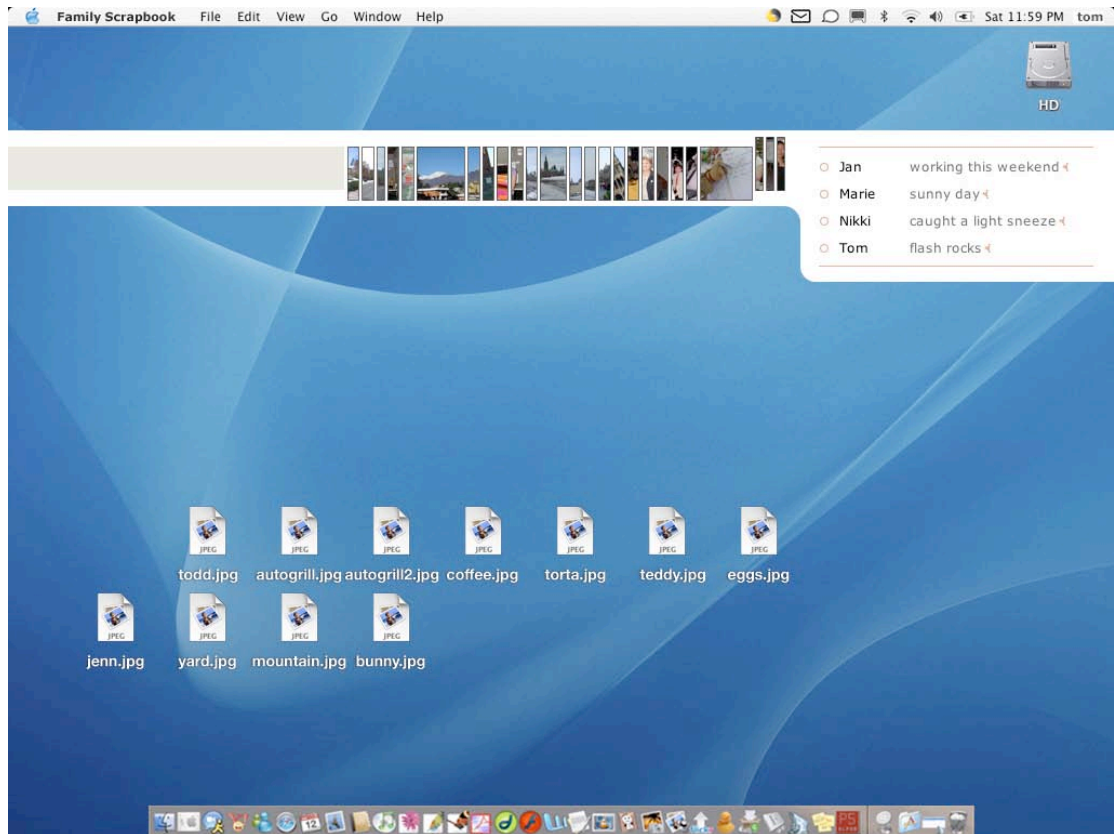


Nikki rolls over one of the three new pictures on the right and she sees a close-up of Tom's coffee cup. Tom is weirdly likes to photograph food and beverages, which the parents find really interesting but which does not appeal to her that much. She has no desire to see more coffee images in full view, so she goes back to work and the three photos stayed raised on Nikki's photo strip, along with the older ones.

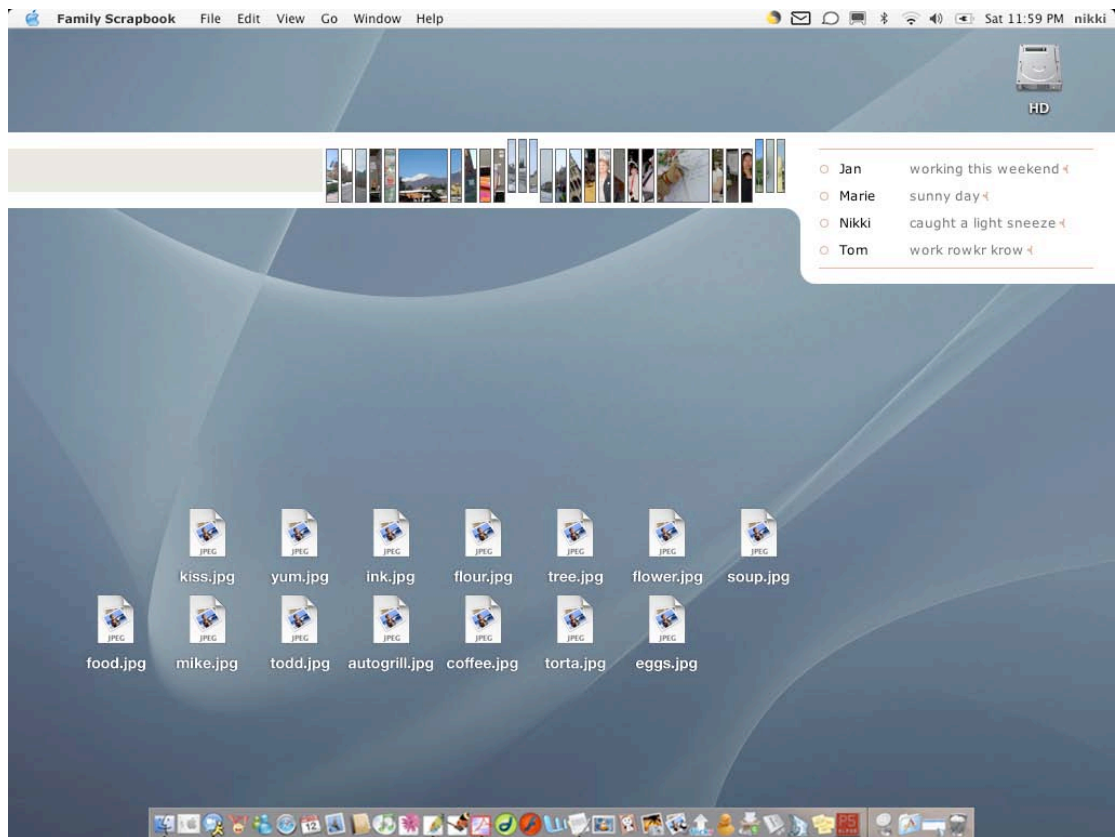


Status messages

Before really starting to work, Tom spends five more minutes with the Family Scrapbook. As he is browsing through the photo strip, Nikki writes a new status message “Caught a light sneeze,” which is immediately displayed underneath her name.



Tom can vividly imagine Nikki's persistent whining when she's sick, and shuns the thought of calling her. He'll make up an excuse quickly, typing as his status message: "work rowkr krow." Now Nikki will think he is working and he does not have time to call.



Going to the shoebox view

Later the same afternoon, Nikki has some time to kill and decides to look through Tom's food photos. So she clicks on the first raised picture on the left of her sliver window. The strip expands into a white window that fills the whole screen. Nikki can see the selected image at full size. Also, the timeline shows a small preview of the same selected photo at full width, while the other photos remain as slivers. Nikki's Family Scrapbook now looks like the picture below.




Nikki is surprised to see a beautiful landscape instead of Tom's lunch. It turns out that not all Tom's images are about food. As she mouses over the next button, in the timeline, the following photo opens up at full width.

Lucy also checks out her dad's photos, which have been raised in the middle of her photo strip for quite a while. Jan is a photo maniac, he likes to "shoot from the hip," and capture everything around him. He probably has been the most active poster within the Family Scrapbook. Curious to see exactly how many images her dad has sent, Nikki clicks on his name on the right-hand side of the screen. The timeline will now show at full width all Jan's photos, outlined by an orange border.


✖ Close Archive

The Stoviceks



Jan
Marie
Nikki
Tom

Ottawa ↵
Posted by Jan



One more. ↵

Tags

- Holiday
- Caribbeans
- Home
- Canada
- Nikki
- Graduation
- house

Nikki's attention is caught by the first image Jan posted. It shows her parents in the Caribbean's, enjoying a summery sun and not thinking of the cold and snowy Ottawa. Nikki does not mind the cold and the snow, but she knows that Tom, in Toronto, would give anything to live in a place where there is no winter. Anticipating some sort of reaction from Tom to the image, Nikki mouses over the rectangular button on the right side of the image. The image flips, displaying Tom's excited comments.

✖ Close Archive

The Stoviceks



The Caribbeans

Posted by Jan



It's sunny and hot on the beach. Back home it's still snowing.

Jan

Marie

Nikki

Tom

Tags

Holiday

Caribbeans

Home

Canada

Nikki

Graduation

house

✖ Close Archive

The Stoviceks



The Caribbeans

Posted by Jan

Tags

Holiday

Caribbeans

Home

+

Comments

Tom: Here it's been sunny and warm for almost two months. It's time you guys get some sun as well.

Nikki: No sun is not good.

+

Jan

Marie

Nikki

Tom

Tags

Holiday

Caribbeans

Home

Canada

Nikki

Graduation

house

It's sunny and hot on the beach. Back home it's still snowing.

Tags

Nikki now wants to see what other Caribbean images the family has posted with the Family Scrapbook. She clicks on the Caribbean tag on the bottom right of the screen. (A tag is a one-word description attached to a photo. The same photo can have one or more tags attached to it. The same tag can have more than one photo attached to it.) The tag moves upwards and attaches itself at the bottom of the family list. Now the timelines will show all the images that were annotated with the word Caribbean.

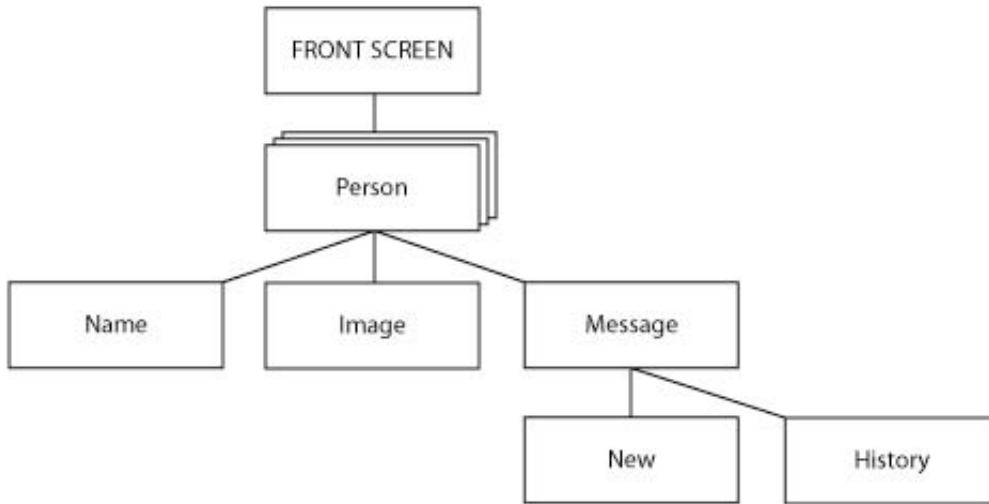
The screenshot shows a web-based family scrapbook interface. At the top left, there is a "Close Archive" button. The main title is "The Stoviceks" in a large, elegant font. Below the title is a horizontal navigation bar with a small thumbnail of the current page. A photo gallery strip is visible below the navigation bar. The main content area features a large photo of a man and a woman sitting on a green fountain with a large bird sculpture. Below the photo is the caption: "It's sunny and hot on the beach. Back home it's still snowing." To the right of the photo is a list of names: Jan, Marie, Nikki, Tom. Below this list is a tag labeled "Caribbeans". Further down is a "Tags" section with a vertical scroll bar. The tags listed are: Holiday, Home (highlighted), Canada, Nikki, Graduation, house, and Ottawa.

There is only one picture that corresponds to this criterion, as the timeline shows. Lucy would really like to see more pictures from that trip. So she picks up the phone to ask her mom to send more images.

5.1.2 Application Design

The Family Scrapbook system is built on a hierarchical structure. Each screen prioritizes information, bringing the most important features to the front and ghosting the less relevant items. For instance, the three crucial elements for the slider screen are the pictures, the message and the names. All three elements are

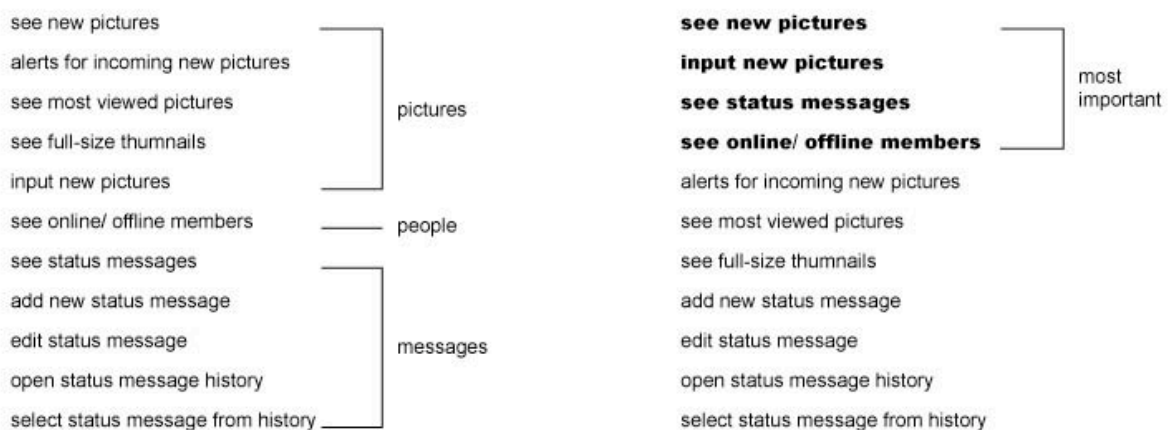
characteristics of one person. The sliver screen would host several people, all displaying the same characteristics. Consequently, the hierarchy of the main screen follows the succession shown in the diagram below.



For more detail about the system structure, see the diagrams in appendices A, B and C.

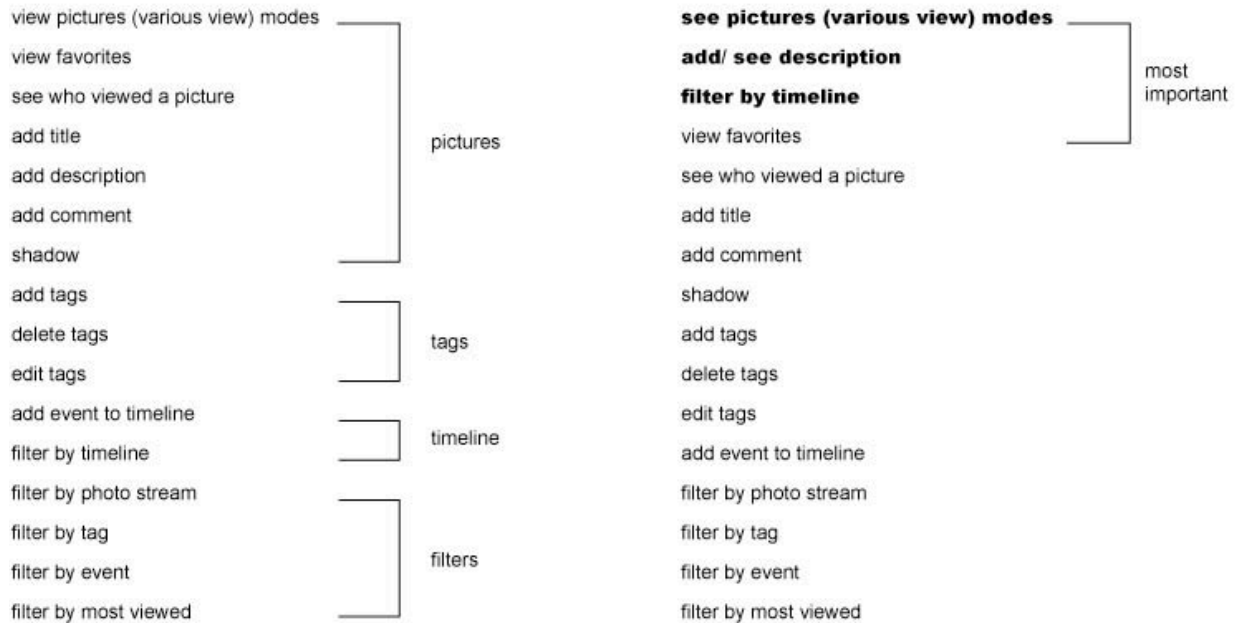
The interface design was guided at every step by the application main goals. Each screen is a container for specific functionalities, of which three or four shine through as the most important. For instance, the goal of the sliver view is to show activity within the family space. The most important functionalities are shown in the diagram below.

FUNCTIONALITIES SLIVER SCREEN



At the opposite end of the spectrum, the shoebox screen is more concerned with how people manipulate the pictures. The main functionalities of the shoebox side of the application are to allow people to view pictures, categorize them and filter through.

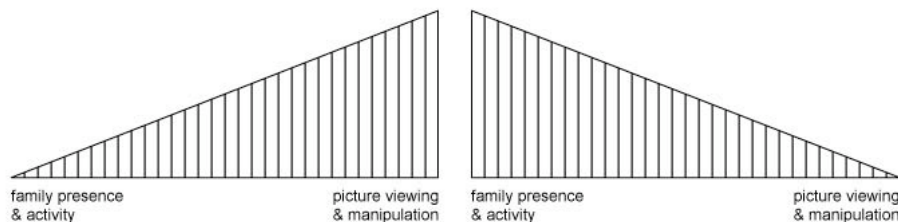
FUNCTIONALITIES SHOEBOX SCREEN



The two sides of the application mirror its double-layered goal: to become a daily active family space, and to act as a static archive for family mementos. The duality of the goals is reflected in the interface design. The front layer (the sliver) is concerned with creating a vibrant family space, revolving around the concept of presence (through pictures, messages or activity). The second layer acts as a facilitator for easy photo manipulation. The main drives of the two application sides are drastically different, as shown in the diagrams below, but they form a complete entity in their partnership.

SHOWBOX SCREEEN

SLIVER SCREEEN



The different drives of the two application sides also influenced the visual layout of the interface design. The sliver screen had to

be pulsating and teasing at the same time. This screen would always float on the background, being glanced at every now and then. Should this screen be dead, the people would not feel the presence of their families and they would lose incentive to keep the application open. This screen had to deduce and display meaningful clues about how the family uses the application. For this purpose, the family strip mysteriously hides and reveals the new pictures, spotlighting the family's most favorite ones. The photo timeline is the heart of the sliver screen, ranking first in terms of importance in the conceptual design.



The shoebox screen is more concerned with displaying a full-blown version of the pictures that were teasingly showing through the sliver screen. As a consequence, the conceptual design model of the screen is built around this feature.



5.1.3 Software implementation

The final technical solution of the Family Scrapbook would consist of standalone applications programmed in Java running on common personal computers connected to a web server, which hosts a mySQL database that can be accessed via PHP. The client applications are used to upload and modify pictures and other data on the mySQL database. They would regularly query updates from this database so that the user is instantly

updated if someone changes the content of the database, by uploading a new image for instance.

The final prototype for the Family Scrapbook consists of a standalone client application, created in Macromedia Director MX. Instances of the same application run on several Apple computers, talking to each other with Macromedia's MultiUserXtra. Instead of exchanging information like image data with an Internet server, all applications talk to an identical set of local images and only exchange names of images. This is how they update each other about which files are uploaded and which are not yet.

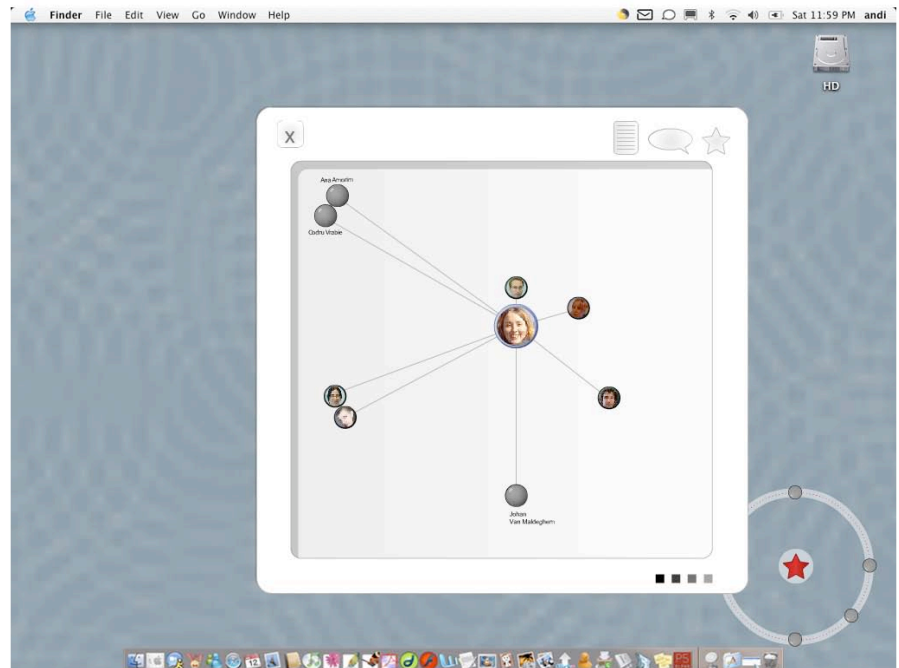
The application mimics a desktop environment showing the sliver screen with which one can post images, view the status message of the family members as well as their activity. One can drag and drop icons of image files depicted by graphical elements (so called "sprites") into the application window in order to upload an image. The application notifies the other client applications about this change, which will take place on the other computers. A similar exchange of information occurs when the user of one client application modifies image information such as tags or comments.

5.1.4 The process

5.1.4.1 The Constellation

The grandmother of the Family Scrapbook was the Constellation. The Constellation also aimed to use supporting communication to reconnect remote families, but it used different tools to achieve this goal.

The Constellation shows the remote family the immediate social circle of every family member. The application scans all the incoming and outgoing emails for each family member and displays this information in a constellation-shaped visualization.



The family can see the digital social circle of each family member. They have to select a specific person, who will appear in the center of the visualization screen. The people with whom that person has had the most contact are positioned closest to her, at 12 o'clock. All the others move further out and clockwise, signifying less and less contact with the same person. The Constellation would pull out photos from the address book, using them to pinpoint friends or close contacts.

The Constellation was developed to some level of detail, but did not pass the “reality” test. A basic experience prototype showed that remote families did not connect better by finding out about the others’ email recipients.

The main problems were:

- Seeing someone’s email network does not convey meaningful information about that person
- Scanning personal email inflows and outflows is intrusive

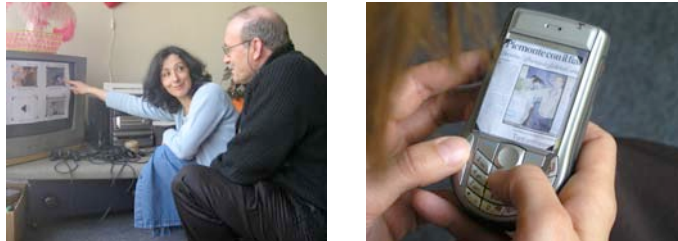
The Constellation was not a success, but it steered my thinking on the track of supporting communication. I just needed to find more effective tools to work with.

5.1.4.2 Scenarios

I started the Family Scrapbook by sketching scenarios to portray the user experience. I envisioned various circumstances of use for the application, and made decisions about the tools I wanted to

employ and the main functionalities the application should support.

In a first iteration, depicted in a photo scenario, the Family Scrapbook lives on plethora of devices, such as the computer, the mobile or the TV. The application comes with a variety of props, allowing users to scan physical items or leave vocal messages by calling a specific phone number.



The photo scenarios broadened the scope of my design, and helped me make educated decisions about when and where to narrow it down.

5.1.4.3 The San Siro exhibition

I presented a raw demo of my concept and a video scenario during the San Siro exhibition in Milan. I had to explain the idea to several people and be very specific about the differences between my system and the already-existing tools.



I learnt that:

- the two main supporting communication tools in the family are indeed photos and messages
- supporting media, in today's scenarios of use, does fall short of immediacy
- my project's singularity lies in its immediate, informational and ambient qualities

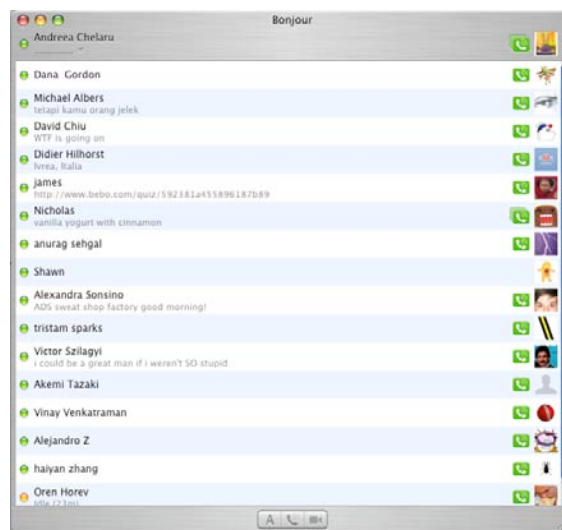
- women are very attracted by the emotional value of my project, while men asked mainly technical questions
- in an exhibition environment, it's hard to reproduce a multi-user experience that gains value over time

5.1.4.4 Experimenting with status messages

My user research gave me clues about the communication potential of status messages and photos. The next step was to make tests to confirm these clues.

I made two small experiments with status messages. I took screenshots of my iChat and Rendez Vous windows for ten days, several times a day. I compiled a list of all messages gathered over time and showed it to colleagues, asking them about the information value of the messages and the overall mood they were setting.

I also kept my own message history for three weeks, at the end of which I sent it to my sister. I asked her to tell me what the messages meant and how they clued her about my daily ups and downs.



I found out that:

- status messages give life and ambience to a virtual space
- people find it most interesting to read others' messages, however cryptical they may be
- people use message as an outlet of self-expression

- messages are often a starting point for conversation. My interviewees identified several specific messages that would have prompted them to ask questions about what's going on.
- in the family environment, the clues of the status messages excite more interest than between friends.
- status messages communicate clearly someone's moods. My sister was particularly intrigued by some of my messages, she read between the lines, and made strangely accurate assumptions about what I was going through, as reflected in the messages.

5.1.4.5 Experimenting with photos

My second experience prototype tested the four main aspects of the Family Scrapbook

- the information qualities of photos
- the experience of receiving photos instantly to one's desktop
- being able to store all family pictures in one place
- potential interpersonal reactions the application provokes

Six families signed up for my experience prototype for three long weeks. The six families came from countries such as Canada, USA, England, Romania, Hong Kong and Serbia and Montenegro.

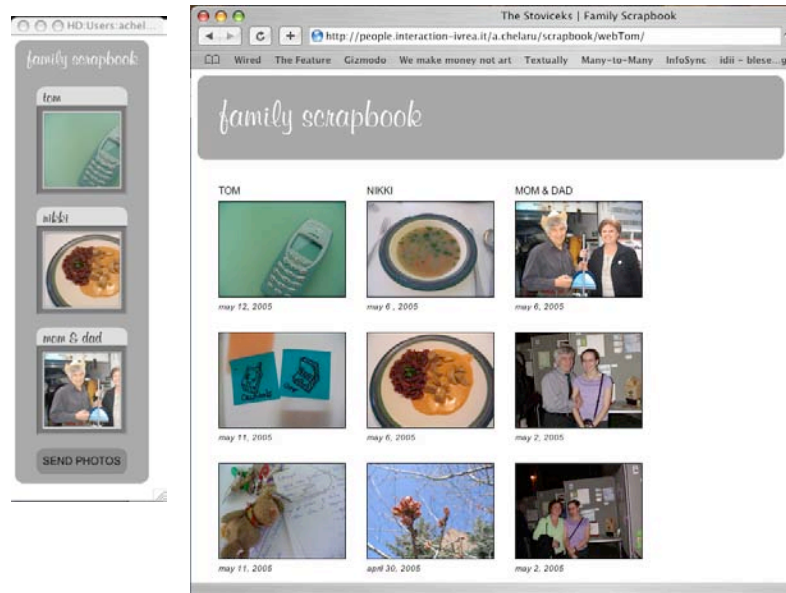
I sent 21 Flash files to the 21 people involved in my experiment. Each file was tailored for every person in particular. The Flash files called PHP files on the web, and loaded in photos stored on a web location.

The Flash file opened in a narrow window on the desktop, and displayed a photo slot for each family member. To upload pictures, people would use a "send photos" button. The button was located at the bottom of the Flash window, and opened up an email addressed to me.

All the participants emailed me the new pictures for their families. I worked as the application engine, uploading the photos on the web and changing the .txt file that told the individual Flash files what photos to show. This way, family members would get new photos from their loved ones directly on their desktop.

The shoebox side of the application was also prototyped. By clicking on a picture on the local Flash file, people would be

taken to a webpage that stored all the photos posted by the family up until that moment.



Three of the six families did not engage in the experiment. In all three cases, at least one member of each family posted a couple of images in the beginning. After a while of not receiving any pictures from the rest, they would lose motivation and stopped even opening the application.

The other three families were the complete opposite. They would send pictures as often as every day. On the average, each member of the three active families posted a picture every third day.

Findings about the application:

- people thought the application should be more alive. Photos would be posted only once every couple of days. In the meantime, the application kept a low profile on the desktop. The users would keep it open and expect something to happen. "I liked the preview but I did wish it did something more. It was very exciting to see new images ... but when they didn't change over time, I got sad." says Thomas Stovicek, 30, of Canada.
- The users also wanted to have more prominent alerts for new photos, a way of showing which photo is new and whether there is more than one new photo.
- Using the application depends on group participation. If the family is not active in the family space, the one person willing to use the application will gradually lose incentive and give up.

- The application felt more personal than email.
- The archive side of the experiment had an emotional quality. "Normally I just email them photos." says Miladin Bogetic, 24, of Serbia and Montenegro. "They see them and basta. Here, a history was kept so I was reminded about things that happened."
- The photos helped users understand each other's context. "Seeing photos especially from Masi allowed me to see what stuff looks like over there," says Nicole Stovicek, 24, of Canada. "Masi would talk about his work, briefly describing what he's working on, but getting pics of the work helps to understand what he's working on. It was nice."
- People liked keeping the application open all the time and were checking regularly for new pictures. "I think because I saw the pic box [the application] open all the time, I'd always be a bit excited and checking to see if there are new pictures every day," says Nicole Stovicek.

Findings about mindsets:

- people expected to receive more photos and were disappointed when the other family members did not send new images.
- people felt guilty when other family members posted pictures and they did not. Feeling guilty would sometimes prompt them to post something new, but not all the time.

Findings about photo habits:

- most people sent and received more pictures than the usual.
- some people started thinking of the Family Scrapbook as a daily habit. "I started to consciously think through out the day as to what I could send out," says Iris Chelaru, 28, of Romania.

Effects on family communication:

- people started emailing their families more. Stovicek says, "From my sister, I got an email on my birthday, one in January, and 12 since your prototype."
- senders would prompt other family members to go and check a specific photo. "She [my mom] would tell me to go check

out a picture almost as if she knew I did not look at it," says Nathan Waterhouse, 28, of England.

- senders would start conversations about an event, assuming the others knew about it on account of the photos they posted.

(Un)wanted consequences :

- a photo posted to the Family Scrapbook created a small argument between a couple. The girlfriend thought the photo was too personal and it should not be shared with her boyfriend's family.
- People should avoid posting pictures of food in the Family Scrapbook or they will get emails such as, "Dude. It's so mean to send me that gelato pic. Grr!"

5.2 SpeakOut

SpeakOut, my second thesis exploration, aims to push forward family presence in a physical space.

At that stage, I was very interested in "family forgetting" – the way people dissociate their families from their daily lives. A solution for this problem could be to signal the presence of the remote family members in the immediate space of a person.

To this end, I developed more specific goals:

- promote ambient presence in the physical space
- give a sense of communication activity
- encourage communication

SpeakOut, realized in collaboration with Tristram Sparks, explores the realm of physical interaction design. The prototype consists of four sets of boxes. In the picture below, the six boxes represent six different family members.



Every time someone comes home, he can turn on the device and make himself available. The other family members can see that the box representing the first person lights up. An audio channel is opened between every two connected boxes, so that people can eavesdrop into the other space. When a conversation happens, everyone can hear it, which creates interesting social interactions. There is also a private mode that allows the user to speak to only one person.

SpeakOut was a great exploration, opening up a plethora of interesting questions about physical objects and presence in spaces. However tempting it might have been to delve into that direction, I realized that I would have been straying away from my original goal. After finishing the project, I decided that there are more successful solutions in the online world.

5.3 Give_and_Take

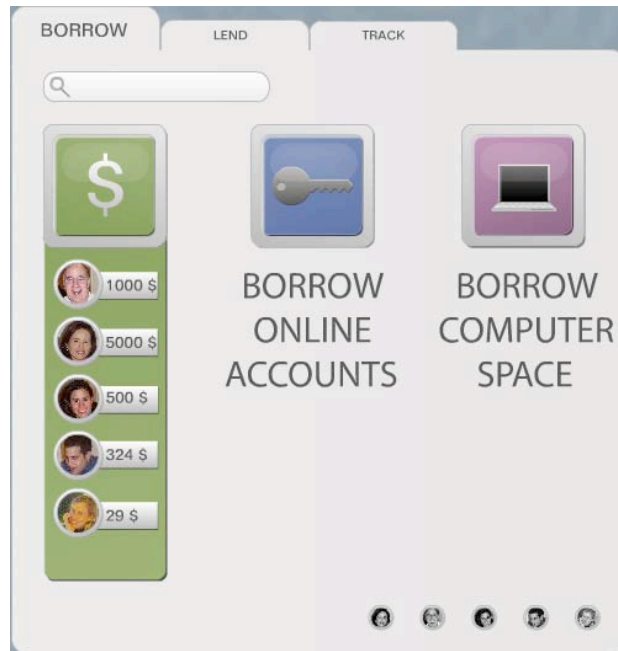
Give_and_Take is an application and a service that allows family members to exchange money, computer space or online memberships. Based on the assumption that family property is fluid, the project aims to connect families by involving them in a shared activity.

Give_and_Take is a family closet for the digital age. Family members who have trouble performing an online task can borrow a solution from their families – they can borrow extra money for an online purchase, temporarily use an application they don't own or save a bigger file on someone else's hard drive.

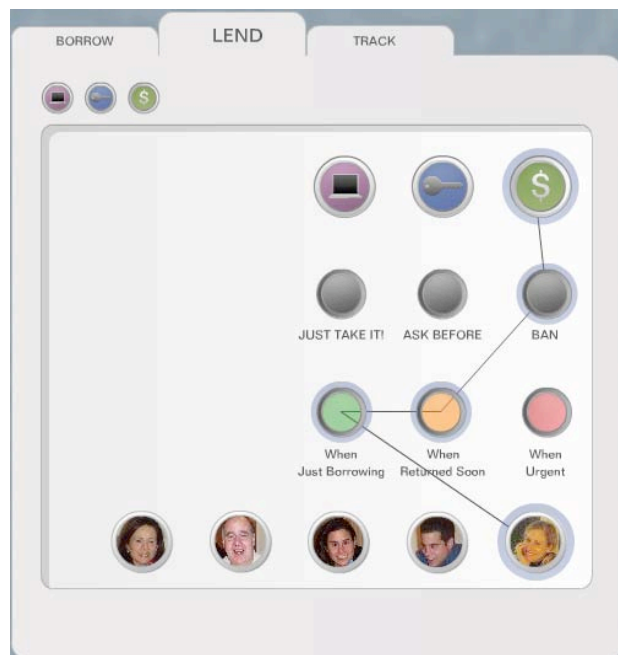
Family members would assign a set amount of money for their families to be able to borrow with this service. They would also

supply relevant information about their online memberships to the same trusted third party. Other family members would have access to these resources through a dedicated application.

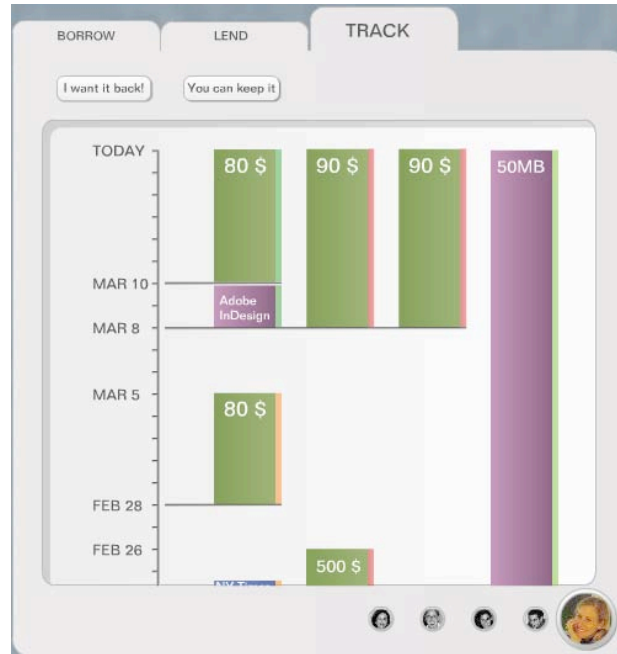
The application window below shows what resources the whole family makes available.



With the same application, people could set permissions for specific family members, as a reaction to their borrowing habits. For instance, if a person abuses the system, the rest of the family can block her from further using the family resources (see picture below).



Lastly, the application keeps track of all the transactions that take place in the Give_and_Take environment. The user can immediately see who owes him what, and he can thus re-evaluate his relationships with certain members of the family through the lens of their activity within the service.



I loved the idea of Give_and_Take, and I thought it could bring about funny interactions between family members. I also thought borrowing is a great way to involve the family in a daily activity, to get them talking about an issue in which both parties are equally involved. Unfortunately, user interviews showed that transactions were not the best way to promote family closeness. Moreover, the service implementation posed a lot of problems in the real world.

6 Economic Study

Family Scrapbook is a feasible project, which can be easily developed in real life.

6.1 Product overview

A software-development company could develop the application and advertise it online as a family communication tool. Users would be able to download the application from the Internet and install it on their personal computers. One member of the family could configure the application for the whole family, subsequently sending the others invitations to join.

The application and the basic service could be used for free. Users will be able to instantly send photos to each other, but they will not be stored over time. The archiving attribute would only be available through a pay service. To activate the archiving feature, one or more family members could pay a monthly fee for storage space. Prices would vary according to the amount of storage required by the family.

6.2 Business plan

A possible business plan for the project could look at starting up a company that specializes in archiving for the family. The Family Scrapbook would be its first product.

To start a business, one or two developers with skills in web, database and Windows (Mac) development would be needed.

The goal is to have a usable Beta of the product in six months, while conducting at the same time online marketing activities to get a base set of users. The beta version of the software could be used to get initial feedback and debug the system. Three months later, the initial archiving and pay service would be offered to start making revenue. Development would continue on a six-month cycle and would expand to create new services.

6.3 Finances

The company would require basic costs to run. Initial setup fees, equipment, servers and three employees would cost 150,00 euros per year. Server costs would increase as usage increases, although it is reasonable to expect these costs to be offset by the incoming revenues.

There will be three main revenue sources:

- investors with seed money and subsequent rounds of finance
- partnerships or funding from companies like Hallmark or Kodak, which could take care of the promotion and offer free storage space.
- revenues from the pay service

While aiming to have a self-sufficient business in three years, the company could also be acquired by a bigger online service company, which wants to compliment their product line, or by companies that want to push their brand through the application (such as Kodak).

7 Evaluation and Analysis

I will dedicate this chapter to a concise reflection on my design process throughout the past year, considering specifically the three main explorations of my thesis.

7.1 Learnings throughout the thesis year

My thesis topic was a tremendous challenge. Little did-I suspect in the beginning how broad my problem area was or how many question marks it posed. All year, I have been trying to understand the dynamics of the remote family and to pin down recurring problems, which I could subsequently work out.

It wasn't that easy. Every family has their own rhythm and characteristics, which deepen when you factor in different cultures. I was getting contrasting feedbacks with every new interview. I was finding new problems and new possible solutions for each family, only to be turned 360 degrees around during my next session of user research.

It was very hard to decide on a route to follow. I had to break out of my mighty goal of finding a "one-size-fits-it-all" design solution. Only when I realized that I cannot design to help everybody, was-I able to progress and really start designing.

My only regret is that I kept a lot of good ideas at a conceptual level. I think I produced hundreds of concepts during this year. In the beginning though, I was trying to find the perfect solution from the start, so I would not settle for anything less. I regret not having taken some concepts further, developing them into imperfect prototypes, which, despite their flaws, could have showed me the full potential of the ideas.

Although it has been a year of vast efforts, I enjoyed tremendously talking to people and using the human insights to inform my design. I've grown to appreciate the great value of experience prototypes, especially when working on a design with such an accentuated social flavor such as my project.

7.2 The Family Scrapbook

The most frequent question I received about the Family Scrapbook was: "So how is it different from a blog?"

I answered, "It's immediate, it's private and it's a family game." The application could be obviously used by other social groups, but it works best in the family because it makes allowance for people's behaviors in the family environment. It's been a challenge to make people understand that they have to look at

the application in the context of the family, from which it cannot be dissociated. The Family Scrapbook, for those who want to play the game, implies a group commitment. If the commitment has been made, the group will keep the application alive. If the group flails collectively, the application dies. If only one member does not keep his end of the bargain, group pressure will force him to get back into the game.

7.2.1 The experience

The Family Scrapbook introduces a four-layered experience:

- immediacy of exposure to family photos, with consequences on family dynamics
- family presence in a dedicated online space
- family activity in the same space
- safekeeping family mementos over time

I was extremely excited by the feedback from my photo experience prototype. Getting as close as possible to the real application, the experience prototype confirmed my design assumptions and gave me new confidence in my work. The people who participated in the experiment sent out more pictures to their families, and received more as well. They asked questions about specific photos, and understood better the life and the context of their loved ones. Lastly, using the Family Scrapbook prompted conversations between family members about their activity level within the application. My project now placed remote family members in the same daily context, and reconnected them over a common activity, both goals I wanted to achieve from the beginning.

I have only partially managed to prototype the archive side of the application, through a web library I built for my families during the same experience prototype. It was hard to test the value of a design aspect that becomes meaningful over time.

Tests have also shown that the Family Scrapbook is not the ultimate panacea for the remote family. It works for some people. For others, it does not. The application requires a certain amount of dedication, on which its success depends. The Family Scrapbook is designed for people, who are its very engine. Should the families not be willing to put in the effort, the application would not achieve its goal.

I am also aware that the application requires all family members to be computer active, perfectly comfortable with technology. It is hardly the case these days. Most parents in today's remote family still have trouble using the Internet browser.

I am sad that the digital divide would not allow some people to use my project, shall it ever come to life. But on the other hand, I am perfectly comfortable to have pursued a design for the world of the future, where everyone can use a computer.

7.2.2 The interface

The interface of the Family Scrapbook was the product of a long series of conceptual, visual and functional iterations.

I enjoyed tremendously the creative process. At first, my interface ideas did not have a lot of creative vision, but with my advisor's guidance, I managed to think outside the box and come up with unique solutions.

I think the interface might pose problems for computer challenged people. But then again, they are not my target users. Someone with a decent knowledge of how computers work can figure out easily the interface metaphor. In the end, it is a personal decision to use the variety of options the application offers or just to stick faithfully to a couple of basic functionalities.

7.3 SpeakOut

I liked the physicality of SpeakOut. It was a nice metaphor to think of distant family members as a tangible objects, living in one's private environment – the home.

However, the concept posed numerous problems:

- it was intrusive
- it did not provide a significantly different communication experience from a telephone
- it raised scalability questions
- it raised human behavior questions: do people want to leave a door open to their private space, during their time of relaxation?

I am sure all the above questions could have been solved in future iterations of the same project. However, SpeakOut was all about direct, synchronous communication. I was more concerned with connecting remote families in subtler ways, so I left SpeakOut in its kindergarten stage.

7.4 Give_and_Take

Give_and_Take was a short exploration of only two weeks. I started off being very excited about the concept. I made a small

experience prototype, asking people to take note, over the course of one week, if they needed money, a specific computer program or some computer space. Most of my interviewees needed an application they did not have. They did not fall short of money, but they liked the idea of having readily-available extra cash from their family.

Give_and_take was designed with little consideration to human interactions. Borrowing, especially money, is a hot topic in every social group, including the family. Asking for money requires human interaction and cannot be achieved through a depersonalized digital intermediary. Also, setting up the service in real life did not have great success chances.

8 Conclusion

I spent a whole year striving to understand a social phenomenon. I heard a lot of stories, delved in deep analysis and devised a multitude of solutions. The better I understood my context and the people, the more effective my designs became. I could spend another year advancing my knowledge and my work. Another year might not even be enough.

The design world is huge, and the wheel has been reinvented over and over again. However, I see a huge potential in constantly redesigning the wheel with a specific context or human need in mind.

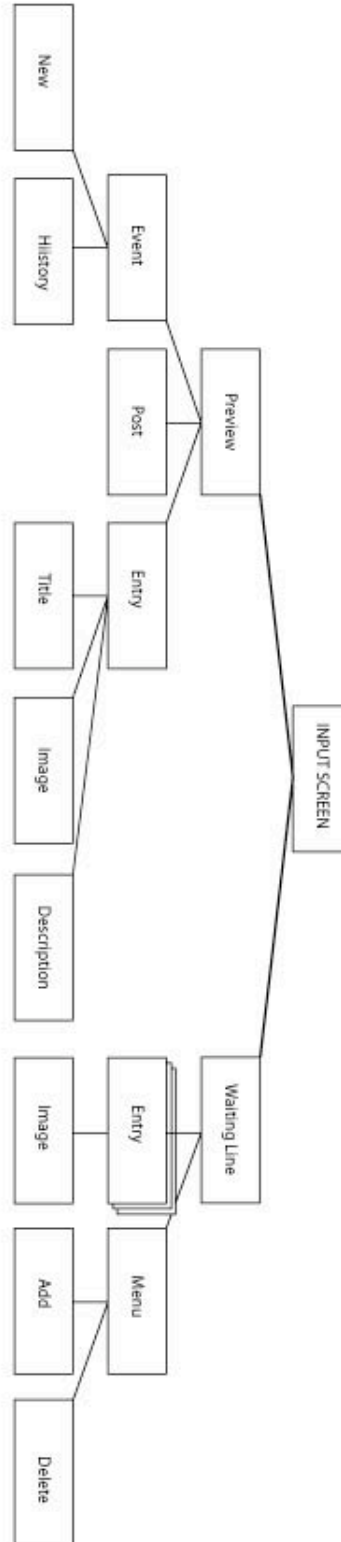
My thesis falls into the realm of human-driven design. Some explorations failed, others succeeded but they all tried to make a difference in the way people connect. I would like other designers to find inspiration in the human force of my work, and attempt to bring design out of isolation, into the real world.

9 Bibliography

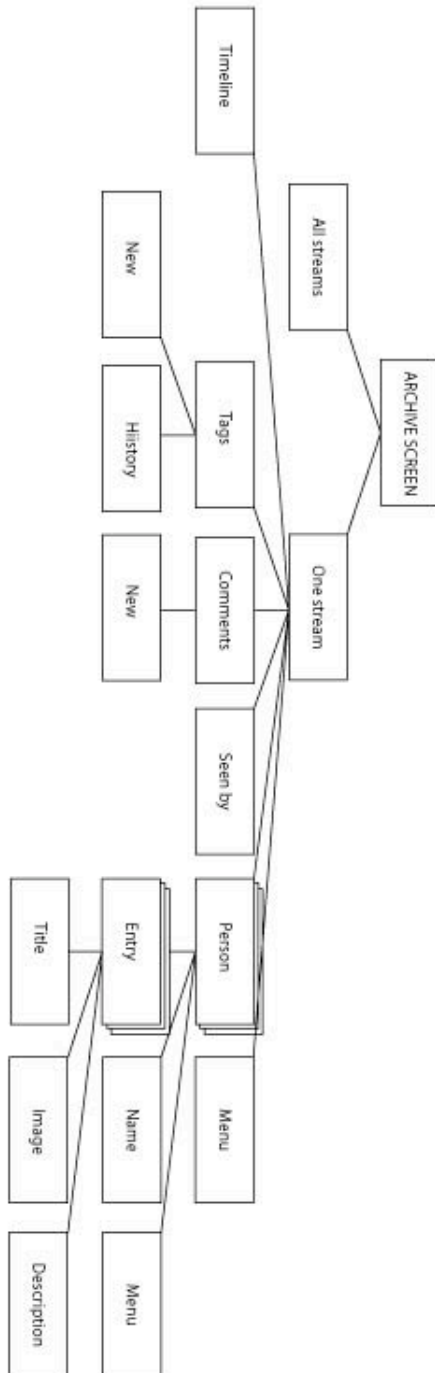
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10 Appendices

Appendix A – Hierarchy for Family Scrapbook input screen



Appendix B – Hierarchy for Family Scrapbook archive screen – one picture view



Appendix C – Hierarchy for Family Scrapbook archive screen – multi-picture view

